The Characteristics of Homeless Adults with Autistic Traits

Morag Ryder

D.Clin.Psy. Thesis (Volume 1), 2017

University College London

UCL Doctorate in Clinical Psychology

Thesis declaration form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature:

Name: Morag Ryder

Date: 11/06/17

Overview

This volume is divided into three sections. Part One is a systematic review of research into the relationship between social support and housing outcomes in the homeless population. The evidence largely suggests that homeless individuals have smaller social networks and reduced social support compared to housed individuals. Within the homeless population, reduced social support is associated with longer histories of homelessness and sleeping on the streets. There are mixed findings regarding the role of social support in achieving housing stability in homeless adults. The findings informed some of the topics explored in Part Two.

Part Two presents empirical research into the characteristics of homeless adults with elevated autistic traits. Based on informant reports by keyworkers, pathways into homelessness and the course of homelessness were found to differ between homeless individuals with elevated autistic traits and the general homeless population. The findings suggest that there is a subset of the homeless population with specific characteristics. The clinical implications of these findings are to raise awareness of the characteristics and potential needs of this group and for homeless services to consider adapting their environments to become more autism-friendly. This was part of a joint study with Alasdair Churchard, also a trainee clinical psychologist also at University College London (UCL).

Part Three presents a critical appraisal of the research process undertaken in Part Two. It reflects on some of the challenges in conducting research into this population and the limitations of the study design. It also details the steps taken to disseminate the research findings.

Table of Contents

List of Figures

List of Tables

Acknowledgements

This project could not have been completed without the commitment of the homeless outreach team with whom the interviews were conducted. I am grateful to all the keyworkers involved for their time and willingness in supporting the research. I would also like to thank the homeless commissioner whose energy, motivation and innovative approach to ending homelessness prompted this study. Thank you to Dr William Mandy and Dr Andrew Greenhill for their knowledge and support across the course of the project. Thank you also to Alasdair Churchard, who it was a pleasure to share this journey with. I would also like to thank all my friends and family for all their support during this process.

Part 1: Literature Review

Social Support and Housing Outcomes in the Homeless

Abstract

Aims: Social support is associated with improved physical and mental health outcomes in the homeless population and a number of studies have examined the association of social support and exiting homelessness. Although one review has compared social support between homeless and housed mothers, there are currently no systematic reviews examining social support in the homeless population more broadly and the role of social support in exiting homelessness and achieving housing stability.

Method: A systematic review was conducted to explore the association between social support and homelessness, including the role of social support during the course of homelessness and in exiting homelessness. The PubMed, PsycINFO and Web of Science databases were searched, and 21 studies met the inclusion criteria for the review. A broad definition of homelessness was used and only studies which used standardised measures of social support were included.

Results: When homeless and housed groups were compared, the majority of studies showed that social network size and perceived support was reduced in the homeless group. When homeless subgroups were compared, chronically homeless individuals and street homeless populations had the smallest social networks and reduced social support. Studies that explored the role of social support in exiting homelessness were mixed, although in adult populations social support was largely a protective factor in achieving housing stability.

Conclusions: The findings highlight that homeless individuals tend to have smaller social networks and reduced social support compared to the general population. Variations can be seen within the homeless population, particularly in relation to homeless chronicity and accommodation type. The implications are for homeless

services to support the maintenance and development of informal social support networks for homeless individuals.

1.0 Introduction

Homelessness is a broad term which can be used to refer to individuals who sleep on the streets, reside in hostels or temporary accommodation, or insecure accommodation, such as living temporarily with family or friends because they have nowhere else to go (Department for Communities and Local Government, 2017). Homelessness continues to be a significant and growing issue, with the latest figures in England showing an increase in the last year (Department for Communities and Local Government, 2016). Homelessness is associated with increased morbidity and early mortality (Department for Communities and Local Government, 2015; Fazel, Khosla, Doll & Geddes, 2008; Thomas, 2011) and the cost of homelessness is also considerable (Department for Communities and Local Government, 2012).

Homelessness results from a complex interplay between individual characteristics and interpersonal and social factors (Gaetz, 2010; Nooe & Patterson, 2010). Understanding the factors that contribute to the maintenance of homelessness and the factors that enable individuals to exit homelessness are necessary to develop effective policies and interventions. The purpose of this review is to summarise the literature related to social support in the homeless population and the role of social support on achieving housing stability, as no systematic review for this topic currently exists.

1.1 Defining Social Support

Kahn and Antonucci (1980) developed the convoy model of social relations which conceptualises social relationships as multidimensional and changing over the life course. The model describes that social relationships can vary in terms of their structure

(including size, composition and frequency of contact), their quality (being positive or negative), their closeness and their function. Social support denotes the functional aspect of social relationships, referring to the material and psychological resources provided by a person's social network, which helps the individual to cope with stress. The construct of social support is commonly divided into three types of resources: emotional (e.g. caring), instrumental (e.g. financial assistance) and informational (e.g. advice), (House & Kahn, 1985). In order to summarise the literature, it is necessary to identify how social relationships and social support is defined and operationalised in each study. This review will only include studies that have included standardised measures of these social networks or social support.

1.2 The Benefits of Social Support

There is extensive evidence that social support is positively associated with a number of outcomes. In clinical samples, having a social network and greater levels of perceived social support are shown to be related to improved mental health outcomes (Buchanan, 1995). Having supportive relationships are also linked to better health and quality of life outcomes in the general population (Holden, Lee, Hockey, Ware & Dobson, 2015). The benefits of social connectedness are especially apparent for individuals experiencing stressful circumstances (Wethington & Kessler, 1986), with social support acting as a buffer against the negative impact of stress (Gottlieb, 1983). These findings are replicated in the homeless population, with social support being linked to better physical and mental health (Calsyn & Morse, 1992, Hwang et al., 2009).

1.3 Social Support in the Homeless

A review of homeless families showed that they have small social networks compared to housed families (Shinn, Knickman & Weitzman, 1991). Compared to

housed controls, homeless individuals also have less contact with relatives and fewer relatives that they name as supports (Wood, Valdez, Hayashi, & Shen, 1990). Homeless individuals also report high levels of social isolation, with more individuals classifying themselves as lonely than in the general population (Crisis Report, 2015). Research indicates that within the homeless population, the presence of co-morbid substance use disorders or mental health problems further compound reduced social networks (Goering et al., 1992; Solarz & Bogat, 1990). In a study of previously homeless individuals, the authors named three factors to explain reduced network size: (1) the premature death of network members, (2) participants isolating themselves and (3) network members facing their own obstacles that prevented them from supporting the homeless individuals (Hawkins & Abrams, 2007). There are exceptions to the overall trend which have found no differences in social network size between homeless individuals and housed individuals (Toro et al., 1995).

An important consideration when reviewing the literature is the heterogeneity seen within the homeless population, which is also reflected in study samples. Social support may vary with age, length of homelessness and accommodation type (e.g. street homeless, residing in temporary accommodation or 'doubling up' with family and friends). For example, there are differences in the role of social support and age of homeless onset; for young people, family conflict and negative peer relationships are among the significant factors in the onset of homelessness (Maycock et al., 2011), whereas for adults and older adults, marital breakdown and being widowed are among the factors implicated in becoming homeless (Crane & Warnes, 2001).

Grigsby, Baumann, Gregorich and Roberts-Gray (1990) offer a model for affiliation and disaffiliation in the homeless, which suggests that on becoming homeless, individuals may either increase their social networks with individuals from the homeless

population or isolate themselves to avoid the pressures of interacting. In line with the convoy model of social relations (Kahn & Antonucci, 1980), this model highlights that social support is not fixed and therefore length of homelessness is another important consideration when comparing the findings of different studies. The review includes a broad definition of homelessness and therefore evaluation of the findings will need to carefully consider the sample population utilised by each study.

1.4 Social Support and Housing Outcomes

A review by Meadows-Oliver (2009) found that compared to mothers who were housed, homeless mothers had reduced social support. Furthermore, findings show social support is related to an individual's course of homelessness and route out of homelessness. In particular, greater family support is linked to shorter episodes of homelessness (Caton et al., 2005). Furthermore, support from family and friends is associated with exiting homelessness and achieving housing stability (Zlotnick, Tam & Robertson, 2003).

Social networks may influence an individual's housing outcomes in several ways. For example, social network members may provide tangible support (e.g. money) to help an individual find housing or maintain housing, or they may have an indirect role, such as providing emotional support, that may facilitate a person's ability to cope with stressors. Alternatively, social networks may have a negative influence; conflict in relationships or abusive relationships may precipitate homelessness and once homeless, network members may encourage an individual to engage in substance or alcohol use or discourage someone from accessing support and thus may contribute to maintaining homelessness.

1.5 Aims

Previous reviews of social support in homeless populations have focused on homeless mothers (Meadows-Oliver, 2009; Shinn et al., 1991). While a number of studies have explored social support and social relationships more broadly in the homeless population (e.g. in single homeless adults), there is currently no overall review of the literature in this area and the link to housing outcomes. The purpose of this systematic review is to better understand social relationships and the role of social support in the homeless population, specifically the nature of social relationships and how social support impacts on the course of homelessness and exiting homelessness. In order to address this aim, this review sought to address the following questions:

1. What are the differences in social support between homeless and housed individuals?
2. How does social support differ between different subsets of the homeless population?
3. Does social support act as a protective factor for increasing the chances of being rehoused?

The intended value of this review is to support policy making and service design and delivery for the homeless population and those at risk of homelessness and to move beyond a focus in an individual's characteristics (e.g. mental health) and towards a more systemic understanding of homelessness and the possibilities of reducing homelessness. Shinn (1992) considers 'What is a psychologist to do' in relation to homelessness and explores the importance of conducting research and using a structural model as opposed to an individual deficit model. Although clinical psychologists in the UK tend not to work specifically with homeless populations, it is likely that they will work with low

income families at risk of homelessness or who have previously experienced homelessness. This review links with Part Two, the empirical paper, which also seeks to understand a subset of the homeless population (including individual and interpersonal factors) with a view to improving service design and delivery. It is important to understand the literature in relation to social relationships and support in the general homeless population and the link to achieving housing stability as it is anticipated that homeless adults with autistic traits have been under researched and would have particular challenges with establishing and maintaining relationships.

2.0 Methods

2.1 Inclusion Criteria

Studies were included in the review if they met the following criteria:

1. Explicitly measured levels of social support in the homeless (i.e. longitudinal or correlational designs). For example the review included studies which compared social support in homeless versus housed controls as well as studies which assessed social support over time (i.e. homeless individuals who either went on to be housed or remained homeless).
2. Used a validated measure for social support.
3. Sampled adolescents or adult populations (including families and individuals).
4. Homeless populations can include individuals living on the streets, in temporary accommodation or 'doubled up' with family of friends.
5. Employ quantitative analysis.

2.2 Exclusion Criteria

Studies were excluded from the review if they met the following criteria:

1. If homelessness results from a natural disaster or being a refugee.
2. Non-western populations.
3. Studies which assess the effectiveness of interventions or housing programmes on levels of social support.

Intervention studies or those which assess the effectiveness of particular housing programmes were excluded as these were very context specific (e.g. Housing First Programmes in the U.S.A.) and the concern was that these would not generalise to other contexts.

2.3 Systematic Search Strategy

A systematic search to identify relevant publications was conducted using the databases Psychinfo, Pubmed, and Web of Science (WoS) Core Collection. The search strategy consisted of the terms "homeless*" cross-referenced with "social support" OR "social network*" AND "housing". The following medical subject headings (MeSH) were applied where these terms were available: "homeless", "social networks", "interpersonal interaction", "social capital", "social groups", "social interaction", "social support", "social groups" and "housing". Results were limited to articles from peer reviewed journals written in English. The search terms are outlined in Table 1.

Table 1: Search terms used for each database

	PsychINFO	Pubmed	WoS
Homeless: Free text		homeless*	

Homeless: MeSH terms	Homeless	homeless persons	Not available
Social support: Free text	"social network*" *OR* "social support"		
Social Support: MeSH terms	social networks or interpersonal interaction or social capital or social groups or social interaction or social support or support groups	social support	Not available
Housing: Free text	Housing		
Housing: MeSH terms	Housing	housing	Not available
Limits	English language		
Number of results	621	561 (544)	383

* allows for multiple endings of the term

The results of these searches were combined and all duplicates removed. Relevant studies were initially identified by reviewing the titles and abstracts and assessing eligibility against the inclusion and exclusion criteria. In cases where it was not possible to determine suitability for inclusion from reviewing the abstract, the full paper was reviewed. Seven additional studies were identified and included in the review after searching the references of the included studies.

2.4 Appraising the Methodological Quality of the Studies

Quality appraisal tools have been developed to evaluate the methodological quality of individual studies and thus support the process of conducting a systematic review. Selecting an appropriate tool depends largely on the study design in question. In addition, the majority of tools are designed for the evaluation of intervention studies (Katrak, Bialocerkowski, Massy-Westropp, Kumar, & Grimmer, 2004). To aid this review, several tools were considered (including the QualSyst tool), however, none of

these were well suited to comparing the broad range of observational study designs that were included. Therefore whilst all studies were evaluated for methodological quality, this was not done using a quantitative quality assessment tool. Nevertheless, several domains of the QualSyst tool informed the evaluation of study quality, of particular note were: adequate definition and measurement of outcomes, sufficient description of subject characteristics and results reported in sufficient detail.

3.0 Results

3.1 Characteristics of the Studies

The systematic search found that a total of 21 studies met the inclusion criteria for review, see Figure 1. Full details of the studies are included in Table 2.

Figure 1: Diagram of systematic search protocol with studies excluded at each stage

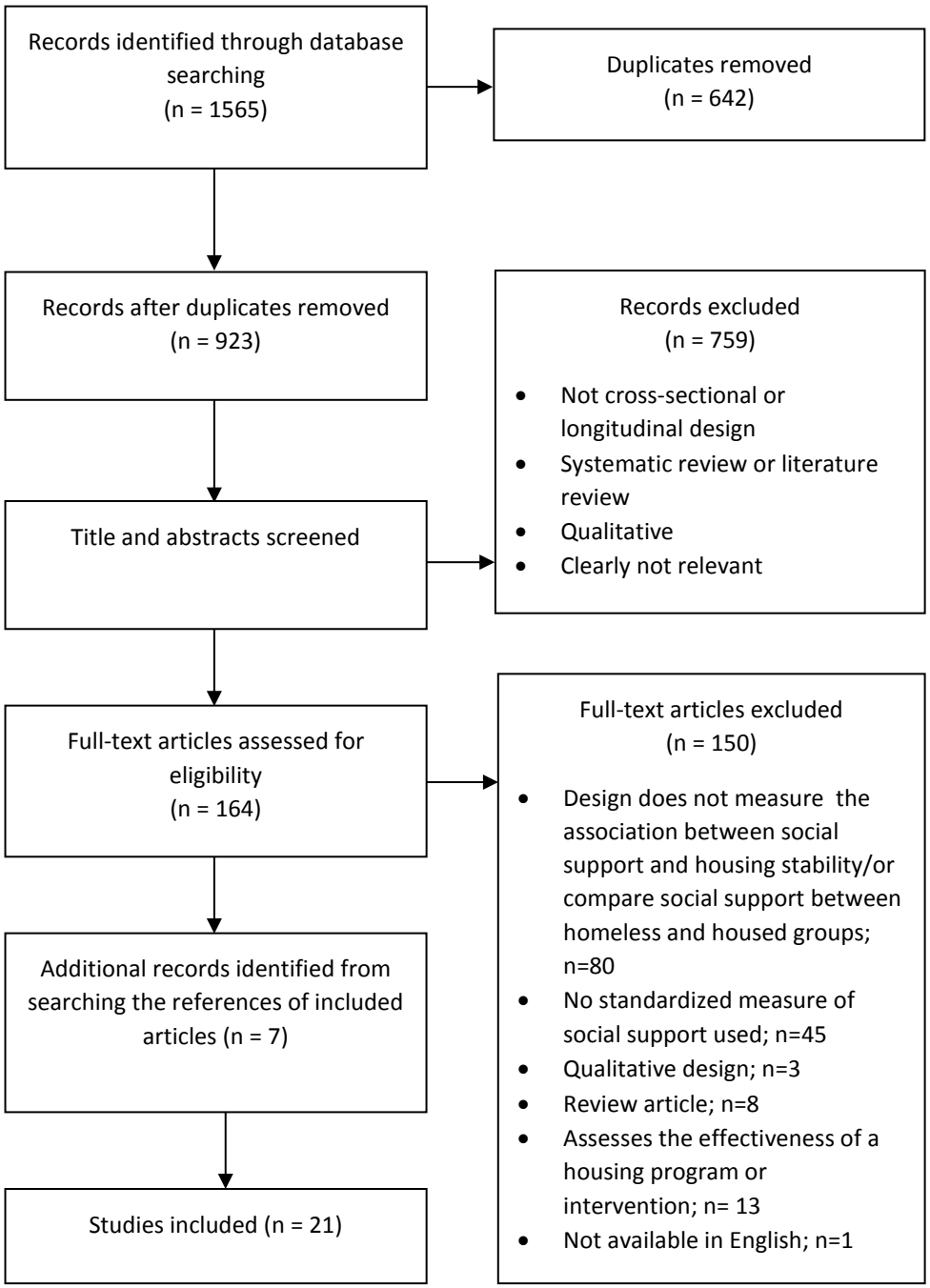

Table 2: Study Information

Study	Country	Design /Population Size	Sample Population	Study Aims	Homelessness Definition	Social Support Measure	Outcome
Aubry, Duhoux, Klodawsky, Ecker & Hay (2016)	Canada	Longitudinal (2 years) 197	Single homeless individuals (aged 15-62 years) in emergency shelters	1.To identify predictive factors associated with exiting homelessness. 2.To explore the relationship between becoming housed following homelessness and wellbeing.	Homelessness: a situation in which an individual has no housing of his own and is staying in a temporary form of shelter.	SSQ	A larger social support network was predictive of housing stability.
Bassuk & Rosenberg (1988)	USA	Cross sectional 130 families	Female-headed homeless families in family shelters (49) and female-headed low-income housed families (controls = 81).	A systematic comparison of homeless and housed families, to identify the correlates of family homelessness.	Homeless: residing in a shelter. Controls: housed with low income (e.g. receiving welfare).	SSNI	Homeless mothers had more fragmented support networks than housed mothers.
Bassuk, Buckner, Weinreb, Browne, Bassuk, Dawson, & Perloff (1997)	USA	Cross sectional 436	Homeless mothers in family shelters (220) and low-income housed mothers (controls = 216).	To identify individual-level risk factors that increase the likelihood of a female-headed family becoming homeless.	Homeless: living in a shelter (for at least the past 7 days). Controls: never homeless families receiving aid and residing in public or private housing.	PASS & FRS	A larger social network (of non-professionals) is protective against family homelessness.
Booth, Sullivan, Koegel & Burnam (2002)	USA	Cross sectional 1185	Single homeless adults using shelters, meal facilities or rough sleeping with no chronic mental illness.	To examine the associations of substance use disorders with personal and social vulnerabilities for homelessness	Homeless: if one of the last 30 nights had been spent in temporary shelter (not with family or friends) or in a place not designed for habitation.	MOS-SSS	Social support was positively correlated with the proportion of nights in places meant for sleeping in the past 30 days.
Braciszwski, Toro & Stout (2016)	USA	Longitudinal (7 years) 243	Homeless and other at risk youth (aged 12.7 to 17.9 years) recruited from shelters, substance abuse treatment programs, sychiatric facilities, and street settings.	To study the length of time to achieve stable housing after an episode of homelessness.	Homeless: if adolescents had spent at least one night on their own during the past month unaccompanied by a legal guardian.	FES	Family cohesion (including family support) was not related to either rapid or delayed rehousing.
Cohen, Teresi, Holmes, Roth (1988)	USA	Cross sectional	Homeless men aged 50+ (281)	To analyse the survival skills and needs of older homeless males.	Homeless: included 195 individuals residing in temporary	NAP	Homeless men had fewer contacts then controls although

		281	Comparison group: a general community sample of 61 housed men aged 65-69.		accommodation and 86 who lived on the streets.		saw these contacts more frequently.
Cohen, Ramirez, Teresi, Gallagher & Sokolovsky (1997)	USA	Longitudinal (2 years) 210	Homeless women aged 50+	To explore the factors that predict exiting homelessness and obtaining stable housing in older homeless women.	Homeless: living in a public or private shelter or on the streets for at least one day	NAP	Perceived support and number of community facilities attended were the only significant predictors of being housed.
Davey-Rothwell, Latimore, Hulbert & Latkin (2011)	USA	Longitudinal (1 year) 237	Homeless drug users receiving an HIV prevention intervention.	To examine the relationship between sexual network characteristics and improvements in housing outcomes.	Homeless: self-reported.	PNI (ASSIS)	Having a sex partner who lent money and was not a drug user was associated with moving from homelessness to being housed.
Fischer, Shapiro, Breakey, Anthony Kramer (1986)	USA	Cross sectional 51 homeless (1,338 housed men)	Homeless individuals accessing mission accommodation Comparison group of housed men not recruited by the study.	To explore the mental health and characteristics of homeless individuals.	Homeless adults accessing mission accommodation.	GHQ	The homeless have impoverished social networks compared to the housed group.
Goodman (1991)	USA	Cross sectional 100	50 homeless mothers and 50 housed mothers	To compare the nature of social support between homeless and housed mothers.	Homeless: residing in a homeless shelter	ASSIS	There were no differences between the housed and homeless mothers on social support variables except for the degree to which respondents expressed trust in these networks.
Kennedy (2007)	USA	Cross sectional 120	Individuals (aged 16-20) who were pregnant or had given birth prior to turning 20	To examine the relationships between homelessness, cumulative violence exposure, and school participation among poor adolescent mothers.	Homeless: accessing a youth homelessness centre and self-report (for ever homeless).	SS-B	Those who had been homeless had lower levels of social support than those who had not been homeless.
Kertesz, Larson, Horton, Winter,	USA	Longitudinal (2 years)	Individuals aged over 17 from an inpatient detox unit	To test whether changes in mental and physical health-related quality of life	Self-report. Housing status was organised into 3 categories:	MOS-SSS	Chronically homeless had significantly less social support

Saitz, & Samet (2005)		274		(HRQOL) differed according to homeless chronicity.	Chronically homeless: federal definition Transitionally homeless: homeless nights during 1 or 2 assessments Housed: no homeless nights		than the transitional and housed subgroups.
Latkin, Mandell, Knowlton, Vlahov, Hawkins (1998)	USA	Longitudinal (5.2 months) 324	Homeless injection drug users	Examined the relationship between personal network characteristics and· homelessness in a sample of injection drug users.	Self-report of being homeless at any time within the preceding 6 months.	ASSIS	Social support network size was associated with homelessness.
Letiecq, Anderson & Koblinsky (1996)	USA	Cross sectional 207	Homeless mothers (92) and permanently housed low-income mothers (controls = 115)	Whether there are differences in the support experienced by homeless families and their low-income housed peers.	Homelessness: mothers in emergency shelters, transitional housing or doubled up with family or friends.	FSS	Homeless mothers had significantly less contact with their friends/relative and had fewer people to rely on in their social network than housed mothers.
Mizuno, Purcell, Zhang, Knowlto, Varona, Arnsten & Knight (2009)	USA	Longitudinal (12 months) 821	HIV-seropositive injection drug users	To explore the predictors of current housing status.	Homeless: currently not housed, lived in a squat, homeless shelter, car, or on the street.	ISSB	Greater perception of social support was associated with increased odds of housing.
Nemiroff, Aubry, Klodawsky (2010) Part of a larger longitudinal study	Canada	Longitudinal (2 years) 101	Homeless women aged 20+, residing in shelters	To explore the factors associated with becoming rehoused.	Homeless: did not have their own accommodation or were living on the streets or were temporarily living with friends or families and not paying rent	SSQ	Perceived social support was not related to either becoming re-housed or to achieving housing stability.
O'Toole, Gibbon, Hanusa & Fine (1999)	USA	Cross sectional 373	Homeless and housed poor adults (aged 18+)	To describe health service utilisation by homeless and housed poor adults.	Homeless: if lacked a fixed, regular and adequate night-time residence or were staying in a shelter or temporary accommodation, or in a place not designed as sleeping accommodation.	MOS-SSS	Those in unsheltered accommodation had significantly reduced social support networks compared to those in all other types of accommodation.
Passero, Zax & Zozus (1991)	USA	Cross sectional	90 homeless men aged 18-67 compared with 20 male housed controls,	To compare the social networks of homeless and non-homeless men.	Resided for at least one night in emergency housing shelters or in public or private places	ASSIS	The housed controls had significantly larger social networks than the homeless

		110	aged 20-62, in economic hardship.		without official permission, in the absence of some major public catastrophe.		and also had greater frequency of positive interaction.
Segal, Silverman & Temkin (1997)	USA	Cross sectional 310	Long-term users of client-run mental health agencies	To look at the effects of psychological disability on social networks and support of homeless and non-homeless individuals.	Literally homeless: living on the streets, cars, or in shelters.	SNSSI	The homeless had significantly fewer friends in their social network than the housed clients.
Tevendale, Comulada & Lightfoot (2010)	USA	Longitudinal (2 year) 391	Homeless youth aged 14-24.	To identify trajectories of homeless youth over a 2 year period and predictors of those trajectories.	Homeless: self-reported, living in a homeless setting e.g. on the streets, hostel, squat, friend's home in the past 3 months.	SSMS	Instrumental support from parents was positively associated with the consistently sheltered trajectory.
Toro, Bellavia, Daeschler, Owens, Wall, Passero, Thomas (1995)	USA	Cross sectional 144	Currently homeless adults (59), previously homeless (31) and never homeless poor (54)	To compare the characteristics of the homeless from the housed poor	Used the housing income and services timeline (HIST)	ISEL	The currently homeless group did not differ from the previously homeless or housed controls with regards to social support or social networks.

Participants and Sample Populations. Of the 21 studies, the majority (19) were conducted in the U.S., with two exceptions from Canada (Aubry, Duhoux, Klodawsky, Ecker & Hay, 2016; Nemiroff, Aubry & Klodawsky, 2010). As shown in Table 2, 12 of the studies were cross-sectional in design and nine studies were longitudinal. Sample sizes ranged from 51 participants (Fischer, Shapiro, Breakey, Anthony & Kramer, 1986) to 1,185 participants (Booth, Sullivan, Koegel & Burnam, 2002).

As shown in Table 2, of the 21 studies included in the review, seven sampled only female populations (Bassuk et al., 1997; Bassuk & Rosenberg, 1988; Cohen, Ramirez, Teresi, Gallagher & Sokolovsky, 1997; Goodman, 1991; Kennedy, 2007; Letiecq, Anderson & Koblinsky, 1996; Nemiroff et al., 2010), two studied only males (Cohen, Teresi, Holmes & Roth, 1988; Passero, Zax & Zozus; 1991) and the remaining twelve sampled a mixed population of both males and females. Of the twelve studies which used a mixed sample, ten studies had a much higher representation of males with figures between 61% (Davey-Rothwell, Latimore, Hulbert & Latkin, 2011) and 94.1% (Fischer et al., 1986), one study showed an equal proportion of males and females (Aubry, et al., 2016) and one study showed a higher proportion of females at 67% (Braciszwski, Toro & Stout, 2016).

The studies spanned a range of sample populations as outlined in Table 2. Four studies were interested specifically in homeless families, typically homeless mothers and children (Bassuk et al., 1997; Bassuk & Rosenberg, 1988; Goodman, 1991; Letiecq et al., 1996), and a further study sampled females who were pregnant or had given birth prior to turning 20 years of age (Kennedy, 2007). The majority of the studies (16) sampled single adolescents or adults; four of these studies focussed specifically on populations of drug users (Davey-Rothwell et al., 2011; Kertesz et al., 2005; Latkin, Mandell, Knowlton, Vlahov & Hawkins, 1998; Mizuno et al., 2009) and one study recruited from long-term

users of mental health agencies (Segal, Silverman & Temkin, 1997), the remaining studies sampled adults from the general homeless population.

The included studies spanned populations with a range of ages from 12.7 years (Braciszwski et al., 2016) to 67 years old (Passero et al., 1991). As shown in Table 2, the majority of studies (16) sampled adult populations which included a broad range of ages from 17 and above. Of these, 16 studies included a mean age for participants, ranging from 27.33 years (Letiecq et al., 1996) to 62 years (Cohen et al., 1988), with the median age being 37 years old. For the five studies which sampled adult women (excluding the one sample of females aged 50 or above; Cohen, et al., 1997) the age range was much younger from 16 to 35.6 years old (Bassuk et al., 1997; Bassuk & Rosenberg, 1988; Goodman, 1991; Letiecq et al., 1996; Nemiroff et al., 2010). Notably, four of these five studies sampled mothers, as outlined above. Three further studies focussed exclusively on adolescent or young adult populations; one sampled adolescents ranging in age from 12.7-17.9 years (Braciszwski et al., 2016), a further two studies sampled adolescent and young adults aged 14-24 years (Tevendale, Comulada & Lightfoot, 2010) and 16-20 years (Kennedy, 2007). Two further studies looked exclusively at adults over 50 years of age (Cohen et al., 1988; Cohen et al., 1997).

There was substantial variation in ethnicity across the included studies. Nineteen (out of 21 studies) made reference to the ethnicity of the sample. For nine studies, African American was the most common category, with the figure being over 50% in seven of these studies (Booth et al., 2002; Davey-Rothwell et al., 2011; Kertesz et al., 2005; Latkin et al., 1998; Letiecq et al., 1996; Mizuno et al., 2009; O'Toole, Gibbon, Hanusa & Fine, 1999). For seven of the 21 studies, white ethnicity was the most common category and accounted for over 50% of the participants in three studies (Cohen et al.,

1988; Goodman, 1991; Fischer et al., 1986). In only one of the 19 studies where ethnicity was stated, Latina was the most common category (Kennedy, 2007).

Due to the heterogeneity of the term homelessness and the broad inclusion criteria for this review, the studies included individuals across the course of homelessness (including newly homeless as well as chronically homeless individuals). There was substantial variation in the measurement and reporting of length of homelessness across the studies. The highest quality studies employed specific measures to explore participants' homeless histories. For example Booth et al., (2002) used the Housing, Education, and Income Timeline (HEIT) to provide a detailed account of participants' homeless histories in the past 30 days as well as lifetime history of homelessness. A similar level of detail was given by Toro et al. (1995) who used the Housing, Income and Services Timeline (HIST) to report on total time homeless and episodes of homelessness. Many of the studies did not report on the length of homelessness, either of the most recent episode of homelessness, lifetime homelessness or number of episodes of homelessness (for example Cohen et al., 1988, Fischer et al., 1986, and Kennedy, 2007 among others). As shown in Table 2, the majority of studies recruited individuals from temporary or sheltered accommodation. Three studies included individuals who were sleeping on the streets and compared this group to homeless individuals in other types of accommodation (Cohen et al., 1988; Kertesz et al., 2005; O'Toole et al., 1999).

Due to the nature of the review aims, all the included studies used an observational design (cross-sectional or longitudinal design). Ethical and practical considerations prohibit an experimental design being used to study the causal relationship of these variables on housing status and outcomes.

Table 3: Details of standardised support measures used

Measure	Authors, date	Format	Domains (dimensions of social support; network size; satisfaction with support)	Population with which originally developed
Arizona Social Support Interview Schedule (ASSIS)	Barrera (1981)	Interview	Perceived social support: (1) Available social support network size; (2) Utilized social support network size; (3) Support satisfaction; & (4) Support need. Available and utilized conflicted network size can also be measured. Identifies characteristic of network members e.g. drug use.	Undergraduate students
Family Environment Scale (FES)	Moos & Moos (1994)	Survey	10 subscales which assess a broad range of family environment dimensions. In the study by Braciszwski, Toro & Stout (2016) the Cohesion subscale was used which measures the commitment, help and support provided by family members.	Diverse families including adults and adolescents, including families undergoing treatment or in crisis
Family Resource Scale (FRS)	Dunst & Leet (1987)	Survey	Perceived adequacy of resources & supports: (1) Growth & Support; (2) Necessities and Health; (3) Physical Necessities and Shelter; (4) Intrafamily support, (5) Child Care & (6) Personal Resources	Mothers with preschool-aged children
Family Support Scale (FSS)	Dunst, Jenkins, & Trivette, (1984)	Survey	Parents' satisfaction with support from 5 sources of support: (1) Kinship; (2) Spouse/partner support; (3) Informal support; (4) Programs and other organizations & (5) Professional services.	Parents with developmentally at risk and physically and mentally challenged preschool children
General Health Questionnaire (GHQ)	Goldberg (1972)	Survey	Measures social support networks including marital status, number of relatives, number of friends and number of confidants.	Patients in a primary health care setting.
Interpersonal Support Evaluation List (ISEL)	Cohen, Mermelstein, Kamarck, & Hoberman (1985)	Survey	Self-reported social support across four subscales: 1) Tangible Support 2) Belonging Support 3) Self-esteem Support 4) Appraisal Support.	General population
Inventory of Socially Supportive Behaviours (ISSB)	Barrera (1980)	Survey	Self-reported frequency of received support across 5 areas: (1) Material Aid, (2) Behavioural Assistance, (3) Intimate Interaction, (4) Feedback, & (5) Positive Social Interaction.	Undergraduate students
Medical Outcomes Study – Social Support Survey (MOS-SSS)	Sherbourne & Stewart (1991)	Survey	Perceived availability of social support: (1) Emotional support/Informational support; (2) Tangible support; (3) Positive social interaction; (4) Affectionate support & (5) Overall support.	Patients with chronic conditions

Network Analysis Profile (NAP)	Sokolovsky & Cohen (1981)	Interview	Measures six fields of interaction: tenant-tenant, tenant-nontenant, tenant-kin, tenant-hotel staff, tenant-agency staff, tenant-social institution. For each interaction the content, frequency, duration, intensity, and directional flow of the link is explored.	Elderly population (aged 60+) who were hostel residents including 'ex mental health patients'.
Personal Assessment of Social Supports (PASS)	Dunst & Trivette (1988)	Interview	Perceived support: Emotional support, willingness to provide resources, and conflict across 5 relationships. Network size, adequacy of resources, level of reciprocity, level of dependency on the network and support satisfaction. Asked to name 10 relationships and asked about the quality of the first 7. Sum of ratings for each dimension = measure of social support.	Low income families with preschool children
Social Networks and Social Support Interview (SNSSI)	Lovell, Barrow, Hammer (1984)	Interview	Measures network size and structure (i.e. number of friends and number of family). Assesses instrumental support and expressive support and the directionality of the support (whether provided, received or reciprocal).	Mental health population
Social Support Behaviours Scale (SS-B)	Vaux, Riedel, & Stewart (1987)	Survey	Assesses available support from family and friends across five modes of support: (1) emotional support, (2) socializing, (3) practical assistance, (4) financial assistance, and (5) advice/guidance.	Poor, urban, adolescent mothers
The Social Support Microsystem Scale (SSMS)	Seidman, Allen & Aber (1995)	Survey	Perceived support/cohesion, daily hassles, and involvement. Perceived number of supports (out of 7 including peers, family and teachers) and helpfulness of supports across the 3 areas of support.	Urban and culturally diverse adolescents
Social Support Network Inventory (SSNI)	Flaherty, Gaviria, & Pathak (1983)	Interview	Perceived support: (1) availability, (2) practical help, (3) reciprocity, (4) emotional support & received support: (5) in response to a stressor, within the individual's 5 most important relationships	Mixed sample of undergraduate students, adults in an urban population and adults in a religious community
Social Support Questionnaire (SSQ)	Sarason, Levine, Basham & Sarason (1983)	Survey	Perceived number of social supports (up to 9) and satisfaction with social supports (Likert scale 1-6)	Undergraduate students

3.2 Measurement of Social Support

Only studies that utilised standardised social support measures were included in the review. As outlined in Table 3, 15 different standardised measures were used across the studies. The number of measures for social support utilised by the studies in this review reflects the diversity of the concept. Several of the measures included a structural component, identifying the size or composition of the network. The majority of the measures considered different types of support including emotional and instrumental support and satisfaction with support. All the measures considered the presence of supportive behaviours. Three measures also explored conflict in relationships. Of the 15 measures used across the studies, only one (the NAP) was developed for use in the homeless population. Four of the 15 measures were developed with undergraduate populations. All except three of the measures were developed in the 1980s or earlier and therefore may not effectively capture the current nature of social relationships (e.g. connections via social media).

The focus of this review was informal support from family, partners or peers and therefore did not include studies which only measured support from professionals or services. Three measures were developed with families and were designed for assessment of families' social support. The majority of studies (17 out of the 21) measured social support from a range of sources (family, partner and peers). One study used the Personal Network Inventory (a modified version of the Arizona Social Support Interview Schedule, ASSIS) to specifically explore the sexual networks of participants (Davey-Rothwell et al., 2011). As shown in Table 3, eight out of the fourteen measures used a survey format, with the remainder using an interview format.

3.3 Comparing the Social Support of Homeless and Housed Individuals

Eleven out of the 21 studies included in the review compared measures of social support between homeless and housed individuals. All eleven studies employed a cross-sectional design. Nine of the 11 studies found that homeless individuals showed significantly reduced social support compared to housed individuals (Bassuk et al. 1997; Bassuk & Rosenberg, 1988; Booth et al., 2002; Cohen et al., 1988; Fischer et al., 1986; Kennedy, 2007; Letiecq et al., 1996; Passero et al., 1991; Segal et al., 1997). Two of the 11 studies found no significant difference in social support between the two groups (Goodman, 1991; Toro et al., 1995). Two additional studies compared social support between different subsets of the homeless population alongside a housed group and as such will be considered under section 3.4: Social Support across Different Subsets of the Homeless Population (Kertesz et al., 2005; O'Toole et al., 1999). There was variation across the studies in the quality of their designs and reporting of the results which will be considered alongside the review of the findings.

The review will firstly consider the studies that compared the homeless and housed groups using t tests and chi squared analysis (or non-parametric equivalents). Social support was conceptualised and measured in different ways across these studies. The following sections will summarise the findings related to social networks followed by the findings pertaining to the nature of the relationships and type of support.

Social Networks. Three studies examined the mean size of individuals' social networks and found that homeless individuals had significantly fewer people in their social networks compared to housed controls, with means for the homeless groups ranging from 2.54 people to 6.4 people (Cohen et al., 1988; Letiecq et al., 1996; Passero et al., 1991). There were slight variations in the criteria used to produce the mean figures for social network size. Cohen et al. (1988) had the broadest measure of social network,

which included any informal linkages (family or friends). Of the three studies they found the largest mean of 6.4 for their sample of homeless men aged 50 or older, which was nevertheless significantly lower than housed controls whose mean linkages was 10.8. However, the study did not report the significance figures or confidence intervals for these findings. Passero et al. (1991) used a narrower definition of social network which included individuals who provided some form of support. They found that the mean size of homeless individuals' social network was 4.71 and significantly smaller than that of the housed controls who had a mean of 7.00. This finding was corroborated by Letiecq et al. (1996) who found that homeless mothers had significantly smaller numbers of friends or relatives (mean of 2.54 compared to 4.5 for the housed mothers) when social network was measured by the number of friends or relatives that the participants saw or talked to weekly. This was the smallest mean of the three studies and also the most specific definition of social network. When Letiecq et al. (1996) compared homeless and housed mothers in terms of the numbers of adults they had regular contact with (not specifically friends or family) they found that there was no significant difference between the groups. Interestingly, Cohen et al. (1988) found that although homeless men had significantly fewer linkages than housed controls, they saw their contacts more frequently.

Looking more specifically at the composition of social networks, two studies found that homeless individuals had significantly fewer friends in their social network than housed controls (Fischer et al., 1986; Segal et al., 1997). Additionally, homeless individuals were found to have significantly fewer family members in their social network than housed controls (Fischer et al., 1986). Two studies also reported that homeless individuals were significantly less likely to be married or have a partner (Fischer et al., 1986; Letiecq et al., 1996). However, Letiecq et al. (1996) considered that

homeless mothers in their study may have under-reported having a partner so as to gain access to services where being a single female is one of the criteria.

The increased likelihood of isolation in some homeless individuals is detailed by Fischer et al. (1986) who found that the homeless group most commonly had no relatives (31.4%) and no friends (45.1%) in contrast to the housed controls who most commonly had six or more relatives (43.7%) and six or more friends (48.8%). They also found that of the homeless group, 68.6% had no confidants (family and friends), which was double the proportion of the housed males without a confidant (31.3%).

Although not the focus of this review, it is interesting to note that Cohen et al. (1988) found that substantially more of the homeless group reported having formal links with services (between 67% and 83%) compared to only 17% of the community controls. This suggests that homeless men rely more on social agencies (e.g food programmes) than non-homeless men.

Social Support. Passero et al. (1991) found that the homeless group had significantly fewer positive interactions compared to housed controls and were also less likely to seek the support of others when in need. Using a measure of enacted support, Letiecq et al. (1996) found that over a six month period, homeless mothers received significantly less help from their social support networks than housed mothers, specifically from their parents, relatives and partner. There was not a significant difference between the groups in terms of helpfulness of friends. Cohen et al. (1988) also found that homeless men relied less on family members for support (with money, shopping or illness) compared to housed men but nevertheless did utilise friends. Both studies suggest that support from relatives is significantly reduced for homeless individuals compared to housed controls. Of the two studies, only Letiecq et al. (1996) reported figures for participants' length of homelessness (means of 20.4 months in

temporary accommodation and 2.8 episodes of homelessness over the past five years). Exact figures for length of homelessness were not reported by Cohen et al. (1988) but the study reports differences between street homeless and temporary housed individuals and the authors indicate that the homeless population as a whole consist of individuals who have extensive homeless histories.

Two studies employed measures that explored different types of support between homeless and housed men (Passero et al., 1991; Segal et al., 1997). Passero et al. (1991) examined the provision of support on four dimensions: (1) emotional support, (2) material support, (3) advice and (4) companionship. Segal et al. (1997) also explored social support on four dimensions: (1) being able to "share (one's) deepest thoughts and feelings" with another person, (2) having someone to count on for help, (3) a composite variable for different types of expressive support (i.e., providing advice, offering greetings on special occasions, and spending time together) and (4) a composite variable for instrumental support (i.e. sharing money, providing a place to sleep, providing help when sick). For each type of social support, Segal et al. (1997) also looked at the directionality of support, i.e. whether support was given, received or reciprocally given and received.

The two studies reported some differences in the types of social support available to homeless individuals. Passero et al. (1991) found that of the four types of support measured, only the material assistance dimension was significantly lower in the homeless group. In contrast, Segal et al. (1997) found that homeless individuals had significantly fewer numbers of people with who they could share their feelings, get expressive support and access instrumental support (the last category only just reached significance, $p = .047$). The only exception was the category 'rely on others for assistance' for which there was no difference between the groups. The homeless group had significantly fewer

relationships which could be classified as reciprocal across the four dimensions of support and significantly fewer relationships than housed controls in which they gave support to others across the four dimensions.

Interestingly, Passero et al. (1991) sampled homeless men residing in sheltered accommodation and over a third of the sample were participants in a work rehabilitation program that provided employment and treatment for substance abuse. It may be that through their accommodation, these individuals had greater access to emotional support, advice and companionship than a broader homeless sample. In contrast, Segal et al. (1997) used a sample where homelessness was defined as literally homeless i.e. included individuals that were living on the streets, in cars, or in shelters. The differences in homeless populations may partly explain the variations in the findings, with reduced social support across all types of support being linked to literal homelessness (Segal et al., 1997). Segal et al. (1997) examined the length of homelessness for their participants and reported that the median time homeless was just over two years and a minority of 10% had been homeless for five years. Passero et al. (1991) did not include length of homelessness figures which may be an additional factor underlying the variation in the findings. The selection of the control group may also contribute to the variation in the findings. Segal et al. (1997) did not match homeless and housed participants on any variables whereas Passero et al. (1991) recruited controls from a low income population who had not experienced an episode of homelessness in the past five years, to control for poverty as a confounding factor between the groups. The criteria used did not exclude housed controls having ever experienced homelessness. These factors may also account for the greater similarities between the homeless and housed groups for Passero et al. (1991) compared to Segal et al. (1997).

In contrast, two studies found no significant differences between homeless and housed groups with regards to social support. Goodman (1991) found no significant differences between homeless and housed mothers in the size of their social networks, including number of conflicted social networks, nor any difference in perceived support between homeless and housed mothers. Goodman (1991) also reported similar numbers of family, friends, and helping professionals in both groups. The only difference was that homeless mothers had lower trust in relationships but the difference in means was quite small. Goodman (1991) suggest that compared to other studies with significant findings, their control group had less stable housing and therefore less established social networks.

Similarly, Toro et al. (1995) found no significant differences in social support between single homeless and housed adults. Toro et al. (1995) compared three groups; (1) currently homeless, (2) previously homeless and (3) housed individuals. The study reports that no significant differences were found on measures of perceived social support and so the variable was not included in the subsequent regression model. The authors report that the finding for the social support variable approached significant, although did not report the figures. The modest sample size across the groups may be a factor in the non-significant finding (n=54, 31, 59 for the never homeless, previously homeless and currently homeless groups respectively) and the study did not report a power calculation.

There were a number of limitations of the above studies (Cohen et al., 1988; Fischer et al., 1986; Goodman, 1991, Letiecq et al., 1996; Passero et al., 1991; Segal et al., 1997; Toro et al., 1995). For all the studies, the sampling method was either not outlined or was not random except for Toro et al. (1995) who did employ a random sampling method. For those studies where random sampling was not employed, the samples are vulnerable to selection bias, as individuals who agreed to participate may

have better social skills or be more stable than those who refused. However, this would be more likely to minimise rather than inflate significant differences between the groups. Importantly, all seven studies used multiple comparisons and therefore are at increased risk of Type 1 error.

The major limitation of the above studies is that they only tested for significant differences between the groups and did not attempt to control for potential confounding effects of other variables on which the homeless and control groups differed. Four further studies, using more carefully controlled designs and methods of analysis, attempted to address this limitation (Bassuk & Rosenberg, 1988; Bassuk et al. 1997; Booth et al., 2002; Kennedy, 2007). Using multiple regression analyses and controlling for other variables, they all found that homeless individuals showed significantly reduced social support across a range of measures.

Three of the four studies compared homeless and housed mothers (Bassuk & Rosenberg, 1988; Bassuk et al. 1997; Kennedy, 2007) whereas Booth et al., (2002), examined single homeless adults. Looking firstly at homeless and housed mothers, Bassuk & Rosenberg (1988) found that social support was inversely correlated with homelessness. Specifically, they found that homeless women had more fragmented support networks, which included proportionately more men. In contrast, housed mothers had more contact with their relatives, particularly their mothers. Using multiple logistic regression to compare the homeless and housed mothers and controlling for age and race, they found that social support and psychiatric difficulties, physical abuse as an adult and abuse as a child were all independently associated with homelessness. However, they did not report the figures of the multiple regression analyses.

A more recent study by Bassuk et al. (1997) found that homeless mothers had significantly smaller and more conflicted networks than housed mothers. Again using

multiple logistic regression and controlling for childhood risk factors (namely ever being in foster care and primary female caregiver taking drugs) they found that independent adult risk factors for homelessness included conflict in a person's social support network, alcohol or heroin use, recent hospitalisation for a mental health problem, being an ethnic minority and having been in the area for a year or less. They also found that protective factors included graduating from high school and having a larger informal network (i.e. not professionals).

Kennedy (2007) similarly found that social support was significantly reduced in the group of homeless adolescent mothers compared to housed adolescent mothers. Using regression analyses they controlled for witnessing parental violence, physical abuse by a parent or adult caregiver and partner violence. They found that social support moderated the effects of violence exposure in relation to the odds of ever being homeless.

Booth et al. (2002) also found that for single homeless adults, a number of independent predictors were negatively associated with the proportion of nights spent in a place meant for sleeping in the last 30 days. These were a recent diagnosis of alcohol dependence, being male, Hispanic, lifetime number of months homeless and income, whereas social support was positively associated with nights housed.

3.4 Social Support across Different Subsets of the Homeless Population

Three out of the 21 studies included in the review examined social support across different subsets of the homeless population (Cohen et al., 1988; Kertesz et al., 2005; O'Toole et al., 1999). All three papers described their research questions and objectives in their introductions although the objectives set by Cohen et al (1988) were vague. All the studies employed appropriate study designs to answer their research questions; Cohen

et al. (1988) and O'Toole et al (1999) both used a cross-sectional design. Kertesz et al. (2005) made a comparison of homeless and housed individuals at baseline within a longitudinal design focusing on mental and physical health, and it is this part of their analysis which will be considered under this section.

Two studies compared subgroups based on accommodation status (Cohen et al., 1988; O'Toole et al., 1999). O'Toole et al. (1999) compared five subgroups, these were four homeless subgroups and one housed group: (1) unsheltered, i.e. street homeless, (2) emergency sheltered, (3) bridge sheltered, i.e. single room occupancy accommodation, (4) doubled up with friends and family and (5) housed (poor) individuals. Cohen et al. (1988) primarily focussed on the comparison between the homeless group and the housed comparison group which was reported in the previous section. The study also included comparisons between the street homeless and temporarily housed individuals within the overall homeless group and these aspects shall be considered under this section. Kertesz et al. (2005) defined and compared subgroups based on the length and pattern of homeless, they included a comparison of social support between three groups: (1) chronically homeless, (2) transitionally homeless and (3) housed.

All three studies described the selection of participants but only O'Toole et al. (1999) and Kertesz et al. (2005) attempted to select participants at random. Cohen et al. (1988) did not report in detail how the street homeless and flophouse men were defined and given this study was conducted over 20 years ago the generalisability of the findings to other homeless populations needs to be considered. The two other studies outlined distinct inclusion and exclusion criteria of participants and provided a clear definition of homelessness. Kertesz et al. (2005) provided the most detailed information on numbers of participants included at each stage and also considered selection bias. Cohen et al (1988) could have been more explicit with regards to the characteristics of each group.

Group characteristics were sufficiently outlined in the other two papers. None of the three studies gave a power calculation. Due to the multiple subgroups in each study these three papers have some of the smallest group sizes of all the studies included in the review.

Cohen et al. (1988) offers a very descriptive account of the characteristics of each group; the methods of analysis are not well described and the results are not reported in sufficient detail, therefore they must be interpreted with caution. In contrast O'Toole et al. (1999) and Kertesz et al. (2005) give a detailed account of the chosen method of analysis and report the results in sufficient detail including an estimate of variance for the main results.

Comparisons of subgroups within the homeless population based on housing status indicated that individuals who were street homeless had the lowest social support (Cohen et al., 1988; O'Toole et al., 1999). O'Toole et al. (1999) found that individuals who were street homeless had the lowest mean scores on a measure of perceived social support and these were significantly lower than any other category. Interesting, they found the highest scores were equally between those in emergency accommodation, single room occupancy accommodation and those doubled up with friends or family, this was followed by those who were living in an apartment or house but were poor with those in unsheltered accommodation having the lowest scores. This finding was corroborated by Cohen et al. (1988) who found that men who were street homeless had a third fewer overall social ties than the homeless individuals not living on the streets (9.6 versus 6.0 ties) and a third fewer informal ties (family or friends). They found that those living on the street were most likely to be ‘loners’; 9.3% had only one linkage and an additional 10.5% had only two social ties. Similar to O'Toole et al. (1999), Cohen et al. (1988) found that those living in the ‘flophouses’ (low cost dormitories or cubicles of

substandard quality) also saw their contact more frequently, however no significance figures were reported. The authors suggest that the flophouse environment fostered interaction.

Cohen et al. (1988) also explored several other aspects of social networks. It was found that individuals who were street homeless had greater reciprocity in their relationships compared to non-street homeless men who showed a slight tendency of depending on others. For both the street homeless and the non-street homeless men, formal linkages (with services) made up 20-25% of their total linkages, much higher than the community housed controls where the figure was 2%.

Comparisons of subgroups within the homeless population based on length of homelessness found that individuals who had the longest homeless histories also had the lowest levels of social support. Kertesz et al., (2005) found that perceived social support from both friends and family was greater for the housed group than for two different homeless groups. Of the two homeless groups, social support from both family and friends was significantly lower in the chronically homeless compared to the transiently homeless group. The difference between the groups with regards to social support from family was highly significant ($p=0.002$) but only just reached significance when social support from friends was compared between the groups (0.04). The study sampled individuals with addictions from an inpatient detoxification unit and therefore may not be representative of the wider homeless population.

3.5 The Relationship between Social Support and Exiting Homelessness

Seven of the 21 studies included in the review examined predictive factors associated with exiting homelessness and all included a measure of social support in their analysis. These seven studies employed a longitudinal design, appropriate to the research

objectives. Four of the seven studies found that social support significantly predicted being rehoused at follow up (Aubry et al., 2016; Cohen, et al., 1997; Davey-Rothwell et al., 2011; Mizuno et al., 2009). In contrast three studies found that social support variables did not predict housing status at follow up (Braciszwski et al., 2016; Nemiroff et al., 2010; Tevendale et al., 2010). This review will attempt to understand these findings with respect to the sample populations, measures used and study quality.

Of the four studies which found that social support significantly predicted being rehoused at follow up, two studies sampled homeless adults with substance misuse and HIV (Mizuno et al., 2009; Davey-Rothwell et al., 2011), one study sampled homeless women aged 50 or over (Cohen et al., 1997) and one sampled single homeless adults (Aubry et al., 2016). Davey-Rothwell et al. (2011) measured participants' sexual network size and composition, whereas the three other studies explored social support from across a person's network including support from partner/s, peers and family.

The above four studies (Aubry et al., 2016; Cohen, et al., 1997; Davey-Rothwell et al., 2011; Mizuno et al., 2009) were of good quality. All four papers sufficiently described the study objectives in their introduction. All the studies gave a clear description of the sampling method used except for Davey-Rothwell et al. (2011) where it was unclear how participants were recruited into the programme. Cohen et al. (1997) and Davey-Rothwell et al. (2011) also gave the acceptance rates of homeless individuals who were asked to participate (56% and 70% respectively), these rates are reasonable considering that Cohen et al. (1997) sampled women who were street homeless as well as in temporary accommodation. Cohen et al. (1997) also gave details of the characteristics of those who did not participate, which included a higher percentage of women who were street homeless and with possible psychosis (likely an issue for many of the studies). The outcome was best defined by Aubry et al. (2016) who utilised the Housing Income and

Services Timeline (HIST) to determine accommodation status at follow up. This is a more detailed measure than used by the other studies and better captures the inevitable variation in accommodation over time. All four studies reported a follow up rate which ranged between 59.9% (Aubry et al., 2016) and 85% (Cohen, et al., 1997; Mizuno et al., 2009). Aubry et al. (2016) additionally reported that the individuals lost to follow up were equivalent to the respondents on all demographic characteristics.

The four studies found that having a larger social support network (Aubry et al., 2016; Cohen et al., 1997; Mizuno et al., 2009) and greater perception of social support (Cohen et al., 1997, Mizuno et al., 2009) were related to exiting homeless and achieving housing stability. In terms of types of support, this included intimacy and provision of tangible support from one's social network (Cohen et al., 1997) as measured by the Network Analysis Profile. Davey-Rothwell et al. (2011) also found that in their sample of homeless drug users with HIV, having a partner who lent money was associated with moving into stable housing. All the studies reported the results in sufficient detail and provided an estimate of variance for the main outcomes.

In contrast, three of the seven studies which explored the role of social support in predicting housing outcomes found social support variables did not predict housing status at follow up (Braciszwski et al., 2016; Nemiroff et al., 2010; Tevendale et al., 2010). Two of these were the only studies (of the seven longitudinal studies) to sample homeless youth (Braciszwski et al., 2016; Tevendale et al., 2010). Interestingly, both studies specifically explored the role of family support as predictors of housing outcomes as outlined below.

Braciszwski et al. (2016) examined the course and risk factors for homelessness in homeless adolescents over a seven year period. Using the cohesion subscale from the Family Environment Scale (FES; see Table 3 for details), they found that family support

was not related to either rapid or delayed rehousing. The FES measure explores general emotional support from the entire family rather than specific members, which may minimise the effects of specific family members. Similarly, Tevendale et al. (2010) explored the predictors of being either consistently sheltered or long-term inconsistently sheltered for homeless youth over a two year period. They used the Social Support Microsystem Scale to assess instrumental support from parents and found that this did not predict homeless trajectory (i.e. being consistently sheltered or inconsistently sheltered). These findings indicate that for homeless youth, family support (both emotional and instrumental support) are not predictive of housing outcomes.

Nemiroff et al. (2010) was the third study to find that social support was not predictive of being housed at follow up. It was the only study of the seven to sample exclusively adult women, 49% of whom had dependent children. Participants were asked to list people who provide them with different types of support and then rate their satisfaction with support and an overall score of satisfaction was then calculated, ranging from 1-6 (Social Support Questionnaire, see Table 3 for details). Overall, the sample showed a high level of perceived satisfaction with social support (mean = 4.70). Nevertheless, the findings showed that perceived social support did not predict becoming rehoused or greater housing stability at the two year follow up. Mental health functioning (which was low overall) also did not predict housing outcomes, the only factor identified to significantly predict being rehoused was having an unaccompanied child. Although individuals in the study had high levels of perceived social support, it could be that their supports had few resources themselves that the women could use to help them to exit homelessness. The participants in this study had a lifetime history of homelessness of 18.65 months, the criteria for being housed was defined as being in housing for at least 90 days continuously prior to follow up.

All three studies were of high quality. Each clearly specified the study objective in the introduction. Nemiroff et al. (2010) and Tevendale et al. (2010) both outlined the inclusion criteria and the sampling strategy. In contrast, Braciszwski et al. (2016) defined the inclusion criteria, however, it was not clear how the participants were recruited. All three studies sufficiently described the participant characteristics at baseline. Similarly, all three studies reported on the follow up rates which ranged from 66% (Nemiroff et al., 2010) to 92.6% Braciszwski et al. (2016) and compared the non-responders with the responders and found no major differences with regards to the predictor variables. All three studies outlined the analytic methods used with Nemiroff et al. (2010) and Braciszwski et al. (2016) both choosing logistic regression whereas Tevendale et al. (2010) selected latent class growth analysis. All three studies clearly reported the results and provided estimates of variance for the main results. Nemiroff et al. (2010) and Braciszwski et al. (2016) specified the clearest housing outcomes by employing the HIST and the Housing, Education, and Income Timeline (HEIT) respectively. In contrast, Tevendale et al. (2010) could have been more explicit in defining the accommodation outcome. For all three studies the conclusions are supported by the results.

4.0 Discussion

This review examined the relationship between social support and housing outcomes in the homeless population across 21 studies. The studies included in the review showed substantial variation in aims, design and study quality. The studies spanned a broad range of the homeless population and measured different aspects of social support. Despite the broad variations, this discussion attempts to pull together the main themes by summarising the role of social support in relation to the risk of becoming homeless, the course of homelessness and exiting homelessness. The discussion will also

address the three specific questions outlined in the introduction: (1) What are the differences in social support between homeless and housed individuals? (2) How does social support differ between different subsets of the homeless population? And (3) Is social support a protective factor for achieving housing stability? Limitations of the review and generalisability of the findings will also be considered along with ideas for further research.

4.1 What are the Differences in Social Support between Homeless and Housed Individuals?

Where simple tests of comparison were used between the homeless and housed groups (e.g. t-tests and chi-squared tests or non-parametric alternatives), the majority of studies showed that homeless individuals have significantly reduced social support compared to housed individuals. This differences included a range of social support dimensions including social network size and different types of support. Only two studies found that social support was not significantly different between homeless and housed individuals.

The findings of this review indicate that for homeless individuals, network size may be even more reduced than those of both the general population and psychiatric populations. The average network size for people in the general population is reported to range between 20 to 30 members, compared with four to six people in psychiatric population samples (Cohen & Sokolovsky, 1978; Hammer, 1981; Lipton et al., 1981; Froland, 1979). The variation in network size found by this review suggests that the size of a homeless person's network varies according to how social network is classified.

One of the findings of the review was that homeless individuals showed reduced family support where support from different sources was measured. The same difference

was not consistently found for support from peers. Notably, these studies employed cross sectional designs and the samples were not newly homeless. This finding is consistent with Grigsby et al.'s (1990) model of disaffiliation and affiliation in the long-term homeless, which suggests that after becoming homeless, individuals either further isolate themselves or develop peer relationships among the homeless population. If this model is accepted, depending on the length and type of homelessness there may be differences in peer support, but stigma and difficulties in family relationships is likely to persist across the course of homelessness. Further research is needed to explore if reduced family support is a result or cause of longer-term or repeated homelessness. Differences in findings with regards to available types of support between homeless and housed individuals may depend on the nature of the homeless population (i.e. homeless chronicity) and the selection of the control group.

Fewer studies employed more complex methodologies and analyses reflecting the challenge of research into social support in the homeless. Nevertheless, where more stringent designs and analyses were employed, controlling for confounding variables between homeless and housed individuals, the finding that social support is substantially lower amongst the homeless persisted.

4.2 How Does Social Support Differ between Different Subsets of the Homeless Population?

The research into social support and different subsets of the homeless population is scarce, with only three studies (of the total 21) making an attempt to subdivide and compare the homeless population on social support measures and housing outcomes. The heterogeneity of the homeless population and the often changing nature of homelessness poses a challenge to defining subcategories within this population. Whether

subcategories are defined by accommodation type or length of homelessness, the boundaries are not fixed and individuals can move between categories.

The review overall highlights that within the homeless population there is substantial variation as to size of social networks and availability of social support. It is evident that the common held assumption that the homeless are 'loners' or totally isolated does not adequately describe the entire homeless population. Nevertheless, within the homeless population, some individuals can be characterised as being very isolated. From the small number of studies that attempt to explore different subsets of the homeless population, the findings suggest that those who are street homeless and those who are chronically homeless have the smallest social networks and appear the most isolated of the homeless population (Cohen et al., 1988; Kertesz et al., 2005; O'Toole et al., 1999). The cross sectional study designs that were employed mean that it is not possible to determine how much street homelessness and chronic homelessness are predictors or consequences of small social networks and low social support, or more likely some combination of the two.

Interestingly, two studies found that those in sheltered accommodation may have more frequent interactions with their networks and perceive greater social support even than housed controls. These findings indicate that certain types of sheltered accommodation may foster social interaction and be a more social environment compared even to that of housed individuals. The small number of studies in this area mean that the findings need to be interpreted with caution. Also one of these studies was conducted in the 80s (Cohen et al., 1988) and may not be representative of current environments and homeless pathways. Nevertheless, further research should recognise that certain environments where homeless individuals reside can be social places. The implication for practice are for staff and services to be mindful of the tension between

moving in to independent or semi-independent accommodation and the potential loss of social connections and social support for an individual.

4.3 What is the Relationship between Social Support and Exiting Homelessness?

There was some variation in the findings on social support and the relationship to exiting homelessness. Studies that aim to answer this question generally show social support is predictive of housing outcomes and exiting homelessness. Two out of three studies that found social support is not predictive of housing outcomes were adolescent samples where only family support was measured. This indicates that for adult populations, social support is predictive of achieving stable housing, whereas for adolescent samples, factors other than family support are predictive of exiting homelessness.

4.4 Challenges of Reviewing the Literature

As outlined in the introduction, the concept of social support is broad and multidimensional, which poses a challenge to reviewing the literature in which a range of social support measures have been employed. A limitation with many of the measures used is a lack of flexibility and ability to capture the complex and fluid nature of relationships, particularly the negative aspects of relationships (e.g. a homeless person in an abusive relationship could receive tangible support whilst also being abused). Some studies included in the review employed measures which used a conflict subscale (or similar) in an effort to capture this (Bassuk et al., 1997; Braciszwski et al., 2016; Goodman, 1991), but the overwhelming majority are focussed solely on the positive aspects of social support.

All the included studies used self-report measures of perceived social support which are subject to bias. It is well documented that prevalence of diagnosed mental

health problems and substance use disorder are increased in this population (Fazel, et al., 2008). It is possible that these factors influence individuals' perception and memory of support. In some of the cross-sectional studies these variables were matched, although others showed differences between the homeless and housed groups indicating that these factors may represent confounding variables. The majority of the better controlled studies and the longitudinal studies measured mental health and substance use between the groups.

One of the challenges with reviewing the social support literature in this population is the changing nature of social support across the course of homelessness. Grigsby et al.'s (1990) model of relationships and homelessness over time suggests that on becoming homeless people may lose ties with their relatives and previous friends and where some individuals go on to increase their social network by affiliating with others who are homeless, others remain isolated. If this model is accepted, the choice of sample and the length of homelessness they have experienced will influence the findings, especially when cross-sectional or longitudinal studies are employed across a short period of time. Qualitative designs might therefore be useful to understand the changing composition and nature of social networks across the course of homelessness.

Baker (1994) highlights gender differences in the social networks of homeless men and women, particularly that homeless men are more isolated than women. The majority of studies that incorporated a mixed sample of men and women did not stratify the results by gender (often males were overrepresented) and this is a limitation.

4.5 Limitations of the Review

The majority of the studies included in the review employed a cross-sectional design which limits any conclusions about the causality of social support and housing

status. The findings from the better controlled cross-sectional studies also support that homeless individuals have reduced social support compared to housed controls. Studies employing a longitudinal design to explore the role of social support on exiting homelessness, which controlled for the effect of additional variables, had more mixed findings. Those studies which sampled adolescent populations and explored the role of family support found that family support did not independently predict housing status. Over half of the longitudinal studies only completed a subset of the measures that were used at time one at subsequent time points (Cohen et al., 1997; Davey-Rothwell et al., 2011; Nemiroff et al., 2010; Tevendale et al. 2010), which compromises the validity of the findings as these studies do not control for potentially confounding factors, importantly the effect of social support and housing status at time one on housing status at subsequent time points. This limits the ability to make inferences about whether social support can directly influence chances of leaving homelessness.

A further limitation of the review is the search terms and search strategy used, for example the choice of only including standardised measures of social support prevents the inclusion of very relevant studies that very closely follow but do not employ standardised measures. The search strategy may also limit the included studies to North America at the expense of other European studies in this area.

This review choose to focus on the role of social support and housing outcomes in the homeless, nevertheless it recognises that homelessness is best understood within an ecological model (Nooe & Patterson, 2010). There have been few studies to systematically explore the role of wider environmental factors on homelessness (e.g. social and political factors) and the complex interactions that exist between individual, interpersonal and community level factors. This review did not place any restrictions on the year in which the studies were conducted and consequently they range in date from

the 1980s to the present. Undoubtedly, there are wider contextual factors impacting on homelessness that may affect the composition of these populations, for example Bassuk and Rosenberg (1988) highlight that their findings have to be considered in the context of the housing crisis was taking place at the time of the research, possibly increasing the numbers of homeless families and reducing support available to homeless families if their network members were also financially pressured. The findings show that social support has consistently been shown to play a role in housing outcomes. It is outside the scope of this review, to compare the social support of the homeless over time taking into account wider factors but these should be considered if applying the findings to other populations.

4.6 Generalisability of the Findings

An interesting consideration of this review is the generalisability of the findings. All of the 21 included studies were conducted in North America with the majority (19) being conducted in the U.S. All non-western studies were excluded from this review, as it is likely that cultural differences exist in the conceptualisation and reporting of social support (Chentsova Dutton, 2012). No studies meeting the inclusion criteria were conducted in the U.K. or in Europe.

There are several differences between homeless populations in the U.S.A. and the UK. For example, a review by Baker (1994) highlights that in the U.S.A. ethnic minorities, especially African Americans, are overrepresented in the homeless and account for 20% to 80% of samples. In comparison, a large audit of over 3000 homeless individuals in the U.K. shows that the predominant ethnicity is white at 89% (Homeless Link, 2014). This highlights potential differences in underlying factors for becoming homeless and may result in differences in social network structures. Although not the

focus of this review, differences in the role of the state and social services in both countries could be associated with different levels of formal support from statutory services.

The majority of studies recruited homeless individuals from sheltered accommodation, given the challenges of sampling from other subsets of the homeless population, for example the rough sleeping homeless population and the 'hidden homeless'. The findings of the review may be more representative of individuals who access sheltered accommodation rather than these other subsets of the homeless population.

4.7 Further Research and Implications

Despite the differences in characteristics between the U.S. and the U.K. homeless populations, evidence indicates that social isolation is also prevalent in U.K. homeless populations. A report by Crisis which surveyed 506 service users highlights that 61% classified as lonely and a third reported often feeling isolated (Sanders & Brianna, 2015). Over half of the service users reported that social isolation made it harder to seek support and others identified that alcohol and drug use was a way of blocking out social isolation.

Given these figures, the findings from the U.S. research outlined in this review could be relevant to U.K. policy. This review highlights the importance of social relationships when considering the needs and rehousing of homeless individuals. The major clinical implication of the review is for policy makers, commissioners and services to consider how services can enable individuals to maintain and develop informal relationships. This aligns with recent updates to the U.K. Homelessness and Homelessness Reduction Bill (March, 2017) which recognises that social support is important in preventing homelessness. This Bill recommends that homeless individuals

should not be placed out of area and away from family and friends. This review further highlights that within the homeless population, social support is even further reduced among people who have been homeless long-term or who are street homeless. Additionally, hostels and temporary accommodation can be social environments relative to independent and semi-independent accommodation. For the long-term homeless and street homeless populations, services need to consider how housing options can support them to maintain social ties so that individuals do not have to decide between better housing and maintaining social relationships. Further research is needed in the U.K. particularly to understand the structure and role of social support in these groups.

References

Aubry, T., Duhoux, A., Klodawsky, F., Ecker, J., & Hay, E. (2016). A Longitudinal Study of Predictors of Housing Stability, Housing Quality, and Mental Health Functioning Among Single Homeless Individuals Staying in Emergency Shelters. *American Journal of Community Psychology*, *58*(1–2), 123–35.

Barrera, M.A. (1980). A method for assessing social support networks in community survey research. *Connections, 3,* 3–8.

Barrera, M., Sandler, I.N., & Ramsay, T.B. (1981). Preliminary development of a scale of social support: Studies on college students. *American Journal of Community Psychology, 9,* 435–448.

Bassuk, E.L., Buckner, J.C., Weinreb, L.F., Browne, A., Bassuk, S.S., Dawson, R., & Perloff, J.N. (1997). Homelessness in female-headed families: childhood and adult risk and protective factors. *American Journal of Public Health*, *87*(2), 241–8.

Bassuk, E.L., & Rosenberg, L. (1988). Why does family homelessness occur? A case-control study. *American Journal of Public Health*, *78*(7), 783–8.

Booth, B.M., Sullivan, G., Koegel, P., & Burnam, A. (2002). Vulnerability factors for homelessness associated with substance dependence in a community sample of homeless adults. *The American Journal of Drug and Alcohol Abuse*, *28*(3), 429–52.

Braciszewski, J.M., Toro, P.A., & Stout, R.L. (2016). Understanding the attainment of stable housing: A seven-year longitudinal analysis of homeless adolescents. *American Journal of Community Psychology*, *44*(3), 358–366.

Buchanan, J. (1995). Social support and schizophrenia: A review of the literature. *Archives of Psychiatric Nursing*, *9*(2), 68–76. Burt, M.R. (1992). *Over the edge: The growth of homelessness in the 1980s.* New York. Russell Sage Foundation.

Calsyn, R.J., & Morse, G.A. (1992). Predicting psychiatric symptoms among homeless people. *Community Mental Health Journal, 28*(5), 385–395.

Caton, C.L.M., Domingues, B., Schanzer, B., Hasin, D.S., Shrout, P.E., Felix, A., & Hau, 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*, 1753–1759.

Chentsova Dutton, Y.E. (2012). Butting In vs. Being a Friend: Cultural Differences and Similarities in the Evaluation of Imposed Social Support. *The Journal of Social Psychology*, *152*(4), 493–509.

Cohen, S., Mermelstein, R., Kamarck, T., & Hoberman, H. (1985). Measuring the functional components of social support. In I. G. Sarason & B. R. Sarason (Eds.), *Social support: Theory, research and application* (pp. 73-94). The Hague, The Netherlands: Martinus Nijhoff.

Cohen, C.I., Ramirez, M., Teresi, J., Gallagher, M., & Sokolovsky, J. (1997). Predictors of Becoming Redomiciled Among Older Homeless Women. *The Gerontologist*, *37*(1), 67–74.

Cohen, C., & Sokolovsky, J. (1978). Schizophrenia and social networks: Ex-patients in the inner city. *Schizophrenia Bulletin, 4*, 546-560.

Cohen, C.I., Teresi, J., Holmes, D., & Roth, E. (1988). Survival strategies of older homeless men. *The Gerontologist*, *28*(1), 58–65.

Cook-Craig, P., & Koehly, L. (2011). Stability in the Social Support Networks of Homeless Families in Shelter: Findings From a Study of Families in a Faith-Based Shelter Program. *Journal of Family Social Work*, *14*(3), 191–207.

Crane, M., & Warnes, A.M. (2001). The responsibility to care for single homeless people. *Health and Social Care in the Community, 9*(6), 436–444.

Crisis. (2015). *'I was all on my own'.* London. Retrieved from https://www.crisis.org.uk/ending-homelessness/homelessness-knowledge-hub/health-and-wellbeing/i-was-all-on-my-own-2015/

Davey-Rothwell, M.A., Latimore, A., Hulbert, A., & Latkin, C.A. (2011). Sexual networks and housing stability. *Journal of Urban Health : Bulletin of the New York Academy of Medicine*, *88*(4), 759–66.

Department for Communities and Local Government. (2012). *Costs of homelessness: evidence review*. London. Retrieved from https://www.gov.uk/guidance/homelessness-data-notes-and-definitions

Department for Communities and Local Government. (2015). *Homelessness statistics*. London. Retrieved from https://www.gov.uk/government/collections/homelessness-statistics

Department for Communities and Local Government. (2016). *Rough Sleeping Statistics Autumn 2016.* London. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/585713/Rough_Sleeping_Autumn_2016_Statistical_Release.pdf

Department for Communities and Local Government. (2017). *Homelessness data: notes and definitions.* London. Retrieved from https://www.gov.uk/guidance/homelessness-data-notes-and-definitions

Department for Communities and Local Government. (2017). *Homelessness and Homelessness Reduction Bill: response to Select Committee reports*. London. Retrieved from https://www.gov.uk/government/publications/homelessness-and-homelessness-reduction-bill-response-to-select-committee-reports

Dunst, C., Jenkins, V., & Trivette, C. (1984). The Family Support Scale: Reliability and validity. *Journal of Individual, Family, and Community Wellness, 1*(4), 45-52.

Dunst, C.J., & Leet, H.E. (1987). Measuring the adequacy of resources in households with young children. *Child: Care, Health and Development*, *13*(2), 111–125.

Dunst, C.J., & Trivette, C.M. (1988). *Personal Assessment of Social Support Scale.* Morganton, NC: Western Carolina Center, Family, Infant and Preschool Program.

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 Med*, *5*(12), e225.

Fischer, P. J., Shapiro, S., Breakey, W.R., Anthony, J.C., & Kramer, M. (1986). Mental health and social characteristics of the homeless: a survey of mission users. *American Journal of Public Health*, *76*(5), 519–24.

Flaherty, J.A., Gaviria, F.M., & Pathak, D.S. (1983). The measurement of social support: The social support network inventory. *Comprehensive Psychiatry*, *24*(6), 521–529.

Froland C., Brodsky, G., Olson M., & Stewart (1979). Social support and social adjustment: Implications for mental health professionals. *Community Mental Health Journal, 15,* 82-93.

Gaetz, S. (2010). The struggle to end homelessness in Canada: How we created the crisis, and how we can end it. *The Open Health Services and Policy Journal, 3,* 22 –26.

Grigsby, C., Baumann, D., Gregorich, S.E., & Roberts-Gray, C. (1990). Disaffiliation to Entrenchment: A Model for Understanding Homelessness. *Journal of Social Issues*, *46*(4), 141–156.

Goering, P., Wasylenki, D., Onge, M.S., Paduchak, D., & Lancee, W. (1992). Gender differences among clients of a case management program for the homeless. *Hospital & Community Psychiatry*, *43*(2), 160-165.

Goldberg, D.P. (1972). *The Detection of Psychiatric Illness by Questionnaire.* London. Oxford University Press.

Gonzalez Baker, S. (1994). Gender, ethnicity, and homelessness: "accounting for demographic diversity on the streets". *The American Behavioral Scientist, 37*(4), 476.

Goodman, L.A. (1991). The prevalence of abuse among homeless and housed poor mothers: a comparison study. *The American Journal of Orthopsychiatry, 61*(4), 489–500.

Gottlieb, B.H. (1983). Social support as a focus for integrative research in psychology. *American Psychologist. 38*(3), 278-287.

Hammer, M. (1981). Social supports, social networks, and schizophrenia. *Schizophrenia Bulletin 7,* 45-57.

Hawkins, R.L. & Abrams, C. (2007) 'Disappearing acts: The social networks of formerly homeless individuals with co-occurring disorders', *Social Science & Medicine, 65,* 2031–42.

Holden, L., Lee, C., Hockey, R., Ware, R.S., & Dobson, A.J. (2015). Longitudinal analysis of relationships between social support and general health in an Australian population cohort of young women. *Quality of Life Research, 24*(2), 485–492.

Homeless Link. (2014). Health Needs Audit. London: Homeless Link. Retrieved from http://www.homeless.org.uk/facts/homelessness-in-numbers/health-needs-audit-explore-data

House, J.S. (1981). *Work stress and social support.* Reading, MA: Addison-Wesley.

House, J.S., & Kahn, R.L. (1985). Measures and concepts of social support. In S. Cohen & S. L. Syme (Eds.), *Social support and health* (pp. 83-108). Orlando, FL: Academic Press.

Hwang, S.W., Kirst, M.J., Chiu, S., Tolomiczenko, G., Kiss, A., Cowan, L., & Levinson, W. (2009). Multidimensional Social Support and the Health of Homeless Individuals. *Journal of Urban Health*, *86*(5), 791–803.

Katrak, P., Bialocerkowski, A., Massy-Westropp, N., Kumar, V.S.S., & Grimmer, K. (2004). A systematic review of the content of critical appraisal tools. *BMC Medical Research Methodology, 4*(1), 1-22.

Kennedy, A.C. (2007). Homelessness, violence exposure, and school participation among urban adolescent mothers. *Journal of Community Psychology*, *35*(5), 639–654.

Kahn, R. L., & Antonucci, T. C. (1980). Convoys over the life course: Attachment, roles and social support. In P. Baltes & O. Brim (Eds.), Life span development and behavior (Vol. 3, pp. 253–286). San Diego, CA: Academic Press.

Kmet, L., Lee, R., & Cook, L. (2004*). Standard Quality Assessment Criteria for Evaluating Primary Research Papers from a Variety of Fields.* Alberta: Alberta Heritage Foundation for Medical Research.

Kertesz, S.G., Larson, M.J., Horton, N.J., Winter, M., Saitz, R., & Samet, J.H. (2005). Homeless Chronicity and Health-Related Quality of Life Trajectories Among Adults With Addictions. *Medical Care*, *43*(6), 574-585.

Latkin, C.A., Mandell, W., Knowlton, A.R., Vlahov, D., & Hawkins, W. (1998). Personal Network Correlates and Predictors of Homelessness for Injection Drug Users in Baltimore, Maryland. *Journal of Social Distress and the Homeless*, *7*(4), 263–278.

Letiecq, B.L., Anderson, E.A., & Koblinsky, S.A. (1996). Social support of homeless and permanently housed low-income mothers with young children. *Family Relations: An Interdisciplinary Journal of Applied Family Studies*, *45*(3), 265-272.

Lin, N., Simeone, R.S., Ensel, W.M., & Kuo, W. (1979). Social support, stressful life events, and illness: a model and an empirical test. *Journal of Health and Social Behavior*, *20*(2), 108–19.

Lovell, A., Barrow, S., & Hammer, M. (1984). *Social support and social network interview.* New York: Epidemiology of Mental Disorders Research Department, New York State Psychiatric Institute.

Maycock, P., Corr, M.L., O'Sullivan, E. (2011). Homeless young people, families and change: family support as a facilitator to exiting homelessness. *Child and Family Social Work*, *16*(4), 391-401.

Meadows-Oliver, M. (2009). Adolescent Mothers' Experiences of Caring for Their Children While Homeless. *Journal of Pediatric Nursing*, *24*(6), 458–467.

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*(1), 165–172.

Moos, R.H., & Moos, B.S. (1994). *Family Environment Scale manual (3rd ed.).* Palo Alto, CA: Consulting Psychologists Press.

Nemiroff, R., Aubry, T., & Klodawsky, F. (2010). Factors contributing to becoming housed for women who have experienced homelessness. *Canadian Journal of Urban Research, 19*(2), 23-45.

Nooe, R.M., & Patterson, D.A. (2010). The Ecology of Homelessness. *Journal of Human Behavior in the Social Environment, 20*(2), 105–152.

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.

Passero, J.M., Zax, M., & Zozus, R.T. (1991). Social network utilization as related to family history among the homeless. *Journal of Community Psychology, 19*(1), 70-78.

Sanders, B. & Brianna, B. (2015) *'I was all on my own': experiences of loneliness and isolation amongst homeless people*. London: Crisis.

Sarason, I.G., Levine, H.M., Basham, R.B., & Sarason, B.R. (1983). Assessing social support: The social support questionnaire. *Journal of Personality and Social Psychology, 44,* 127–139.

Segal, S.P., Silverman, C., & Temkin, T. (1997). Social networks and psychological disability among housed and homeless users of self-help agencies. *Social Work in Health Care, 25*(3), 49–61.

Seidman, E., Allen, L., Lawrence Aber, J., Mitchell, C., Feinman, J., Yoshikawa, H., & Roper, G.C. (1995). Development and validation of adolescent-perceived microsystem scales: Social support, daily hassles, and involvement. *American Journal of Community Psychology, 23*(3), 355–388.

Sherbourne, C.D., & Stewart, A.L. (1991). The MOS Social Support Survey. *Social Science and Medicine, 32*(6), 705–714.

Shinn, M. (1992). Homelessness: What is a psychologist to do? *American Journal of Community Psychology, 20*(1), 1-24.

Shinn, M., Knickman, J.R., & Weitzman, B.C. (1991). Social relationships and vulnerability to becoming homeless among poor families. *The American Psychologist*, *46*(11), 1180–7.

Sokolovsky, J., & Cohen, C.I. (1981). Toward a resolution of methodological dilemmas in network mapping. *Schizophrenia Bulletin, 7,* 109-116.

Solarz, A., & Bogat, G.A. (1990). When social support fails: The homeless. *Journal of Community Psychology*. *Journal of Community Psychology*, *18*(1), 79-96.

Tevendale, H.D, Comulada, W.S., & Lightfoot, M.A. (2011). Finding shelter: Two-year housing trajectories among homeless youth. *Journal of Adolescent Health, 49*(6), 615-620.

Toro, P.A., Bellavia, C.W., Daeschler, C.V, Owens, B.J., Wall, D.D., Passero, J.M., & Thomas, D.M. (1995). Distinguishing homelessness from poverty: A comparative study. *Journal of Consulting and Clinical Psychology*, *63*(2), 280-289.

Thomas, B. (2011). *Homelessness: A silent killer - A research briefing on mortality amongst homeless people.* London: Crisis. Retrieved from https://www.crisis.org.uk/ending-homelessness/homelessness-knowledge-hub/health-and-wellbeing/homelessness-a-silent-killer-2011/

Vaux, A., Riedel, S., & Stewart, D. (1987). Modes of social support: The Social Support Behaviors (SS-B) Scale. *American Journal of Community Psychology, 15*, 209–237.

Wethington, E., & Kessler, R. (1986). Perceived Support, Received Support, and Adjustment to Stressful Life Events. *Journal of Health and Social Behavior, 27*(1), 78-89.

Wood, D., Valdez, R.B., Hayashi, T., & Shen, A. (1990). Homeless and housed families in Los Angeles: A study comparing demographic, economic, and family function characteristics. *American Journal of Public Health, 80,* 1049–1052.

Zlotnick, C., Tam, T., & Robertson, M.J. (2003). Disaffiliation, substance use, and exiting homelessness. *Substance Use & Misuse, 38,* 577–599.

Part 2: Empirical Paper

Characteristics of Homeless Adults with Autistic Traits

Abstract

Aims: Autism Spectrum Condition (ASC) and elevated levels of autistic traits are associated with poor adult outcomes. However, there has been no peer-reviewed research into whether adults with elevated autistic traits in the homeless population also have specific characteristics and needs. Therefore this study aimed to identify the characteristics of homeless adults with elevated autistic traits (EATs).

Method: This exploratory study sampled 106 individuals from a long-term homeless population who were predominantly street homeless. Anonymous information about the population was gathered via interviews and questionnaires with keyworkers. The presence of EATs was determined via keyworker report of clients' behaviours, using a semi-structured interview based closely on the DSM-5 diagnostic criteria for ASC. Characteristics of the population were elicited through further interviews and questionnaires with keyworkers. Twenty-two individuals showed evidence of EATs and were compared to the 72 individuals who did not show evidence of EATs. Quantitative content analyses was used to categorise the data and the groups were then compared using odds ratios (OR).

Findings: Using data reported by keyworkers found that the sample had a median age of 50 years and had been homeless for 10 years. The EAT group was significantly older than the non-EAT group, on average 6.5 years older ($p=0.007$). As reported by keyworkers, the EAT group showed higher odds compared to the non-EAT group of becoming homeless due to being unable to live independently (OR: 3.48, $p=0.045$, 95% CI: 1.03 to 11.79). Once homeless, based on keyworker reports, the EAT group showed increased odds, compared to the non-EAT group, of consistently declining offers of statutory accommodation (OR: 2.79, $p=0.042$, 95% CI: 1.04 to 7.48) and being totally isolated (OR = 4.62, $p<0.0001$, 95% CI: 3.66 to 33.35). Based on keyworker report, the

EAT group showed reduced odds of currently using drugs or alcohol compared to the non-EAT group (OR = 2.92, p=0.037, CI: 1.07 to 7.98).

Conclusions: The findings represent preliminary evidence that individuals with EATs show different characteristics to the general homeless population, both in the onset and course of homelessness, based on keyworker reports. These findings have implications for homeless policy and service design to reduce the risk of homelessness in adults with EATs and work differently with currently homeless adults with EATs in order to achieve stable housing. Further research is needed to explore if the findings are replicated in other homeless populations.

1.0 Introduction

Autism Spectrum Condition (ASC) is a neurodevelopmental condition characterised by difficulties with social communication, unusually restricted and repetitive behaviours, narrow interests and sensory needs (American Psychiatric Association, 2013). The term 'spectrum' captures the heterogeneity of the condition, including variations across individuals in verbal expression and levels of IQ. For the purposes of this paper, ASC will be used to refer to a diagnosis of Autism Spectrum Disorder, as the term disorder is stigmatising and does not recognise the strengths as well as difficulties which represent individuals on the spectrum (Hull et al., 2017).

ASC is not a discrete condition, rather the social deficits characteristic of ASC are common and continuously distributed in the general population (Constantino & Todd, 2003). Given this distribution, the threshold for a diagnosis of ASC is an arbitrary cut-off. Further evidence of the dimensional nature of the condition comes from research which shows that sub-diagnostic autistic traits also have an impact on an individual (Lundström et al., 2011). If in a supportive environment, individuals with ASC show good outcomes, which highlights the important interaction between individual and environment and subsequent functioning (Lai & Baren-Cohen, 2015).

A diagnosis of ASC in childhood is associated with more severe symptoms and concurrent developmental delay (e.g. low IQ or language delay). Individuals without developmental delay or with more subtle symptoms typically receive a later diagnosis (Mandell, Novak & Zubritsky, 2005). The prevalence of ASC in adults is estimated to be 1.47% (Fazel, Geddes & Kushel, 2014). Lai and Baren-Cohen (2015) suggest that this figure may be an underestimate and there is likely a 'lost generation' of adults who did not receive a diagnosis in childhood due to the lack of understanding about high functioning autism and Asperger's syndrome.

1.1 Autism Spectrum Conditions (ASC) in the Homeless Population

There is growing recognition of a 'hard to reach' subset of the homeless population suspected of having ASC (Homeless Link, 2015). Initial reports indicate that the prevalence of ASC may be much higher in the homeless population (Evans, 2011; NHS Devon, 2010) than in the general population. However, these reports have not been peer reviewed, and are marked by substantial methodological limitations including small sample sizes and issues with sampling bias. This hypothesis was further supported by Churchard (2017), who found evidence of EATs based on informant report from keyworkers, with the figure estimated to be as high as 12%.

Research into the characteristics and needs of homeless adults with ASC is also scarce. A qualitative study involving 12 previously homeless individuals with ASC reported anecdotal evidence that their risk factors for homelessness included financial exploitation, family breakdowns and reduced social support (Shelter Cymru, 2015). It was also suggested that difficulties with sensory processing, social communication and cognition also posed a barrier to accessing housing services and support. However, as with the prevalence studies, the small sample size and biases in sample selection limit the generalisability of these findings. It is clear that further systematic research is required to understand the needs of homeless adults with ASC.

1.2 Developing Hypotheses about the Needs of Homeless Adults with ASC

Given the limited research into EATs in the homeless population, this study will develop hypotheses about the characteristics and needs of this group, drawing on existing research into ASC and EATs in the general population. Such research demonstrates that individuals with EATs have different characteristics and outcomes compared to people without EATs. The literature can be grouped under two main areas: (1) risk factors for

becoming homeless and (2) course of homelessness, including alcohol and substance use and social networks.

1.21 Risk Factors for Becoming Homeless

Adults with ASC in the general population have poor outcomes specifically in relation to living independently, employment and social relationships (Howlin & Moss, 2012). These factors may increase the risk of becoming homeless for these individuals.

Independent Living Skills. A review of outcomes in adults with ASC shows that below 20% lived independently or semi-independently (Howlin & Moss, 2012). Furthermore 48% still lived at home with their parents. For these individuals, who have difficulty coping with change, the death of a parent and the subsequent loss of support could be a major contributing factor to becoming homeless.

Unemployment. The same review also found that only 49% of adults with ASC were in some form of employment (including paid or voluntary work or an educational programme) and those in employment tended to occupy unskilled and low-paid positions (Howlin & Moss, 2012). Consistent with this finding, adults with ASC are more likely to be poorly educated and economically deprived (Brugha et al., 2011). These challenges substantially limit housing options and an individual's ability to maintain accommodation, and could therefore increase vulnerability to becoming homeless.

Relationships. The nature of relationships between adults with ASC and their families or partners is not well researched. Evidence from research into parents of children with ASC show higher levels of stress and more mental health problems than other parents, including those in other clinical groups (Micali, Chakrabarti & Fombonne, 2004; Singer 2006). These findings suggest that there are challenges to living with someone with ASC, which may require considerable adaptations to be made (e.g.

adapting to social communication needs, routines and special interests), which could contribute to breakdowns in family relationships in adulthood. In the context of having a high level of dependence on families, relationship breakdowns would increase the risk of homelessness.

1.22 Course of Homelessness

The characteristics and needs of homeless individuals result from an interaction of individual, interpersonal and societal factors. How the factors of alcohol and substance misuse, mental health and social networks may present in adults with ASC in the homeless population are considered below.

Alcohol and Substance Use. A meta-analysis by Fazel, Khosla, Doll and Geddes (2008) found a high prevalence of drug and alcohol dependence in the homeless population, as high as 58.5% for alcohol dependence and 54.2% for drug dependence. In addition, a report by the homeless charity Crisis found that over a third of deaths in the homeless population are caused by drugs or alcohol (Thomas, 2012). While findings show that alcohol and smoking is less commonly a cause of death in individuals with ASC compared to those without ASC in the general population (Shea & Mesibov, 2005), little is known about the prevalence of substance use disorder in adults with ASC. A review by Lai, Lombardo and Baron-Cohen (2014) suggests the figure is 16% and may be a means of self-medicating to reduce anxiety. It is not known if homelessness is associated with increased prevalence of alcohol and substance misuse for adults with ASC, but the relatively low rates in the general ASC population indicate that this may not be a major feature.

Mental Health. The prevalence of mental health issues for individuals with ASC varies depending on diagnosis; most common are anxiety, estimated between 42-56%,

and depression, estimated to be between 12-70% (Lai et al., 2014). In their meta-analysis, Fazel et al. (2008) found that the prevalence of diagnosed serious mental disorders were raised compared with rates in the general population, with depression and psychosis being the most common with the highest estimates reported to be just over 40% for each condition. A report by the charity Homeless Link (2014) suggest that the actual figure is likely to be much higher, with self-reported mental health issues in a large sample of homeless adults being 80%, specifically self-reported anxiety and depression being the most prevalent, at 65% and 67% respectively. These findings suggest that there will be a high proportion of mental health problems in both groups.

Social Networks. Howlin and Moss (2012) found that on average only 14% of individuals with ASC were either married or in a long-term relationship and only a quarter had at least one friend (Howlin & Moss, 2012). Poor social skills and difficulties establishing and maintaining relationships are key features of ASC. Lai et al. (2014) consider that ASC can be associated with social naivety, making an individual vulnerable to abuse and exploitation. Individuals with ASC in the homeless population may therefore have smaller social networks than individuals without ASC. Furthermore, where relationships do exist these may be characterised by exploitation.

1.3 Challenges of Researching ASC in the Homeless Population

There are substantial challenges in conducting research with the homeless population, particularly engaging these individuals who have multiple and complex needs (Kryda & Compton, 2009; Olivet, Bassuk, Elstad, Kenney & Jassil, 2010). A further challenge is the assessment of ASC in this population. Ideally, individuals would undertake a formal assessment (NICE, 2012), consisting of a clinical interview and behavioural assessments such as the Autism Diagnostic Observation Schedule (Lord et

al., 2000), as well as clinicians gaining a developmental history from a family member. However, the process of ASC assessments is time consuming and requires a high level of engagement and motivation from the person being assessed. A further challenge to formally diagnosing homeless individuals is that they typically have little contact with family and friends, making it difficult to gain a developmental history (Roll, Toro & Ortola, 1999).

Given the difficulties with engaging this population, it was predicted that attempting to meet directly with homeless individuals would give a small sample size, with people with social communication difficulties being the most likely to refuse to participate. It was decided that the approach used by the NHS Devon Audit (2011) to meet with individuals but on a large scale would incur a substantial level of bias and would therefore not be feasible. No other studies have attempted to assess ASC in homeless populations.

Instead of engaging directly with homeless individuals, it was decided to use informant report as an alternative methodology. This approach was adopted by Fraser et al. (2012) who estimated the prevalence of ASC in a youth mental health service by asking clinicians to provide informant report of ASC symptoms in their clients. Although this approach is not as rigorous as conducting full ASC assessments, an advantage is that sampling bias can be reduced as a whole caseload can be screened. There are currently no existing tools for assessing ASC traits that have been validated or are suitable for use in this population (Sappok, Heinrich, & Underwood, 2015). Therefore, an informant report measure was developed by Churchard (2017) to assess traits of ASC in this population.

The decision to assess elevated levels of autistic traits is further supported by research into populations with autistic traits that fall just below clinical threshold, which

indicate that these presentations are qualitatively similar to individuals who meet the threshold for a diagnosis of ASC. Individuals with sub-threshold autistic traits also experience difficulties in independent living, relationships and increased mental health problems (Happé & Ronald, 2008; Lundström et al., 2011; Skuse et al. 2009; Szatmari et al., 2000).

1.4 Aims

Homelessness continues to be a growing issue (Department for Communities and Local Government, 2016) and is associated with high levels of morbidity and early mortality (Fazel et al., 2008; Office of the Chief Analyst, 2010). Initial findings indicate that the prevalence of ASC may be higher in the homeless population than in the general population. However, there is a lack of research into the characteristics of homeless adults with ASC. It is important to identify the characteristics of this population, to inform better service provision for this group.

Research into ASC and EATs in the general population suggests that these individuals have certain risk factors that make them more vulnerable to becoming homeless and once homeless may present with different characteristics and vulnerabilities compared to the general homeless population. In addressing the gap in the knowledge base, this study aims to answer the following research question: Do the characteristics of people with EATs in the homeless population differ from the general homeless population?

This study will compare homeless individuals with informant-reported evidence of having elevated levels of ASC symptomatology (EAT group) to the rest of the homeless population (non-EAT group). The two groups will be compared to answer the following exploratory questions:

1) What are the demographic characteristics?
2) What are the odds of alcohol and substance use and mental health diagnoses?
3) What are the reasons for initially becoming homeless?
4) What are the patterns of statutory accommodation use over the course of homelessness and the reasons for breakdowns in statutory accommodation?
5) What is the social network size and composition?

2.0 Methods

2.1 Design

This study made use of a cross-sectional design. The research took place in a homeless outreach service, in an urban area in south England. The service works with hard to reach homeless clients, who have extensive rough sleeping histories and complex health needs. The researchers did not meet directly with the homeless clients; instead anonymised data about the teams' caseload was gathered via informant report, through interviews and questionnaires with keyworkers.

The decision to use informant report from keyworkers and to not meet directly with homeless individuals was influenced by several methodological and ethical issues specific to this population. The service is designed to work with the 'most complex, chaotic and disengaged homeless individuals'. The long process of a formal ASC assessment would therefore not be feasible with this client group. Consultation with keyworkers from the service highlighted that their clients typically find it difficult to build rapport and trust in new people, especially people associated with institutions and services. Thus being approached for this research would likely be distressing to the clients. It was judged by keyworkers that there was an additional risk that any attempt to approach the clients directly could lead to some clients disengaging from the team. Involving homeless individuals would therefore be likely to produce a small sample size, with lower recruitment of individuals with EATs. This sampling bias would impact upon the generalisability of the results. Although using keyworker reports are also subject to bias and are therefore a limitation of the design, this was considered an acceptable trade off given the lack of research into this area and the potential benefits of the findings.

As outlined above, it was not feasible to assess individuals using a formal diagnostic assessment for ASC. A measure was developed based on the DSM-5 criteria for ASC to identify the presence of elevated autistic traits using information from keyworkers regarding their clients' behaviour (for further details of the development of the measure see Churchard, 2017). After piloting the interviews and questionnaires with keyworkers, it was evident that they could provide detailed information about their clients' behaviour and histories. The teams' entire caseload was screened to reduce potential bias of keyworkers selecting cases with suspected EATs. The group of individuals identified from keyworker report as having EATs were compared to the remaining individuals without evidence of elevated autistic traits (non-EAT group) across a range of variables. As in the general population, it was predicted that individuals with EATs in the homeless population would show differing characteristics from the general homeless population. In order to test this hypothesis, it was necessary to compare the two groups to determine if the characteristics of the EAT group differed significantly from the rest of the homeless population.

2.2 Ethics

Homeless individuals were not approached by the researchers or the keyworkers to ask for their consent for anonymous data to be collected about them. This decision was made to limit potential distress that might occur from attempting to engage these clients directly and to ensure that the relationship between clients and keyworkers was not disrupted. Several steps were taken to ensure anonymity and confidentiality of clients. All cases were referred to by a number assigned by the keyworkers prior to the interviews. No identifying information was given to the researchers during the interviews or in the questionnaires in order to maintain confidentiality. In addition, only group level

findings were reported to ensure that homeless clients could not be identified from the data. With these procedures in place, the benefits of the research were considered to outweigh the ethical limitations, as there is no current research into the needs of homeless adults with elevated autistic traits and the research will potentially benefit this group in terms of better service provision. Keyworkers were directed to the existing pathways for referring clients for adult ASC assessments and were also encouraged to use the local Adult Autism Assessment consultation service if they wished to access support in working with clients that they suspected had elevated autistic traits.

Ethical approval for this study was obtained from the University College London (UCL) Research Ethics Committee (Project ID Number: 8359/001, see Appendix A). All keyworkers were provided with an Information Sheet, and had the opportunity to ask questions, before giving their informed consent (Appendix A).

2.3 Participant Characteristics

The demographics of the total sample are reported in the Results section. The service in which this study was based has nine keyworkers, all of whom were interviewed for the research. Their role is to offer innovative approaches to support individuals to find a sustainable route out of homelessness. The keyworkers have substantial experience of working in this field; on average they have 15 years experience working in homeless services (range of 6-26 years) and an average of 3.8 years in their current role (range from 2.5-8 years).

The team's caseload totalled 137 clients; of these, 31 were excluded due to not being born or brought up in the UK or the Republic of Ireland. These clients were excluded as it was likely that they have different factors influencing the onset and course of homelessness (such as being a refugee or economic migrant), which was beyond the

remit of the study. There would also be additional challenges to classifying the presence of autistic traits where English was not a first language. Therefore a total of 106 clients were screened.

Of the 106 cases that were eligible for screening, 12 were determined to have insufficient information to be able to classify the presence of autistic traits, leaving a total of 94 cases included in the data analysis, see Figure 1.

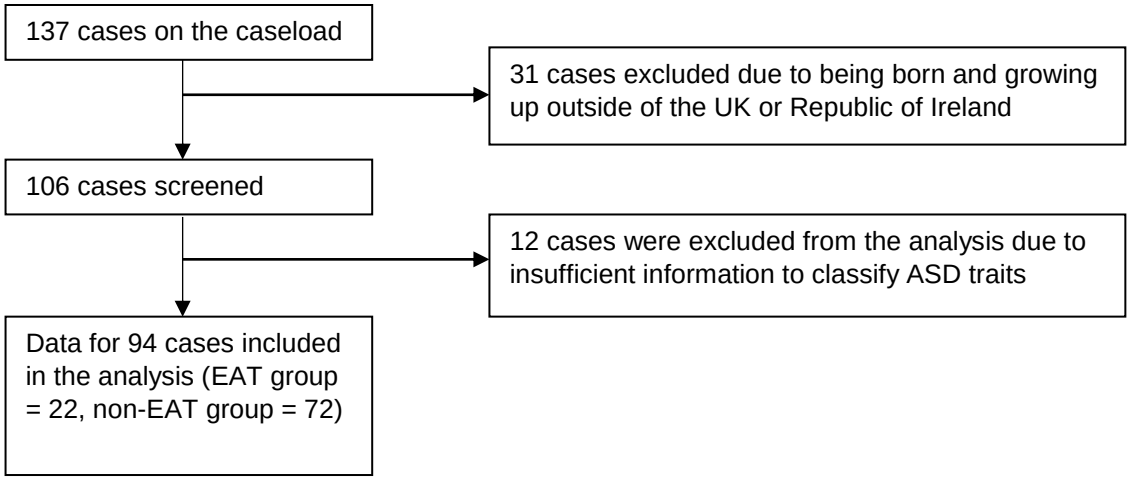

Figure 1: Number of cases included at each stage

The group with insufficient information was compared to the included cases on key variables. Assumptions for parametric tests were met for the variable age for both groups. For the included cases, a Kolmogorov-Smirnov test showed that the data for length of homelessness was not normally distributed **(**D(88) = .152, p <0.001), therefore a Mann-Whitney U test was used to compare the groups. The group with insufficient information had a mean age of 55.91 years which was significantly older than the group of included cases who had an average age of 48.06 years (t(102)=1.961, p=0.05). The group with insufficient information was more likely to be currently street homeless (58.3%) than the included cases (41.5%). The difference in type of current

accommodation was not significant although the figure approached significance ($\chi(3) = 6.952$, $p = .073$). Length of homelessness was not significantly different between the two groups ($U = 423.5$, $Z = 0.284$, $p = 0.777$). This highlights that less is known about the older clients who are street homeless.

2.4 Measures

Four measures were used in the study: a semi-structured and a structured interview, an ASC screening tool and a survey, described in further detail below.

DSM-5 Based ASC Traits in Homeless Individuals Semi-Structured Interview (DATHI). The purpose of this instrument is to identify individuals who, according to keyworker-report, have elevated autistic traits, potentially indicative of ASC. There is no existing measure for identifying ASC that has been validated for the homeless population. Therefore this semi-structured interview was developed based on the DSM-5 criteria for ASC (see Appendix B). The interview consisted of two sections; section A comprised of three items related to social communication and section B comprised of four items related to restricted and repetitive patterns of behaviour and interests including sensory needs, as outlined in the DSM-5. For each of the seven items, one of five classifications could be made by the researchers: present, possibly present, not present, present but attributable to other causes and insufficient information to classify (see Appendix C for the scoring rubric). An overall classification could then be made, see Table 2 for details. The interview was developed with input from the London Autism Special Interest Group and was piloted with two keyworkers to ensure its feasibility. For a detailed summary of the development of the measure see Churchard (2017).

Homelessness Characteristics Structured Interview and Questionnaire. In order to capture the characteristics of homeless clients, keyworkers completed a structured interview and a questionnaire (Appendices D and E respectively). The development of these two measures involved a collaborative and iterative process with keyworkers and piloting of the final versions. This process ensured that items matched the level of information that keyworkers had about the client group. Due to the clients'

long homeless histories and the quality of records, the majority of questions were based around current (or documented) observable behaviours (e.g. pattern of accommodation use and composition of social networks). Thus, even if clients were not well engaged with the keyworkers, detailed observations of the clients enabled keyworker to provide sufficiently detailed information. Both measures avoided questions that involved keyworkers interpretations of non-observable behaviour (e.g. clients' thoughts or feelings). The interview explored three main areas (1) clients' pathways into homelessness, (2) course of homelessness and (3) size, composition and nature of relationships. The questionnaire recorded key demographic information (e.g. gender, age, and ethnicity) and information on several key areas including mental health diagnoses, alcohol and substance misuse and accommodation history. In completing the questionnaire, keyworkers consulted their electronic database to aid more accurate recall.

Autism Spectrum Disorder in Adults Screening Questionnaire (ASDASQ). The ASDASQ (Appendix F) is an informant report measure, which was developed to identify suspected ASC in an adult outpatient psychiatric population (Nylander & Gillberg, 2001). The tool has good internal consistency and inter-rater reliability but lacks sensitivity (out of 66 individuals scoring above cut off, 35 were determined to not have ASC on further examination). The measure has not been validated for use in the homeless population; nevertheless the items are related to observable behaviours, which lends itself to the current study design. The measure was included to explore its utility as an informant-rated screening measure in this population.

2.5 Procedure

Keyworkers were given a half day training on ASC with the aim of reducing potential bias from variation in keyworkers' knowledge of ASC. The researchers then

met with each keyworker who completed the four measures in relation to each of their clients. The information they provided about their clients was used to identify the presence of elevated autistic traits and the characteristics of the population.

The ASDASQ was completed by the keyworkers after they completed the DATHI, except for a random selection of cases (26) where the ASDASQ was administered before the DATHI. There was no significant difference between overall classification and whether the ASDASQ was completed before or after the DATHI ($\chi(1) = 0.007$, $p = .932$). There was also no significant difference between order of completing the ASDASQ and the overall ASDASQ score ($t(104) = 0.526$, $p = 0.6$), indicating that the order of completing the measures did not influence the outcomes on the DATHI or the ASDASQ.

2.6 Data Analysis

A scoring system was devised to give an overall classification of autistic traits as being present, possibly present or not present based on individual item classifications on the DATHI, see Table 1 for details.

Table 1: Details of the overall classification criteria for the DATHI

Overall Classification	Criteria
Present	**Section A:** • 2 items = present AND 1 item = possibly present AND **Section B:** • At least 2 items = present OR • 1 item = present AND 2 items = possibly present

Possibly present	**Section A:** • 3 items = possibly present AND **Section B:** • 2 items = possibly present
Not present	• Does not meet criteria for possibly present
Insufficient information to classify	• Client is so poorly known to services that any attempt to match their behaviour to criteria would be a guess

Based on these overall classifications from the DATHI, cases were placed into one of two groups (1) the EAT group if they had an overall classification of present or possibly present or (2) the non-EAT group if they met the overall classification of not present. Of the 94 cases where there was sufficient data to give a classification, 22 cases were placed in the EAT group (13 present and 9 possibly present) and 72 individuals were placed in the non-EAT group. The EAT group accounted for 23.4% of the sample.

The categorisation of clients into the two groups (EAT and non-EAT) and the decisions about the criteria for each group took into account several practical and methodological considerations. Firstly, the decision to merge the overall classifications of present and possibly present (as identified by the DATHI) took into account that this would increase the power of the study to detect significant effects. If the clients with an overall classification of present on the DATHI (13 individuals) were compared to the rest of the sample, with an effect size of 0.71, the power would drop to 65%, well below the convention of 80%. Secondly, the DATHI was shown to be most reliable at discriminating EAT from non-EAT (n=37, Kappa=0.62, 95% CI: 0.37 and 0.38), with limited reliability for making the distinction between ‘present’ and ‘possibly present’ cases (n=17, Kappa=0.33, 95% CI:-0.14 and 0.71) (Churchard, 2017). Thirdly, those with an overall classification of present and possibly present on the DATHI were compared as to their overall scores on the ASDASQ measure. The mean ASDASQ score for individuals classified as present was 6.15 and was not significantly higher than the

mean score of 5.22 for the possibly present group (t(20)=1.155, p=.262). This is further evidence for combining the two classifications into one group for the purposes of analysis. Fourthly, ASC is a dimensional concept and the cut off scores used by diagnostic assessments are, in effect, arbitrary and do not represent this dimensionality. Individuals who receive a diagnosis are not qualitatively different from those individuals who score just below the threshold for a diagnosis. This is further supported by previous literature highlighting that individuals with high levels of autistic traits, but below threshold for a diagnosis, have associated poor outcomes which are similar to individuals with a diagnosis of ASC (Happé & Ronald, 2008; Lundström et al., 2011; Skuse et al. 2009; Szatmari et al., 2000).

Assumptions of Normality. Tests of normality, including skewness, kurtosis and Kolmogorov-Smirnov values were produced for continuous variables (age and length of homelessness). The analyses were run for each group to assess whether the data met the assumptions for parametric testing. For the EAT group the distribution for age, D(20) =0.23, p = 0.006, appeared to be non-normal whereas for the non-EAT group the data is normally distributed D(68) =0.074, p =0.20. Conversely, for length of homelessness, the data for the EAT group is normally distributed, D(20) =0.23, p =0.154, whereas for the non-EAT group the data is significantly non-normal, D(68) =0.167, p = <0.001. Examination of the histograms also confirms that the data for age is not normally distributed for the EAT group and the data for length of homelessness is not normally distributed for the non-EAT group. These findings show that the assumptions for parametric testing have not been met and indicate that non-parametric tests are appropriate given the small size of the EAT group. The median values will therefore be reported for these variables.

Analysis. Quantitative content analysis was used to analyse the data and develop a picture of the characteristics of the EAT group and compare these to the non-EAT group. A series of Mann Whitney U tests and chi-squared analyses were used to establish whether there were any differences between the EAT and non-EAT group on key demographic variables, including age, length of homelessness, mental health diagnoses and drug and alcohol use.

Keyworkers responses to the homelessness structured interview were recorded verbatim and this along with the written text on the homelessness questionnaire was analysed using content analysis to further explore and compare the characteristics of the two groups. The qualitative content analysis process, outlined by Elo and Kyngäs (2008), was followed to code and analyse the information, including the three main phases of preparation, organizing and reporting. Firstly, as part of the preparation stage, the written material was read through repeatedly so as to become immersed in the data and begin to make sense of it (Burnard, 1991; Polit & Beck, 2004). Deductive content analysis was then chosen (over an inductive content analysis approach) to organize and analyse the data, as the aim was to test hypotheses derived from existing literature outlined in the introduction (Marshall & Rossman, 1995). The nature of the data collected and research questions determined that only the manifest content would be analysed. A categorisation matrix was then developed to code the data according to the categories (Elo & Kyngäs, 2008). For each question to be analysed using content analysis, a categorisation matrix was developed comprising of three levels: (1) the main category, (2) the generic categories and (3) the subcategories. Based on the previous literature, four main categories were identified: (1) factors related to the onset of homelessness, (2) the pattern of homelessness, (3) reasons for breakdowns in accommodation and (4) social network size (for the categories: partner, peers and family). An unconstrained matrix was used so

that for each main category, new categories that emerged could be used to create their own generic categories and subcategories (see Appendix G for guidelines for categorising). Once coded, odds ratios were calculated for the main categories of onset of homelessness, pattern of homelessness and social network size for the subcategories of partner, peers, family and totally isolated. Odds ratios were then used to compare the EAT group and non-EAT group. The subcategories were also recorded for these main categories and a further category of reasons for breakdowns in accommodation. Percentages were calculated for these subcategories so as to create a richer narrative.

Reliability of the Coding. An inter-rater reliability analysis using the Kappa statistic was calculated for a subsection of 20 cases to determine consistency among two independent raters for the main codes of the content analysis. The subsection of cases consisted of 10 cases from the overall category not present, six cases from the overall present classification and four cases from the overall possibly present category (within these three categories, cases were chosen at random). The reliability was calculated for the generic categories under the four main categories: pathways into homelessness, patterns of accommodation use, reasons for breakdowns in accommodation and social network size (see Results section). The raters were not 'blind' to the presence of elevated autistic traits.

2.7 Collaboration

Data collection for this study was undertaken as part of a joint project. Both trainees collected full datasets from keyworkers including the DATHI, ASDASQ, and the homeless structured interview and questionnaire. The workload was divided equally so that each trainee screened approximately half of all cases on the caseload before the data was pooled. Details for the other part of this study are reported in Churchard (2017):

Evidence of raised levels of autistic traits in a homeless population (Clinical Psychology Doctorate Thesis). Churchard (2017) used the data from the DATHI to estimate the prevalence of elevated autistic traits. Once cases with EATs had been identified, this study focused on describing the characteristics of this group using data from the structured interview about client's homeless histories and the questionnaire completed by keyworkers (see Appendix H for further details).

3.0 Results

3.1 Demographic Information

Of the total cases with sufficient information to be included in the analysis, the large majority were male and white British. The role of the team is to support individuals with extensive homeless histories, including those sleeping on the streets, and this is reflected in the following characteristics. The median age of the total sample is just under 50 years old (range: 23 to 77 years). The median length of homelessness for the total sample is 10 years (range: 6 months to 40 years). It was most common for individuals to be currently sleeping on the streets, with hostels being the next most common type of accommodation, see Table 2 for detailed demographic information.

A comparison of the two groups shows that the median age of the EAT group is six and a half years older than the non-EAT group and this is a significant difference ($U = 431.0$, $Z = -2.68$, $p = 0.007$). Individuals in the EAT group had also been homeless for 2.5 years longer than the non-EAT group. This difference approached, but did not reach significance ($U = 448.5$, $Z = -1.81$, $p = 0.07$). There were two outliers in the EAT group who were the only females identified as having ASC traits. Notably, both were much younger and had a far shorter length of homelessness than the males in the group. Due to

the small numbers, it was not possible to further explore gender differences between the EAT group and non-EAT group.

In terms of current accommodation, as is shown in Table 2, both the EAT group and non-EAT group were most commonly street homeless followed by staying in a hostel. The groups also had a similar distribution of gender and ethnicity.

Table 2: Demographic information for the EAT group and non-EAT group

Categories	**EAT group (n = 22)**		**Non-EAT group (n = 72)**		**Total sample (n = 94)**		**U**	**P**		
Age (median)	53.50		47.00		50.00		431.0	0.007		
Length of homelessness (median years)	12.50		10.00		10.00		448.5	0.070		
	n	%	**n**	**%**	**n**	**%**	**X^2**	**P**		
Gender (Male)	20	90.90	60	83.30	80	85.10	0.76	0.382		
Current accommodation							2.46	0.650		
- Street homeless	9	40.91	30	41.67	39	41.49				
- Hostel, B & B, temporary	7	31.82	16	22.22	23	24.47				
- Independent or semi-independent	5	22.73	14	19.44	19	20.21				
- Prison	1	4.55	7	9.72	8	8.51				
- Other (including disappeared)	0	-	5	6.94	5	5.32				
Ethnicity							0.47	0.790		
- White or White British	18	85.70	63	90.0	81	86.20				
- Black or Black British	2	9.50	3	4.30	5	5.30				
- Asian or Asian British	0	-	1	1.40	1	1.10				
- Other	1	4.80	3	4.10	4	4.30				
	n	%	**n**	**%**	**n**	**%**	**OR**	**P**	**Lower CI**	**Upper CI**
Diagnosed mental health issue	8	36.36	26	36.11	34	36.17	1.01	0.983	0.37	2.73
- Psychosis	4	18.18	14	19.44	18	19.15				
- Depression	2	9.09	17	23.61	19	20.21				
- Anxiety	2	9.09	9	12.50	11	11.70				
- OCD	2	9.09	2	2.78	4	4.26				
- PTSD	0	-	4	5.56	4	4.26				
- Personality disorder	4	18.18	3	4.17	7	7.45				
- Eating disorder	1	4.55	0	-	1	1.06				
- Bipolar	0	-	2	2.78	2	2.13				

Suspected and diagnosed mental health issue	18	81.82	65	90.28	83	88.30	0.48	0.288	0.13	1.84
Drug and alcohol use (any)	12	54.50	56	77.78	63	72.34	2.92	0.037	1.07	7.98
- Occasional use	4	18.20	9	13.40	13	13.83				
- Frequent use (daily or weekly)	8	36.40	42	62.70	50	53.19				
No drug or alcohol use	10	45.50	16	23.90	26	27.66				

3.12 Mental Health

As is shown in Table 2, just over a third of all clients had a diagnosed mental health condition, as reported by their keyworker. There was no significant difference between the groups in terms of the odds of having a diagnosed mental health condition. For the EAT group, the most common diagnoses were psychosis (n=4, 18%) and personality disorder (n=4, 18%), whereas for the non-EAT group depression (n=17, 24%) followed by psychosis (n=14, 19%) were the most common diagnoses. The figures for each disorder were too small to allow meaningful statistical comparisons between the groups. When diagnosed and suspected mental health conditions were analysed together (as suspected by the keyworker to meet clinical threshold), the odds of having a diagnosed or suspected mental health condition were lower in the EAT group, but again the difference between the two groups was not significant, see Table 2. As is shown in Table 3, the groups did not differ significantly in terms of the numbers that had ever been sectioned according to keyworker report.

3.13 Drug and Alcohol Use

The findings show a significant negative association between alcohol and substance misuse and the presence of EATs. As shown in Table 2, the odds of current alcohol or drug use was significantly lower in the EAT group. Notably, of the 12 individuals with EATs who did use drugs or alcohol, 33% exhibited only occasional use. In comparison, the non-EAT group were characterised by frequent alcohol or drug use, with 82% of the 56 individuals who were known by the keyworkers to use drugs or alcohol were reported to do so daily or weekly.

3.2 ASC and Homelessness

Inter-rater Reliability. Inter-rater reliability was calculated for the generic categories under the four main categories of: (1) pathways into homelessness, (2) pattern of statutory accommodation use, (3) informal relationships and (4) reasons for breakdowns in statutory accommodation. A Cohen's kappa coefficient (κ) shows a high level of agreement for the main categories under pathways into homelessness; these were adolescent onset, unable to meet the demands of independent living in adulthood, drug/alcohol use/mental health/offences, adverse life events, positive choice and not known (κ = 0.86, p < .0001, CI: 0.66, 1.52). A high level of agreement between the raters was found for the main pattern of statutory accommodation use, which consisted of four generic categories: refusal, abandoned, evicted or combination of the other three categories (κ = 0.86, p < .0001, CI: 0.68, 1.54). There was also a high level of agreement for presence of informal relationships, including current relationships (κ = 1, *p* < .0001, CI: 1, 2), peer relationships (κ = 0.9, *p* < .0001, CI: 0.72, 1.62) and family contact: (κ = 0.73, *p* = .001, CI: 0.4, 1.13). There was moderate agreement for the main categories under reasons for breakdowns in accommodation, which consisted of individual behaviours, factors related to drug or alcohol use or mental health difficulties, prison and sectioning (κ = 0.63, p =.001, CI: 0.34, 0.96).

3.21 Becoming Homeless

Table 3 highlights the main factors precipitating homelessness as reported by the keyworkers. As the sample is an older population with a long history of homelessness, there is a high proportion of cases (n=24, 26%) where the risk factors for homelessness are not known (e.g., onset of homelessness occurred over 20 years ago and the client may be guarded in speaking about the topic). The proportion of unknown cases was similar

between the EAT group and the non-EAT group, see Table 3. There was no significant difference in age at becoming homeless (U = 660.5, Z = -1.29, p = 0.20), length of homelessness (U = 649.00, Z = -1.03, p = 0.30) or current accommodation type ($\chi(4)$ = 1.44, p = 0.84) between the cases where the risk factors for homelessness were not known and the rest of the cohort.

As is shown in Table 3, the onset of homeless in adolescence occurred for 18% of the total sample and was not significantly different between the two groups. The groups differed in adult onset of homelessness, defined as first becoming homeless aged 20 or above, which applied to 56% of the total sample. Based on keyworker report, the EAT group were identified as having 3.48 times higher odds of becoming homeless due to being unable to manage the demands of living independently in adulthood, not in the context of drug or alcohol use or mental health problems (p=0.045, CI: 1.03 to 11.79). This is a marginally significant difference, although not highly significant.

The generic category of being unable to live independently in adulthood referred to being unable to maintain accommodation or live independently, not in the context of drug and alcohol use or significant mental health problems (see Appendix I for details). This generic category described six members of the EAT group and seven members of the non-EAT group. The category was subdivided into four subcategories, which consisted of normal life events, these were the death of a parent, unusual response to change in accommodation, eviction due to unreasonable behaviour (not in the context of drug or alcohol use or a mental health condition) or being unable to maintain accommodation.

For the EAT group, the two most common of these subcategories reported by keyworkers were (1) the death of a parent who they were living with and inability to maintain accommodation thereafter (n=2, 9%) and (2) being unable to cope with

maintaining independent accommodation, not the context of drug or alcohol misuse or mental health difficulties (n=2, 9%).

As is shown in Table 2, the non-EAT group had greater odds of becoming homeless due to drug or alcohol use or mental health issues (including breakdowns in relationships due to drug and alcohol use and mental health issues) or committing offences and being unable to return to previous accommodation, although this was not a significant difference. When the sub-categories were looked at to gain a richer picture of the reasons for homelessness, it was observed that drug and alcohol use was the most common factor precipitating homelessness in the non-EAT group (n=16, 22%; Appendix I). The numbers for the categories of adverse life events precipitating homelessness (including loss of employment) or making a decision to become homeless (e.g. lifestyle choice) were too small to make meaningful comparisons.

3.22 Patterns of Accommodation Use

Cases were ascribed a main pattern of statutory accommodation use since becoming homeless, which took into account clients' interaction with statutory accommodation since first becoming homeless. Four generic categories were defined in relation to statutory accommodation use: (1) only ever declined offers of accommodation, (2) only ever abandoned accommodation, (3) only ever been evicted or (4) a combination of the first three categories.

Table 3: Odds ratios for key variables relating to homelessness for the EAT group and the non-EAT group

	EAT group (n=22)		Non-EAT group (n=72)		Unadjusted Odds Ratio	P	Z	Confidence Intervals (CI)	
	n	%	n	%				Lower CI	Upper CI
Factors associated with homelessness onset									
- Adolescent onset	4	18.18	13	18.06	1.01	0.989	0.01	0.29	3.48
- Unable to meet the demands of independent living in adulthood	6	27.27	7	9.72	3.48	0.045	2.01	1.03	11.79
- Drug or alcohol use/Mental health /Offences	6	27.27	22	30.56	0.85	0.768	0.29	0.29	2.47
- Adverse unexpected events (adulthood)	0	-	6	8.33	0.23	0.319	0.10	0.01	4.20
- Positive choice (adulthood)	0	-	6	8.33	0.23	0.319	0.10	0.01	4.20
- Not known	6	27.27	18	25.00	1.13	0.831	0.21	0.38	3.31
Main pattern of statutory accommodation use									
- Consistently declines accommodation offers	11	50.00	19	26.39	2.79	0.042	2.04	1.04	7.48
- Consistently abandons accommodation	2	9.09	12	16.67	0.50	0.390	0.86	0.10	2.43
- Consistently evicted	3	13.64	8	11.11	1.26	0.748	0.32	0.30	5.24
- Combination (abandoned, evicted and refused)	4	18.18	31	43.06	0.29	0.042	2.04	0.09	0.96
○ Abandons and evicted	1	4.55	13	18.06	-	-	-	-	-
○ Abandons and declines	1	4.55	11	15.28	-	-	-	-	-
○ Evicted and declines	1	4.55	3	4.17	-	-	-	-	-
○ Abandons, evicted and declines	1	4.55	4	5.56	-	-	-	-	-
- Prison (primary pattern)	2	9.09	2	2.78	-	-	-	-	-
Sectioned (ever)	4	18.18	9	12.50	1.56	0.502	0.67	0.43	5.65
Prison (ever)	8	36.36	28	38.89	0.90	0.831	0.21	0.33	2.42

The two groups differed as to the main patterns of accommodation use since becoming homeless. For the EAT group the most common pattern was consistently declining accommodation and the odds of showing this pattern was 2.79 times higher than the non-EAT group, which was a significant difference as is shown in Table 3. For the non-EAT group, the most common pattern was a combination of abandoning, being evicted or refusing accommodation (in particular abandoning as part of the combination) and the increased odds of having this pattern was significant. These findings suggest that the EAT group tend to decline offers of accommodation and remain consistently street homeless whereas the non-EAT group appear more likely to have accessed accommodation but then abandoned it. There was no significant difference between the groups in terms of the numbers that had ever been to prison since becoming homeless.

Further exploration of the sub-categories underlying refusal to enter accommodation and breakdowns in accommodation (due to abandoning or being evicted) highlights key differences between the groups (see Appendix J for breakdown of the subcategories). Of the 11 individuals in the EAT group who showed a pattern of only ever refusing offers of accommodation, over 80% (n=9) did so due to individual factors not related to alcohol and drug use (as reported by keyworkers), most commonly not engaging with services (n=5, 46%). Of the 19 individuals from the non-EAT group who show a primary pattern of declining accommodation, the most common reason reported by keyworkers is due to drug or alcohol use or mental health issues (n=6 32%), followed by lifestyle choice (n=4, 21%). Once in accommodation, drug or alcohol use or mental health issues are reported by keyworkers as the primary reasons for breakdowns in accommodation for the non-EAT group (n=35, 69%). For the EAT group, individual behaviours as well as drug or alcohol issues or mental health issues are equally prevalent factors for breakdowns as reported by keyworkers (n=4, 44% for both sub-categories).

3.23 Social Network

As is shown in Table 4, the EAT group were reported to have noticeably smaller social networks by the keyworkers compared to those in the non-EAT group. This was across all social relationships i.e. partner, peers and family relationships. For those with EATs, the odds of having one friend or more is significantly reduced, as are the odds of being in contact with family. This is especially noteworthy given the low threshold for a score in these categories which included acquaintances, superficial peer relationships and infrequent and non-face-to-face contact with family. There is not a significant difference between the groups in terms of having a current partner, reflecting the lack of personal relationships in both groups, a theme for over two thirds of all the cases. Notably, almost half the EAT group are totally isolated and have neither a partner, friends nor family that they are in touch with; this is double the number of the non-EAT group and a significant difference.

Table 4: Social network size

	EAT group		Non-EAT group		Unadjusted Odds Ratio	P	Z	Confidence Intervals	
	(n=22)	%	(n = 72)	%				Lower	Upper
Social network size									
Partner	3	13.64	18	25.00	0.47	0.271	1.10	0.13	1.79
Peer relationships	11	50.00	57	79.17	0.26	0.010	2.59	0.10	0.72
Family	4	18.18	37	51.39	0.21	0.010	2.60	0.06	0.68
Total isolated	10	45.45	11	15.28	4.62	0.005	2.84	1.61	13.29

Further analysis of the sub-categories (see Appendix K) showed that of the small number of individuals in the EAT group with a current partner (n=3, 14%), none had stable or supportive relationships as reported by keyworkers, for example relationships were characterised by perpetrating violence to the partner (n=1, 5%) or exploitation from the partner (n=1. 5%). Of the total 11 individuals in the EAT group that were reported to have peer relationships by keyworkers, over a third were judged by keyworkers to be exploited by their peers (financially: n=3, 14% or sexually: n=1, 5%) whereas just under half were considered to have only acquaintances (n=2, 9%) or superficial friendships (n=3, 14%), such as misinterpreting friendliness from shopkeepers as close friendships. Only one person in the EAT group was known by the keyworkers to have reciprocal friendships with more than one friend. In contrast, looking at the nature of peer relationships in the non-EAT group (total of 57, 79%), keyworkers reported that these were most commonly associates (n=35, 49%) often in the context of drinking and drug use and reciprocal friendships (n=19, 26%), for example friends encouraging the client to engage with services or rehabilitation.

Although the small number of females identified as having EATs means it is not possible to draw firm conclusions about this subset of the EAT group, it is interesting that both of the two females had peer relationships and these were characterised by sexual or financial exploitation.

4.0 Discussion

This study presents preliminary evidence that homeless individuals with EATs show different characteristics from the general homeless population. Based on keyworker reports, the findings show significant differences between the EAT and non-EAT group

in their pathways into homelessness and course of homelessness. Specifically, the EAT group show significantly greater odds of: (a) becoming homeless due to difficulties with living independently, (b) refusing statutory accommodation or not engaging with services once homeless and (c) being socially isolated, as reported by keyworkers. The EAT group also show a significantly lower prevalence of alcohol or drug use compared to the general homeless population. Similar to the non-EAT group, there is a high prevalence of co-morbid mental health problems in the EAT group. These characteristics are consistent with difficulties associated with ASC. This discussion will explore the meaning of these findings in relation to the existing literature as well as the limitations and potential impact of the study.

4.1 Pathways into Homelessness

The findings show significant differences between individuals with EATs and those without in their pathways into homelessness, as reported by keyworkers. Based on information from keyworkers, the EAT group show significantly greater odds of becoming homeless due to not managing to live independently, not due to drug or alcohol use or mental health difficulties. This finding is consistent with the literature, which shows that adults with ASC or EATs typically live with their families and lack independence in the general population (Happé & Ronald, 2008; Howlin & Moss, 2012; Skuse et al., 2009; Szatmari et al., 2000). Given the restricted and repetitive behaviours that characterise the condition, individuals with EATs are likely to find it difficult to cope if there is a sudden change in longstanding living arrangements, such as the death of a parent which reduces their already limited support network. The finding suggests that significant differences between the EAT and non-EAT group exist prior to becoming

homelessness. The difference between the groups for this category is not highly significant (p=0.045), which may partly reflect the challenge of capturing the multiple individual, interpersonal and social factors that predispose and precipitate homelessness.

4.2 Characteristics and Course of Homelessness

There is a significant difference in the odds of alcohol and substance use between the two groups as reported by keyworkers, with those in the EAT group having significantly lower odds of using alcohol or substances. Of the individuals in the EAT group that use alcohol or substances, they show a pattern of infrequent use. The limited evidence from individuals with ASC in the general population supports that alcohol and substance misuse is not highly prevalent for this group (Lai, Lombardo & Baron-Cohen, 2014; Shea & Mesibov, 2005). It is not well understood why this might be the case. Anecdotally, keyworkers observe that individuals who frequently use drugs or alcohol typically have a good level of social skills and the process involves substantial social interactions and often longstanding relationships. It may be that individuals with EATs have a high level of respect for obeying rules or sensory issues may also be a factor in the low levels of alcohol and drug misuse.

Statutory accommodation use represents another significant difference between the groups. The EAT group has significantly higher odds of not engaging or refusing offers of statutory accommodation as the main pattern of accommodation use throughout the course of their homelessness. For a homeless person, accessing accommodation and services requires a level of social engagement and flexibility to work with multiple professionals and services. Given the social communication difficulties associated with ASC and the social demands of accessing services, it is unsurprising to see a primary

pattern of refusal of statutory accommodation in the EAT group. The findings show that where individuals from the EAT group have gone into statutory accommodation, keyworkers report that individual factors (not in the context of drug and alcohol use) are as common as drug and alcohol use for reasons for breakdowns in accommodation. The environment of temporary accommodation is typically busy and noisy, with many rules and expectations that may not be flexible to individual clients' routines and preferences. This environment would be especially challenging to someone with social communication difficulties, rigidity and sensory needs that are associated with EATs, which could lead to breakdowns in accommodation.

The findings show no significant differences between the groups in the odds of diagnosed mental health issues or the odds of suspected and diagnosed mental health conditions, as reported by keyworkers. This is supported by evidence that the proportion of mental health conditions is high both in the homeless population (Fazel, Khosla, Doll & Geddes, 2008) and in the ASC population (Lundström et al., 2011), and the figures for both populations are significantly higher than in the general population. The increase in estimated prevalence of mental health problems from 36% to 88% in the total sample when the figures for suspected and diagnosed mental health disorders were combined, suggests that mental health issues in this long-term homeless population are underdiagnosed and undertreated. This is likely due to the challenges of engaging and assessing the population and the immediate priority of social needs, poor physical health and alcohol and substance misuse issues. The figures also highlight the complexity of this population, where longstanding mental health issues are the norm.

4.3 Social Networks

The findings highlight that based on keyworker report, the EAT group were significantly more isolated than the non-EAT group, and those with 'friendships' in the EAT group were more likely to be exploited by these peers. As the two groups do not differ significantly as to length of homelessness, the findings support that there are underlying differences between the groups which do not simply result from long-term homelessness. This mirrors the pattern of reduced social networks reported in the general ASC population (Howlin & Moss, 2012). The findings indicate that having EATs is associated with reduced resources to draw on in a crisis or to exit homelessness. Further research is needed to understand how much a small social network and a lack of social support is a cause or consequence of long-term homelessness in this group, or a combination.

It is notable that the social network data is closely aligned to some of the features that define autism, including criterion A3 in the DATHI (deficits in developing, maintaining and understanding relationships). It is therefore not surprising that the two groups differ, although it is interesting to highlight that there are significantly reduced peer and family relationships for the EAT group, given that the comparison group is also a long-term homeless group and therefore likely to have difficulties in maintaining relationships.

The sample is too small to draw firm conclusions regarding any differences between homeless males and females with EATs. Nevertheless, the two females identified as having EATs show different characteristics from their male counterparts, with both females having peer relationships which were characterised by financial and sexual exploitation, as reported by keyworkers. This initial finding indicates that

homeless women with EATs may have wider social networks than homeless males with EATs but are vulnerable to exploitation. Research supports that females with ASC may have a different presentation to males, particularly better compensatory strategies for social communication difficulties (Lai, Lombardo & Pasco, 2011). High rates of sexual exploitation have also been reported amongst females with ASC (Bargiela, Steward & Mandy 2016).

4.4 Limitations and Further Research

There is a distinct lack of research into EATs in the homeless, partly reflecting the many challenges of conducting research with this population. In designing the current study there were tensions between optimising validity and overall feasibility. The researchers acknowledge that this is an exploratory study and the limitations should therefore be viewed in this context.

There are limitations with the DATHI tool and the classifications made; namely the DATHI does not provide a diagnosis of ASC, rather it identifies individuals who show the range of symptoms associated with ASC. Additionally, the DATHI is based solely on informant report and is not a validated measure. This was the best tool given the ethical and methodological challenges of researching this complex population. However, given the limitations caution should be taken not to over interpret the findings.

One of the criticisms of the study is the grouping of the EAT group to include those scoring as “present” and “possibly present” on the DATHI for analysis of characteristics. As the DATHI tool best differentiates those people scoring as “present” and “not present” this may have been a better group comparison. The decision to include those scoring as “possible present” in the EAT group was based on several

considerations. Firstly combining the "present" and "possibly present" group increased the power of the study as the numbers increased from 13 to 22. A further rationale for combining the categories was that the "possibly present" group still had to meet the criteria for both sections of the DATHI i.e. social communication difficulties and restrictive and repetitive behaviours. In this way the "possibly present" group likely represents the continuum of traits that are seen in ASC. It is nevertheless acknowledged that not all of the sample needed to be included to answer the study question.

The choice to use informant report from keyworkers to identify the characteristics of clients was based on ethical and methodological considerations of researching this population. This design is particularly limited in answering the question of factors relating to the onset of homelessness, given that keyworker information is reliant on historical records or client self-report which may be inaccurate or biased. This may partly explain the marginal significance found for the category being unable to live independently ($p=0.045$), therefore further research is needed to replicate the findings. Understanding the factors that lead to homelessness is better addressed by a longitudinal design which would also need to triangulate self-reported data and information from other relevant sources. Similarly, the study design can only offer initial findings as to the reasons related to breakdowns in statutory accommodation, again as the information is based only on keyworker report. Research with service users, including qualitative research, could further explore the reasons underlying breakdowns in accommodation and protective factors in accessing and sustaining accommodation.

A further important consideration is that this study made multiple group comparisons, thus increasing the risk of Type 1 error. Several of the findings were not

markedly below the significance level of $p<0.05$, therefore it is important that the study is replicated to confirm the results.

An additional limitation is that 11% of the original 106 clients could not be classified using the DSM-5 interview due to insufficient information. This group was significantly older and had a longer length of homelessness than the clients that were included in the analysis. This group may have additional needs contributing to a longer length of homelessness and caution must be taken in generalising the findings to these individuals.

The sample consists of the most entrenched rough sleepers in an urban population who were predominantly males aged just under 50. Therefore, caution must be taken in generalising the clinical implications to other homeless groups, for example women, families and individuals with first onset of homelessness. Further research is needed to ascertain if the characteristics found in this study are replicated in other groups.

4.5 Summary

The findings indicate that there is a subset of the homeless population with EATs who show different characteristics compared to the general homeless population. This group have greater odds of becoming homeless due to difficulties with living independently, show a pattern of refusing statutory accommodation or not engaging with services once homeless, are socially isolated and show reduced odds of alcohol or drug use compared to the general homeless population. Like the general homeless population, this group show a high level of co-morbid mental health difficulties. These characteristics are consistent with previous literature and with the difficulties associated with ASC.

The findings suggest two pathways to long-term homelessness in this sample based on the presence or absence of EATs: (1) homeless clients without EATs show greater odds of drug and alcohol misuse, they access statutory accommodation but show repeated patterns of abandoning or being evicted from accommodation related to drug and alcohol misuse and typically have informal social networks, whereas (2) homeless clients with EATs have lower odds of alcohol and drug use, they consistently show a pattern of non-engagement with services and refuse offers of statutory accommodation and have very reduced informal social networks. Long- term homelessness in both groups is compounded by high levels of mental health problems. These two broad profiles have clinical implications.

4.6 Implications

The findings have implications for frontline staff, commissioners and policy makers. The implications for these groups are two-fold, (a) to target those at potential risk of homelessness and (b) to improve identification and service provision for adults with EATs who are currently homeless. In order to reduce the risk of homelessness for individuals with EATs, more research is needed to identify the risk and protective factors for homelessness in this group. Early assessment and post diagnostic support are likely to be key. The significantly different characteristics associated with the EAT and non-EAT groups suggest that these groups have different clinical needs. Whereas interventions targeting alcohol and drug use are key for the non-EAT group, engagement, environmental adaptations and greater flexibility by services are indicated for the EAT group. Increased awareness and training for frontline staff in homeless services is needed given the high estimated prevalence of EATs (Churchard, 2017). Particularly, training

around adapting communication is indicated based on the increased odds of these individuals not engaging or consistently refusing statutory accommodation. Adult ASC assessment services will also be key in providing consultation with homeless services where clients are suspected of ASC. Homeless services and pathways are not currently well designed to meet the needs of this group. The main implication for commissioners and services are to adapt environments to better support individuals with social communication difficulties, rigid and inflexible behaviours and sensory needs.

Further work with clients from this population is needed to better understand the potential adaptations that services could make to particularly support these individuals to exit homelessness. This study hopes to bring together those working in the fields of homelessness and autism, including service users, commissioners and policy makers, to improve the service provision and outcomes for this group.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*, (5th ed.). Washington, D.C: American Psychiatric Association.

Bargiela, S., Steward, R., & Mandy, W. (2016). The Experiences of Late-diagnosed Women with Autism Spectrum Conditions: An Investigation of the Female Autism Phenotype. *Journal of Autism and Developmental Disorders, 46*(10), 3281–3294.

Burnard, P. (1991). A method of analysing interview transcripts in qualitative research. *Nurse Education Today, 11,* 461–466.

Brugha, T.S., McManus, S., Bankart, J., Scott, F., Purdon, S., Smith, J., Bebbington, P., Jenkins, R., & Meltzer, H. (2011). Epidemiology of Autism Spectrum Disorders in Adults in the Community in England. *Archives of General Psychiatry, 68*(5), 459.

Churchard, A. (2017) *Evidence of raised levels of autistic traits in a homeless population.* Unpublished doctoral thesis, University College London.

Cohen, J. (1960). A Coefficient of Agreement for Nominal Scales. *Educational and Psychological Measurement, 20*(1), 37–46.

Constantino, J.N., & Todd, R.D. (2003). Autistic Traits in the General Population. *Archives of General Psychiatry, 60*(5), 524.

Department for Communities and Local Government. (2016). *Rough Sleeping Statistics Autumn 2016.* London. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/585713/Rough_Sleeping_Autumn_2016_Statistical_Release.pdf

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing, 62*(1), 107–115.

Evans, R. (2011). *The life we choose: Shaping autism services in Wales.* Cardiff.

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 Med, 5*(12), e225.

Fraser, R., Cotton, S., Gentle, E., Angus, B., Allott, K., & Thompson, A. (2012). Non-expert clinicians' detection of autistic traits among attenders of a youth mental health service. *Early Intervention in Psychiatry, 6*(1), 83–86.

Grigsby, C., Baumann, D., Gregorich, S.E., & Roberts-Gray, C. (1990). Disaffiliation to Entrenchment: A Model for Understanding Homelessness. *Journal of Social Issues, 46*(4), 141–156.

Happé, F., & Ronald, A. (2008). The 'fractionable autism triad': A review of evidence from behavioural, genetic, cognitive and neural research. *Neuropsychology Review, 18,* 287-304.

Homeless Link. (2014). *Health Needs Audit.* London: Homeless Link. Retrieved from http://www.homeless.org.uk/facts/homelessness-in-numbers/health-needs-audit-explore-data

Homeless Link. (2015). *Autism and Homelessness: Briefing for frontline staff.* London: Homeless Link. Retrieved from http://www.homeless.org.uk/sites/default/files/site-attachments/Autism %26 HomelessnesOct 2015.pdf

Howlin, P., & Moss, P. (2012). Adults with autism spectrum disorders. *Canadian Journal of Psychiatry, 57*(5), 275–283.

Hull, L., Petrides, K.V., Allison, C., Smith, P., Baron-Cohen, S., Lai, M.C., & Mandy, W. (2017). "Putting on My Best Normal": Social Camouflaging in Adults with Autism Spectrum Conditions. *Journal of Autism and Developmental Disorders,* 1–16.

Kryda, A.D., & Compton, M.T. (2009). Mistrust of outreach workers and lack of confidence in available services among individuals who are chronically street homeless. *Community Mental Health Journal, 45*(2), 144–150.

Lai, M.C., Lombardo, M.V, Pasco, G., Ruigrok, A.N.V, Wheelwright, S.J., Sadek, S.A., & Baron-Cohen, S. (2011). A behavioral comparison of male and female adults with high functioning autism spectrum conditions. *PloS One, 6*(6), e20835.

Lai, M.C., Lombardo, M.V., & Baron-Cohen, S. (2014) Autism. *Lancet, 383,* 896–910.

Lai, M.C., & Baron-Cohen, S. (2015). Identifying the lost generation of adults with autism spectrum conditions. *The Lancet Psychiatry, 2*(11), 1013–1027.

Lord, C., Risi, S., Lambrecht, L., Cook, E.H., Leventhal, B.L., DiLavore, P.C., & Rutter, M. (2000). Autism Diagnostic Observation Schedule (ADOS). *Journal of Autism and Developmental Disorders*, *30*(3), 205–23.

Lundström, S., Chang, Z., Kerekes, N., Gumpert, C., Råstam, M., Gillberg, C., & Anckarsäter, H. (2011). Autistic-like traits and their association with mental health problems in two nationwide twin cohorts of children and adults. *Psychological Medicine*, *41*(11), 2423-2433.

Mandell, D.S., Novak, M.M., & Zubritsky, C.D. (2005). Factors associated with age of diagnosis among children with autism spectrum disorders. *Pediatrics, 116,* 1480–1486.

Marshall, C., & Rossman G.B. *(*1995*) Designing Qualitative Research*. *Sage*

Publications, London.

Micali, N., Chakrabarti, S., & Fombonne, E. (2004). The broad autism phenotype: Findings from an epidemiological survey. *Autism, 8*, 21–37.

NHS Devon. (2011). *Homelessness Health Needs Assessment.* Exeter. Retrieved from http://www.devonhealthandwellbeing.org.uk/wp-content/uploads/2011/07/Homelessness-Health-Needs-Assessment-2011.pdf

Palazzoli, M.S., Boscolo, L., Cecchin, G., & Prata, G. (1980). The Problem of the Referring Person. *Journal of Marital and Family Therapy, 6*(1), 3–9.

Nylander, L., & Gillberg, C. (2001). Screening for autism spectrum disorders in adult psychiatric out-patients: a preliminary report. *Acta Psychiatrica Scandinavica, 103*(6), 428–434.

Office of the Chief Analyst. (2010). *Healthcare for Single Homeless People*. London: *Department* of Health. Retrieved from http://www.qni.org.uk/docs/healthcare for single homeless people NHS.pdf

Olivet, J., Bassuk, E., Elstad, E., Kenney, R., & Jassil, L. (2010). Outreach and Engagement in Homeless Services: A Review of the Literature. *The Open Health Services and Policy Journal, 3*, 53–70.

Polit D.F., & Beck C.T. (2004). *Nursing Research. Principles and Methods.* Lippincott Williams & Wilkins, Philadelphia, PA.

Roll, C.N., Toro, P.A., & Ortola, G.L. (1999). Characteristics and experiences of homeless adults: A comparison of single men, single women, and women with children. *Journal of Community Psychology, 27*(2), 189–198.

Sappok, T., Heinrich, M., & Underwood, L. (2015). Screening tools for autism spectrum disorders. *Advances in Autism, 1*(1), 12–29.

Shea, V., & Mesibov, G.B. (2005). Adolescents and adults with autism. In: Volkmar F.R., Paul, R., Klin, A., editors. *Handbook of autism and pervasive developmental disorders.* 3rd ed. New York (NY): John Wiley & Sons, Ltd; 2005. p288–311.

Shelter Cymru. (2015). *Piecing together a solution Homelessness amongst people with autism in Wales.* Cardiff.

Singer, G. (2006). Meta-analysis of comparative studies of depression in mothers of children with and without developmental disabilities. *American Journal on Mental Retardation, 111*, 155–169.

Skuse, D.H., Mandy, W., Steer, C., Miller, L.M., Goodman, R., Lawrence, K., Emond, A., & Golding, J. (2009). Social communication competence and functional adaptation in a general population of children: Preliminary evidence for sex-by-verbal IQ differential risk. *Journal of the American Academy of Child and Adolescent Psychiatry, 48,* 128-137.

Szatmari, P. (2000). The classification of Autism, Asperger's Syndrome, and Pervasive Developmental Disorder. *The Canadian Journal of Psychiatry, 45*, 731-738.

Thomas, B. (2011). *Homelessness: A silent killer - A research briefing on mortality amongst homeless people.* London: Crisis. Retrieved from https://www.crisis.org.uk/ending-homelessness/homelessness-knowledge-hub/health-and-wellbeing/homelessness-a-silent-killer-2011/

Part 3: Critical Appraisal

This critical appraisal is a reflection on the process of conducting the research project. It will explore my motivations for working on the topic of autism and homelessness and the assumptions that I brought to the research. It will involve an in-depth analysis of the limitations of the study and the implications of its findings. In addition, it will consider my personal reflections on the research process. In exploring these issues, this appraisal will draw in particular on systemic ideas.

1.1 Choice of Topic

There are parallels between the research process and working in a clinical role. In conducting this research project, I was conscious of being part of a wider system, including clients, commissioners, frontline staff and policy makers. In this appraisal I have utilised questions from systemic therapy to prompt reflection on the research process. As with family therapy, the first question should be 'who is the referrer' (Palazzoli, Selvini, Boscolo, Cecchin & Prata, 1980), although here the question is who is requesting that the research be conducted? In this case, the request for a research project into Autism Spectrum Condition (ASC) in the homeless population came from homeless commissioners working closely with frontline staff. Through first-hand experience, they had developed a hypothesis that there was a hard to reach subset of the homeless population with ASC. They asked for a formal research project to explore this hypothesis and planned to use the results to help inform service design and delivery.

Developments in the diagnostic criteria for autism explain why this question is being asked now. With the recognition of Asperger Syndrome in the 1980s, the criteria for a diagnosis of autism broadened (see overview by Lai & Baron-Cohen, 2015). This study sampled a largely older cohort (median age of 50) who entered adulthood prior to

this change to the diagnostic criteria. It was therefore anticipated that there would be a group of people with undiagnosed autism within this population, who have been termed a 'lost generation' (Lai & Baron-Cohen, 2015). There is increasingly greater recognition and research into ASC generally and this research question is part of that growing trend. Ongoing research is required to determine whether this question is simply a product of its time, i.e. whether early and accurate diagnosis may be associated with reduced prevalence of ASC in the homeless population in the future. However, the pressure on services for assessment and diagnosis and the general lack of post-diagnostic support (Lai & Baron-Cohen, 2015) indicates that whether diagnosed or otherwise, ASC is likely to continue to be prevalent in the homeless population in the future.

My decision to study the needs of homeless adults with ASC was influenced by a number of factors. Through clinical psychology training, my thinking has been heavily influenced by systemic approaches, as well as Bronfenbrenner's ecological model (Bronfenbrenner, 2005). I was interested in conducting research on the topic of homelessness as this issue cuts across individual, interpersonal and social factors and sits within a wider social, political and historical context. The commissioners recognised that the solution to working better with this hard to reach group involved considering not just the circumstances of the individual, but also the role of services and the relationship between clients and staff. This view matched with my preferred approach of working systemically, both clinically and as a researcher.

In addition, during my time as a trainee, I feel I have made a positive contribution to service design and delivery. I was therefore drawn to a research project that aimed to influence the wider system through shaping the design and delivery of homeless services.

I was motivated by a project where the question emerged from a clinical need and also had practical implications. Culture, religion and family have shaped in me a strong sense of social responsibility. I am also mindful of the power and privilege inherent in being white and having had educational opportunities and I feel a strong obligation to address this by working to empower marginalised groups. I was therefore drawn to a project that explored the needs of homeless individuals, particularly as this is an under-researched population.

1.2 Study Design

In designing any study the researcher must weigh up what is ideal for maximising validity and what is feasible (Barker, Pistrang & Elliot, 2002). In designing this study, the practicalities of conducting research in the homeless population shaped the chosen design. Ideally, each participant would undergo a full assessment of ASC (Nice, 2012), including a behavioural assessment such as the Autism Diagnostic Observation Schedule (ADOS, Lord et al., 2000) and a developmental history would be taken. Given that the sample was an entrenched homeless population with complex needs and more immediate priorities, it was not feasible to conduct a formal diagnostic assessment or gather a developmental history. Furthermore, this population is characterised by a lack of engagement with services and any attempt to meet directly with them would have likely led to non-engagement and a small sample size (those with ASC potentially being the least likely to engage). In addition, attempting to meet with homeless individuals directly would have potentially damaged the relationship that these individuals have with services, which could have had negative consequences for those individuals. With these factors in mind, it was decided that informant report via keyworkers about the observable

presence of autistic traits was the most appropriate design. It is a limitation that ASC was not diagnosed and that traits were identified via informant report from keyworkers, consequently conclusions can only be drawn about those with EATs as identified by keyworkers. However, given the total absence of research in this area and the need for systematic research, it was decided that this was an acceptable trade-off for an exploratory study.

On reflection, my own assumptions partly influenced the research, particularly the content of the homeless interview and questionnaire. The main assumptions that I brought to the study were around the value of social connection and accommodation. These assumptions are influenced by my family and cultural background. In addition, undertaking clinical psychology training has reinforced my view that social communication is key to a meaningful life. I also made assumptions around the importance of accommodation and this being the primary goal for clients. I acknowledge that these assumptions partly shaped my decision to explore patterns of accommodation use and social network size and composition. My views were challenged throughout the interviews with keyworkers. I was particularly struck by a minority of individuals from the overall caseload who keyworkers reported had been 'successfully' housed but subsequently appeared to experience a poorer quality of life due to the loss of community and purpose as reported by their clients. It was apparent that decisions around entering or declining accommodation are complex and often involve clients weighing up competing priorities. This made me appreciate the challenges that keyworkers face in supporting this population and the tensions they face in supporting clients with managing these different priorities whilst also being under pressure to move adults into accommodation.

It was striking that reported social network sizes were so greatly reduced in the EAT group. Embarking on the research, I placed a lot of value on the importance of reciprocal peer relationships. I was challenged to consider that values differ between individuals and social relationships are not the priority for everyone. There may be other ways that individuals create meaning in their lives based on individual strengths and values. For homeless individuals with EATs, interventions targeted at increasing social network size may not support their exit from homelessness in the way that it may do for individuals without EATs. Ultimately, the heterogeneity of ASC means that any intervention should be tailored to the individual and flexible to meet the person's needs and preferences.

One limitation of the study is that it focused more on the difficulties and needs of this group and did less to draw out the strengths and capabilities of these individuals. The EAT group were older and were also homeless for a longer period of time than the non-EAT group, while having smaller social networks. The EAT group had a median age of 53.5 which is older than the average age of death in the homeless population, which is 47 years (Thomas, 2011). This indicates that despite potential challenges, this group is highly resilient. Further research into the needs of this group should consider equally the strengths and needs of this population.

1.3 Potential Implications

This study highlights that homeless individuals with EATs are under-recognised and have unmet needs. Churchard (2017) suggests that the prevalence of autistic traits in the homeless population is as high as 12%. These combined findings indicate that there is a large subset of the homeless population who have specific characteristics and different

needs from the general homeless population. A better understanding of these needs may reduce the risk of adults with EATs becoming homeless and improve the lives of those with EATs who are already homeless. There are also financial arguments justifying further research into this area. Homelessness, with the high level of associated A and E visits and convictions, is estimated to cost £1 billion annually (Department for Communities and Local Government, 2012). Therefore there are also financial incentives for focusing efforts and resources to better understand the needs of this population and improve outcomes.

The findings have implications for the following groups: (1) frontline staff, (2) commissioners and (3) policy makers. By raising awareness and understanding of the needs of homeless adults with EATs, it is hoped that these individuals will have a better experience of services that are more individualised and able to adapt to the clients' needs. The hope is that this research will drive better outcomes for homeless individuals with EATs with regards to accommodation, physical and mental health and quality of life whilst simultaneously reducing the risk of homelessness in individuals with EATs, starting with understanding general patterns and characteristics of EATs.

Over the course of the research, I became increasingly aware that services and pathways out of homelessness are unfavourable to individuals with EATs. Without an understanding of the needs of clients with EATs, they may easily be labelled by professionals as not willing to engage, declining of services, difficult and challenging. This narrative may be reinforced if clients with EATs do not meet the criteria for input from mental health teams or have drug or alcohol misuse issues and there is no obvious explanation for these behaviours. Clients with EATs are likely to find it hard to

communicate their feelings and needs, and consequently unusual behaviours may be misinterpreted (e.g. lack of eye contact as rudeness, or sensory needs as challenging behaviour). Equally, keyworkers report feeling frustrated and having thoughts of inadequacy following their attempts to engage these individuals being met with rejection and hostility. Keyworkers also report feeling stuck and confused regarding the way forward with these clients. The keyworkers who were involved in the research reported that having a new lens through which to view and formulate clients opened up possibilities and made them feel less like they had failed and were not good enough.

The pathways out of homelessness require moving through various short-term and temporary accommodation and meeting with a multitude of new people (e.g. to organise benefits, accommodation, health appointments). I was conscious of how difficult this could be for anyone to navigate, but especially for someone with EATs. Access to any service depends on social communication, which immediately excludes those who find this a challenge. This barrier and consequent inequalities can occur at every stage of the homeless pathway, including for those at risk of homelessness who may struggle to access advice and support to prevent homelessness. The environment of temporary accommodation is typically not autism friendly; it is often busy and noisy and inflexible to individual preferences and routines, which may increase the risk of abandonment for individuals with EATs who make it into accommodation. Temporary and short term accommodation may also disadvantage individuals with EATs who struggle to cope with change. In addition, the criteria for supported accommodation may exclude individuals with these difficulties. In conclusion, the nature of services and

homeless pathways may inadvertently increase the risk and maintenance of homelessness for individuals with EATs.

The lack of awareness of ASC in the homeless population is also reflected in homeless policy which is not considerate of the needs of these individuals and inadvertently disadvantages this group. In order to access emergency or longer term accommodation from a council, a person who is homeless must meet the council's definition of statutory homelessness, a legal definition of homelessness which requires local authorities to provide accommodation for those in priority need, who are deemed not to be intentionally homeless. Non-statutory homelessness refers to anyone who does not fall within the definition of priority need or is deemed intentionally homeless. Priority need includes those who are vulnerable and the criteria for this includes having a physical or learning disability or mental health problem (Department for Communities and Local Government, 2017). Social communication difficulties are not well recognised or understood, therefore individuals with these difficulties, especially if they are high functioning, may not be recognised as in priority need. Additionally, an individual with ASC may be more likely to fall into the category of intentional homelessness, especially if they do not have a diagnosis and are unable to communicate how their difficulties have led to homelessness. The language of policy places blame on the individual and fails to consider the complex interactions of biological, psychological and social factors that lead to homelessness.

1.4 Disseminating the Findings and Next Steps

The next steps following the research are to bring together those working in the fields of autism and homelessness, including policy makers. Conversations are already

taking place with the National Autistic Society and Homeless Link and there is scope to create a joint briefing document for staff to better understand the needs of homeless adults with ASC, along with best practice guidelines for working with this group. The findings of this research highlight the need for specific training on ASC for those working in homelessness services and to equip staff with the knowledge and skills to work with this group. For example, this may include more directive and concrete ways of communicating. For homeless commissioners and homeless services there are implications for making services more autism friendly. This includes both low cost adaptations (e.g. staff training) and potentially higher cost interventions (such as specialist ASC friendly homeless accommodation) depending on local need.

It is recognised that homeless individuals with EATs may not be well engaged with statutory services but may have contact with other organisations and the community sector (e.g. religious organisations). This may particularly be the case in rural areas where there are fewer specialist services. Therefore, it is also a planned outcome to raise awareness among religious and community groups by developing and disseminating an accessible document.

The project highlights that there is an important role for adult autism assessment services. The complex needs of this client group suggest that numbers of direct referrals are likely to be low. Nevertheless, these services could provide consultation to homeless services to help staff formulate complex cases and consider new ways of working, especially around engagement. This model already exists in some Greater London boroughs and has received positive feedback from staff in homeless teams who have utilised the consultation sessions.

Further research is needed to validate a screening tool for ASC in the homeless population, particularly a tool that can be completed by staff. This is very relevant given the complex presentation of the clients in this population and the difficulties with engagement. The outcome of a screening tool may not be to refer someone for a full assessment of ASC, but rather to open up conversations for staff who could then access consultation with adult autism assessment services or generate new ideas for different ways to try and engage clients.

1.5 Personal Reflections

Undertaking this project has highlighted to me the importance of research being a collaborative process, in this case between academics, frontline staff, commissioners and policy makers. The practical implications that have emerged from the findings are a direct consequence of this collaboration and of the research question being identified by commissioners and frontline staff. This collaborative approach partly helped to remove some of the typical barriers that researchers can experience, in that there were no issues with recruitment or attrition as the participants (keyworkers) were motivated to engage. This also increased my enthusiasm and interest to conduct the research.

I was conscious from the start of the process that the project did not involve any collaboration or consultation with clients and that the question came from staff. There was a tension in researching the characteristics of this population only through the eyes of the keyworkers, without involving clients in the design and implementation of the project. I was aware of, and felt uncomfortable with, the power imbalance inherent in this top down approach. However, I was also aware that this is an under-researched issue and that there are serious challenges in collaborating with individuals who find it difficult to

engage and have multiple and complex needs. The problems inherent in the approach were offset by the importance of generating awareness of this topic, in the hope of opening the door for further research. I reflected that in going forward, collaborating with service users from the population (e.g. adults with EATs with current or previous experience of homelessness) would be paramount in better understanding the needs and shaping more appropriate service provision for this group.

The process has made me appreciate the responsibility inherent in the role of being a researcher. In particular, I appreciate that the task of disseminating the findings is equally important as conducting the research. I was prompted to step outside of my comfort zone and be proactive in disseminating the findings, including engaging with third sector organisations (including the National Autistic Society and Homeless Link) and policy makers (Department for Communities and Local Government). I also presented the findings at a conference (Homeless and Inclusion Health, 2017). I recognised that a researcher can play an important role in bringing together interested parties and generating discussion. It is also a key skill to be able to translate academic findings for a variety of audiences; for example I was struck by the difference in approach between academics and policy makers who preferred findings to be distilled into key 'headlines' and action points. Perhaps it was in working alongside these different groups of professional that I recognised my role as a researcher goes beyond publishing the results; it requires identifying and proactively engaging with various groups who will benefit from understanding the work as well as jointly developing and implementing action plans. It became clear to me that clinical psychologists have a

unique skill set combining research and clinical skills, which is well suited to the task of identifying opportunities for service improvement and driving change.

References

Barker, C., Pistrang, N., & Elliot, R. (2002). Research Methods in Clinical Psychology. Chichester: Wiley.

Bronfenbrenner U. (ed) 2005. Making Human Beings Human*: Bioecological Perspectives on Human Development*. London: Sage

Churchard, A. (2017) *Evidence of raised levels of autistic traits in a homeless population.* Unpublished doctoral thesis, University College London.

Department for Communities and Local Government. (2012). *Evidence review of the costs of homelessness.* London. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7596/2200485.pdf

Department for Communities and Local Government. (2017). *Homelessness data: notes and definitions.* Retrieved from https://www.gov.uk/guidance/homelessness-data-notes-and-definitions

Lai, M.C., & Baron-Cohen, S. (2015). Identifying the lost generation of adults with autism spectrum conditions. *The Lancet Psychiatry*, *2*(11), 1013–1027.

Lord, C., Risi, S., Lambrecht, L., Cook, E.H., Leventhal, B.L., DiLavore, P.C., Rutter, M. (2000). Autism Diagnostic Observation Schedule (ADOS). *Journal of Autism and Developmental Disorders*, *30*(3), 205–23.

NICE. (2012). *Autism: recognition, referral, diagnosis and management of adults on the autism spectrum (CG142).* Retrieved from https://www.nice.org.uk/guidance/cg142

Palazzoli, M.S., Boscolo, L., Cecchin, G., & Prata, G. (1980). The Problem of the Referring Person*. *Journal of Marital and Family Therapy*, *6*(1), 3–9.

Appendices

Appendix A: Confirmation of Ethical Approval

UCL RESEARCH ETHICS COMMITTEE
ACADEMIC SERVICES

18 March 2016

Dr Will Mandy
Research Department of Clinical, Educational and Health Psychology
UCL

Dear Dr Mandy

Notification of Ethical Approval
Project ID: 8359/001: Estimating the prevalence and associated needs of autistic traits in a homeless population

I am pleased to confirm in my capacity as Chair of the UCL Research Ethics Committee (REC) that your study has been approved by the UCL REC for the duration of the project i.e. until 15th April 2017.

Approval is subject to the following conditions:

1. You must seek Chair's approval for proposed amendments to the research for which this approval has been given. Ethical approval is specific to this project and must not be treated as applicable to research of a similar nature. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing the 'Amendment Approval Request Form': http://ethics.grad.ucl.ac.uk/responsibilities.php

2. It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator (ethics@ucl.ac.uk) immediately the incident occurs. Where the adverse incident is unexpected and serious, the Chair or Vice-Chair will decide whether the study should be terminated pending the opinion of an independent expert. The adverse event will be considered at the next Committee meeting and a decision will be made on the need to change the information leaflet and/or study protocol.

   For non-serious adverse events the Chair or Vice-Chair of the Ethics Committee should again be notified via the Ethics Committee Administrator (ethics@ucl.ac.uk) within ten days of an adverse incident occurring and provide a full written report that should include any amendments to the participant information sheet and study protocol. The Chair or Vice-Chair will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

On completion of the research you must submit a brief report of your findings/concluding comments to the Committee, which includes in particular issues relating to the ethical implications of the research.

Yours sincerely

Professor John Foreman
Chair of the UCL Research Ethics Committee

Academic Services, 1-19 Torrington Place (9th Floor),
University College London
Tel: +44 (0)20 3108 8216
Email: ethics@ucl.ac.uk
http://ethics.grad.ucl.ac.uk/

Appendix B: Keyworker Information Sheet and Consent Form

RESEARCH DEPARTMENT OF CLINICAL, EDUCATIONAL AND HEALTH PSYCHOLOGY

UCL

Estimating the prevalence and associated needs of autistic traits in a homeless population

Information sheet for Keyworkers

We would like to invite you to take part in this research project. You should only take part if you would like to, and before you decide whether you want to take part it is important for you to read the following information and discuss it with others if you wish. Please ask us if there is anything that is not clear, or if you would like more information.

What is this study about?
This research aims to estimate the percentage of service users [redacted] works with who have autistic traits, and to find out more about the particular needs of a homeless person with autistic traits. Autistic Spectrum Disorder is a condition which can lead to a person having many problems coping in everyday life, and we think that there may be clients on your caseload who have this condition but have not received a diagnosis.

We will not seek to make full diagnoses, but will rather identify whether or not clients show evidence of autistic traits. If we do find evidence that this is the case it may serve as the basis for better support to be offered to this particular group of clients, and could also lead to further services being developed to meet their needs.

Who is being invited to take part?
We are inviting all keyworkers at [redacted] to take part in the research.

Do I have to take part?
It is up to you to decide whether to take part or not; choosing not to take part will not disadvantage you in any way. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you do decide to take part you are still free to withdraw at any time and without giving a reason.

What will taking part involve?
If you agree to take part, we will be asking you to take part in interviews with us where we will ask you questions about all the clients you work with. We will ask you how your clients act, how they communicate with you, and about their strengths, needs, and history of homelessness. We will also ask you to complete questionnaires asking similar questions. We will not at any point ask you for any personally identifiable details of the client, to ensure that we protect their confidentiality. This data will be stored securely and will only be seen by the research team.

We will record a random selection of our interviews to allow us to test how reliable our measures are. This is to test the quality of the research we are doing and the recordings will only be used for this purpose. They will only be listened to by members of the research team, and they will be anonymised and stored on an encrypted drive.

What will happen to the information that is collected?
Your responses on the questionnaires will be anonymous and will be analysed together with other keyworker's responses.

All written information will be stored securely and will be destroyed five years after the study has ended. All data will be collected and stored in accordance with the Data Protection Act 1998. If for any reason you decide to withdraw from the study, all information you provided can be deleted at your request.

Everything that you tell us will be kept confidential; only the research team will have access to what has been said.

The recordings will only be listened to by members of the research team, and they will be anonymised and stored on an encrypted drive. They will be deleted once all reliability checks have been completed.

Once the project is over, the results will be written up as part of a postgraduate thesis and may be submitted for publication in an academic journal. Reports will not reveal the identity of anyone who took part. An anonymised summary of the findings will be sent to [redacted] and shared with all keyworkers in the service, and will also be sent to the homelessness commissioners at [redacted] Council.

Are there any risks of taking part?
We do not expect your taking part in this study to carry any risk to you. If we identify a client with suspected autistic traits who you feel would benefit from further support around this there is a care pathway through [redacted]. We would also be happy to discuss this further with you if required.

What are the possible benefits of taking part?
The benefits of this study are that it may help increase and improve service provision for homeless adults in [redacted] with autism, as this is a potentially very vulnerable client group with a large unmet need. We will share the results with you and the rest of the team at [redacted], and we hope that you may find this research has some practical benefit in terms of your day-to-day work with clients.

Incentive for participation:
As a thank you for taking part we will be offering £30 in food vouchers to [redacted], for use with clients, for each keyworker who participates.

Further information and contact details, and what if something goes wrong?
If you have any questions about this study please contact the researchers. If this study has harmed you in any way or if you wish to make a complaint about the conduct of the study you can contact the principal researcher Will Mandy using the details below:

[redacted]
Will Mandy, Senior Lecturer <w.mandy @ucl.ac.uk>

Research Department of Clinical, Educational and Health Psychology
University College London
Gower St
London WC1E 6BT
Telephone: 020 7679 5962

Thank you for considering taking part in this study.

This study has been approved by the UCL Research Ethics Committee (Project ID Number): 8359/001

You will be given a copy of this information sheet to keep.

Informed Consent Form for Keyworkers

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

Title of Project: Estimating the prevalence and associated needs of autistic traits in a homeless population

This study has been approved by the UCL Research Ethics Committee (Project ID Number): 8359/001

Thank you for agreeing to take part in this research. Before you agree to take part, the person organising the research must explain the project to you.

If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you to decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

Participant's Statement

I

- have read the notes written above and the Information Sheet, and understand what the study involves.
- understand that if I decide at any time that I no longer wish to take part in this project, I can notify the researchers involved and withdraw immediately.
- understand that as a result of my assistance with the project, the service will be given a donation of £30 worth of food vouchers, I understand that this donation will be assured irrespective of whether I decide that I no longer wish to take part in the project.
- understand that my participation may be tape recorded and I consent to the use of this material as part of the project.
- understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.
- understand that the information I have submitted will be published as a report and I will be sent a copy. Confidentiality and anonymity will be maintained and it will not be possible to identify any service users from any publications.
- agree that the research project named above has been explained to me to my satisfaction and I agree to take part in this study.

Signed: Date:

Appendix C: DSM-5 Based ASC Traits in Homeless Individuals Semi-Structured Interview (DATHI), developed by Churchard (2017)

Rubric

Autistic Spectrum Disorder (ASD) is a condition which manifests in a wide variety of ways, and two people with ASD may have completely different presentations. This questionnaire does not therefore provide a checklist of particular behaviours, as the presence of a behaviour is not in itself diagnostic of ASD. It rather lists a number of behaviours, and asks that the researcher consider with keyworkers whether the ways these behaviours manifest is consistent with a presentation of ASD. Throughout researchers should proceed according to the following process:

1. Is the behaviour manifested by the client?
2. If yes, what form does the behaviour take?
3. Is the behaviour consistent across different settings/contexts?
4. Why does the keyworker think the behaviour is being manifested? Are there any obvious reasons why the client acts in this way?

Guidelines for individual items:

Classification	Criteria
Present	• Behaviour(s) associated with trait clearly observed with examples given. • Each behaviour is seen across multiple contexts OR Behaviour seen in one context very clearly meets ASD criteria. • The behaviour is not attributable to other causes. • Not every behaviour has to be present for this to be met, and a single behaviour may be sufficient to give this classification if it very clearly matches DSM-5 criteria (ie. One clearly evident fixated interest would be sufficient to meet criterion B3).
Possibly present	• Meeting any of the following criteria is sufficient reason to give this overall classification: ○ Behaviour(s) associated with trait observed, but it is unclear whether they fully match up with DSM-5 criteria. ○ A single behaviour likely to be consistent with ASD is observed, but no other ASD-related behaviours are observed. ○ Behaviour(s) associated with trait observed, but they do not reliably appear across multiple contexts. ○ Aspects of trait observed and may be better explained by other cause, but this is unclear (ie. Is it anxiety or ASD?).
Not present	• Trait not observed, or only bears superficial resemblance to DSM-5 criteria (ie. Unfriendly when drunk).

Present but attributable to cause other than ASD	• Trait only appears when another factor is clearly influencing the individual's behaviour / mental state (ie. Alcohol). The variability in presentation of the trait can be closely matched up with this additional factor (ie. Poor eye contact and social rapport when drinking, but otherwise eye contact and social rapport are fine).
Insufficient information to classify	• Client is so poorly known to services that any attempt to match their behaviour to criterion would be a guess.

Additional guidelines for decision making on each item

Where the scorer thinks a score on an item falls between classifications (i.e. between 'Not present' and 'Possibly present', or between 'Possibly present' and 'Present') the following guidelines should be followed:

- For Section A (items A1-A3) the scorer should score down
  - E.g. If the scorer thinks the score falls between 'Present' and 'Possibly present' the scorer should rate the item as 'Possibly present'. Similarly if the scorer thinks the item falls between 'Not present' and 'Possibly present' they should rate the item as 'Not present'.
- For Section B (items B1-B4) the scorer should score up
  - E.g. if the score falls between 'Present' and 'Possibly present' the scorer should rate the item as 'Present'. If the scorer thinks the item falls between 'Not present' and 'Possibly present' they should rate the item as 'Possibly present'.
  - The only exception to this is B2 – prompt around difficulty coping with change. It is evident that the general homeless population for different reasons struggle with change. There should be clear examples here of previous difficulties coping with change (e.g. change in the way benefits are given) rather than general fear of change (e.g. refusing accommodation due to avoidance of change)

Guidelines for 'Overall classification'

The following guidelines should be followed to give an overall classification of the presence of autistic traits:

Classification	Criteria
Present	**Section A:** • 3 items = present OR • At least 2 items = present AND 1 item = possibly present AND **Section B:** • At least 2 items = present OR • 1 item = present AND at least 2 items = possibly present
Possibly present	**Section A:** • At least 3 items = possibly present AND **Section B:** • At least 2 items = possibly present
Not present	• Does not meet criteria for 'Possibly present'
Insufficient information to classify	• Client is so poorly known to services that any attempt to match their behaviour to criteria would be a guess (this same classification will be seen on individual items).

The above guidelines should normally be followed to make the overall classification. However, in some cases the general clinical presentation and/or contextual information may raise doubts about the accuracy of the overall classification. In the case the overall classification may be changed, but this should only happen rarely and after careful consideration. Examples of when this might occur include:

- An individual whose overall presentation appears markedly autistic, but who has not quite met criteria for 'Present' and has instead been put in the 'Possibly present' category. In this case it would be appropriate to re-categorise them into 'Present'.
- An individual who has met criteria for 'Present', but it is very unclear what the nature and cause of their autistic traits is. This might be seen in a very chaotic clinical presentation with other confounding factors such as a high level of substance misuse. In this case it would therefore be more appropriate to put them in the 'Possibly present' category.

Criterion	Prompt questions	Answers	Trait present?

A1: Deficits in social-emotional reciprocity	Is the client able to initiate social contact?
	• Specific prompts:
	  ○ Appears completely absent
	  ○ Absence of greetings
	  ○ Does so in a strange manner
	
	Does the client respond to social interactions in an odd fashion?
	• Specific prompts:
	  ○ Awkward
	  ○ Overly blunt
	  ○ Hostile
	  ○ Response to smile
	  ○ Overfriendliness
	  ○ Gives too much information
	
	Can the client engage in back-and-forth conversation?
	• Specific prompts:
	  ○ Monosyllabic replies / only limited responses
	  ○ Responds only to questions
	  ○ Tangential responses
	  ○ Monopolises conversation
	  ○ Overly repetitive in same conversation
	
	Can the client talk about their feelings, and if so how do they talk about them?
	• Specific prompts:
	  ○ Completely immersed
	  ○ Only superficial or stereotyped descriptions
	  ○ Possible to explore further?
			○ Present
			○ Possibly present
			○ Not present
			○ Present but attributable to cause other than ASD
			○ Insufficient information to classify

Criterion	Prompt questions	Answers	Trait present?

A2: Deficits in nonverbal communicative behaviors used for social interaction	What is the client's eye contact like?
	• Specific prompts:
	  ○ Absent
	  ○ Fixed gaze
	
	What are the client's facial expressions like?
	• Specific prompts:
	  ○ Absent
	  ○ Limited range
	  ○ Smile but nothing else
	  ○ Could you guess how the client was feeling from their facial expression?
	
	Does the client use and understand body language and gestures?
	• Specific prompts:
	  ○ Pointing
	  ○ Nodding
	  ○ Shaking the head
	  ○ Inexpressive posture: stiff / rigid upper body
	  ○ Absence of demonstrative gestures
	  ○ Exaggerated / odd gestures
	
	Does the client recognise unspoken cues when you are interacting with them?
	• Specific prompts:
	  ○ eg. Standing up at the end of a meeting to indicate the conversation is at an end
	  ○ Responding to non-verbal instructions. Eg. shake of the head when you don't want someone to do something
	
	When talking to others people typically coordinate their tone of voice, facial expressions, eye contact, gestures and body language with what they're saying. Does the client do this?
			○ Present
			
			○ Possibly present
			
			○ Not present
			
			○ Present but attributable to cause other than ASD
			
			○ Insufficient information to classify

Criterion	Prompt questions	Answers	Trait present?

A3: Deficits in developing, maintaining, and understanding relationships	Does the client adjust their behaviour depending on who they are around?
	
	Does the client notice and understand the impact their behaviour has on others?
	• Specific prompts:
	  ○ Rudeness
	  ○ Losing temper
	  ○ Being friendly / giving compliments
	  ○ Oversharing
	
	Does the client show an intuitive understanding of social situations?
	
	How successful has the client been at forming and maintaining friendships?
	
	Has the client been able to forms relationships with other individuals they come into contact with, such as hostel workers and staff?
	• Specific prompts:
	  ○ One sided friendships?
	
	Is the client interested in making friends?
	
	Does the client show any interest in other people?
	• Specific prompts:
	  ○ Enjoys small talk / socialising for its own sake (beyond meeting wants/needs)
	  ○ Asking people how they are
	  ○ Asking people what they are up to
	  ○ Remember what people have told them in previous conversations?
			○ Present
			
			○ Possibly present
			
			○ Not present
			
			○ Present but attributable to cause other than ASD
			
			○ Insufficient information to classify

Criterion	Prompt questions	Answers	Trait present?
B1: Stereotyped or repetitive motor movements, use of objects, or speech	Does the client show any repetitive movements? Does the client show any unusual hand mannerisms? Does the client repeat the same phrases many times? With regards to the sound of the client's voice, is their intonation unchanging / monotonous? Is the way the client speaks especially formal or stilted? Does the client use words they have made up themselves in conversation? Does the client repeat words you or someone else has said in a socially inappropriate manner?		○ Present ○ Possibly present ○ Not present ○ Present but attributable to cause other than ASD ○ Insufficient information to classify

Criterion	Prompt questions	Answers	Trait present?

B2: Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or non-verbal behaviour	Does the client have any unusual routines?
	• Specific prompt:
	  ○ Very bound to this routine?
	  ○ How do they cope if routine breaks down? (ie. Changing appointment time)
	
	Does the client find it unusually difficult to cope with change and new activities?
	• Specific prompt:
	  ○ Even small change
	  ○ Even if change / new activity is something others see as positive
	  ○ Consider many types of behaviour ie. Food, greeting rituals
	
	Does the client show any ritualized or compulsive behaviour, either verbal or non-verbal?
	• Specific prompt:
	  ○ Organisation of belongings
	  ○ Routes taken
	  ○ Sleep sites
	  ○ Patterns of touching
	  ○ Mentioning dates / pieces of information
	  ○ Strong need to get to end of what they're saying
			○ Present
			○ Possibly present
			○ Not present
			○ Present but attributable to cause other than ASD
			○ Insufficient information to classify

Do any of the symptoms talked about above cause significant impairment in the client's current functioning? If so, which ones?

Is there anything else you have noticed about the client which you think might be relevant to what we have been discussing today?

Appendix D: [*Intentionally removed*]

Appendix D: [*Intentionally removed*]

Appendix D: [*Intentionally removed*]

Appendix D: [*Intentionally removed*]

Appendix E: [*Intentionally removed*]

Appendix E: [*Intentionally removed*]

Appendix E: [*Intentionally removed*]

Appendix F: Autism Spectrum Disorder in Adults Screening Questionnaire (ASDASQ)

Date:

Participant ID:

Name of researcher:

		Yes	No	Don't know
1.	Does the patient have any problems regarding contacts with others? (e.g. cannot get or keep friends of the same age, or cannot get reciprocally satisfying contacts with sex partners).	☐	☐	☐
2.	Is the patient odd, eccentric, 'one of a kind'?	☐	☐	☐
3.	Do you find the patient compulsive or rigid, occupied by rituals, routines or rules?	☐	☐	☐
4.	Has the patient trouble with clothing, grooming and personal care? (e.g. conspicuously old-fashioned or ill-fitting clothing).	☐	☐	☐
5.	Has the patient or has he/she earlier had, special interests, i.e. an intense interest that keeps the patient from engaging in other activities, or an interest that the patient wants to talk about all the time? The subject of the special interest is not important, but the intense engagement or repetitive talking about it.	☐	☐	☐
6.	Has the patient a bizarre language or a strange/unusual voice? Does he/she speak in a very grammatical or old-fashioned way, or use standard phrases or clichés, or talk in an unnecessarily loud or low voice? Does he/she talk in a monotonous, or shrill or whining voice?	☐	☐	☐
7.	Has the patient an unusual non-verbal communication, e.g. abnormalities in gaze, gestures or facial, expression, unusual posture, stiff gait, etc.?	☐	☐	☐
8.	Does the patient seem to have a lack of common sense, or lack the ability to understand and foresee the consequences of his/her doings or sayings? This might cause the patient to repeatedly getting into difficult or embarrassing situations, or get others into these situations.	☐	☐	☐
9.	Is the patient uneven in his/her abilities, i.e. very skilful in some areas while lacking elementary knowledge or skills in others?	☐	☐	☐
10.	Has the patient had any contacts with child and adolescent psychiatry?	☐	☐	☐

Appendix G: Content Analysis Guidelines

Coding Frame for Content Analysis

For the purposes of reliability checking, only the overall code is required for each of the four categories. The subcategories are given to aid the decision making for each code alongside examples.

1. Pathways into homelessness

This information can be found in homelessness interview Section A, Q2 and in the free text at the end of the homelessness questionnaire. Sometimes the homelessness interview Section A,Q1 can also provide context.

For this category, only one code (and one subcategory) can be given for each case.

There will be multiple predisposing factors that contribute to homelessness, so for the purpose of this analysis a code should be given according to the clearest observable event immediately precipitating homelessness.

For many of the individuals in this population, the circumstances leading to homelessness will not be known (e.g. there are no records or the individual has not disclosed this to the keyworker). In these instances, the code of 'not known' should be given. This code should also be used if the keyworker suspects but is not sure of the factors leading to homelessness (e.g. if there are longstanding mental health or substance misuse issues that the keyworker suspects could have contributed to homelessness but this is now known). If factors are listed under Section A Q2 then assume these are known unless it is stated that this is supposition.

Unless adolescent onset is stated or clearly identified (e.g. ran away from boarding school) then assume adult onset and code accordingly.

For adult onset, if there are multiple factors which span drug use/mental health/offence and another category, the code drug use/mental health/offence should be used.

See table 1 for examples.

2. Patterns of accommodation use after becoming homeless

The information required for this code can be found in homelessness interview Section A Q4 and in the free text at the end of the homelessness questionnaire.

For this category include accommodation across a person's entire homeless history (i.e. if only one eviction early on in followed by refusal to enter accommodation for the subsequent decades of homelessness then a code of combination should be used with the relevant subcategory).

Only one code can be given for this category. If a person has multiple patterns of accommodation use then a code of combination can be given. Only the combination code requires a subcategory code.

See table 2 for examples.

3. Reasons for refusals and breakdowns in accommodation after becoming homeless

Information for this category can be found in the homeless interview, Q4. See table 3.

4. Social network

The information required for this code can be found in three places:

- homelessness interview Section A Q3
- free text at the end of the homelessness questionnaire
- DSM-5 interview item A3

For this category multiple scores can be given; a case can receive a maximum score of 3 if a score of 1 (i.e. yes) is given for current partner, peer relationships and family.

Category	Code	Subcategory	Definition/Example
1. Pathways into homelessness	A. Adolescent onset	• Don't know • Transition from care – abandoned/evicted/unable to maintain accommodation • Ran away/breakdown in family relationships • Left home due to abuse • Evicted by partner/family • Flat taken over by peers • Parent/s died • Abandoned	• Where homelessness is known to have occurred age 20 or below • If age of homelessness has not been stated assume adult onset and code B-E as appropriate • The code should take precedence over the other three adult onset categories (e.g. if adolescent onset and drug use than a code of adolescent onset should be given).
	B. Unable to meet the demands of independent living in adulthood (unrelated to alcohol or drug use)	• Parent/partner died • Unreasonable response to change in accommodation circumstances • Unable to maintain accommodation (not due to drug or alcohol use) • Evicted due to unreasonable behaviour (not due to drug or alcohol use) • Breakdown in relationship/family relationships (not in the context of drug or alcohol use)	• Where homelessness is known to have occurred above 20 years old
	C. Drug use, mental health issues, offence	• Drug and/or alcohol use or relationship/family breakdown in the context of drug or alcohol use or mental health issues • Mental health issues • Sex offence – related difficulties returning to previous accommodation	• Where homelessness is known to have occurred above 20 years old • For any case, if there is more than one factor which spans code C and another adult onset code, a code of C should be given
	D. Adverse events	• Loss of employment • Partner died in traumatic way • Domestic violence	• Where homelessness is known to have occurred above 20 years old
	E. Positive choice	• Lifestyle choice	• Where homelessness is known to have occurred above 20 years old
	F. Not known	• Not known	• If stated under homeless questionnaire Section A question to: not known, supposition, suspected, possibly

Category	Code	Subcategory	

2. Patterns of accommodation use	A. Abandoned only		
	B. Evicted only		
	C. Refusal only		
	D. Combination (abandoned, evicted and refused)	• Abandoned and evicted • Abandoned and refused • Evicted and refused • Abandoned, evicted and refused	

Category	**Code**	**Subcategory**	**Definition/Example**
3. Reasons for breakdowns in accommodation	A. Breakdowns in the context of alcohol and drug use and or mental health difficulties	• Alcohol and or drug use • Mental health issues	• If a case has both factors consistent with category A or B, category A should take priority
	B. Breakdowns caused by possible ASD factors	• Does not engage with keyworker or reluctant to be involved with services/claim benefits (R) • Challenging behaviour (E) • Accommodation taken over by others (A) • Did not like the environment (e.g. too busy/noisy) (A/E) • Inflexible (e.g. has a very specific/long list of demands for accommodation) or rigid (R) • Doesn't want the stress of maintaining accommodation (R/A) • Fear of change (R) • Difficulty adjusting (A) • Did not like rules/did not follow rules of accommodation (A/E) • Influence of partner (R) • Unable to maintain (A/E) • Underserving (R)	

Category	Code	Subcategory	Definition/Example
4. Nature of social relationships	A. Totally isolated	N/a	• No friends, no contact with family and no current partner
	B. Current partner	• Violent to partner • Violence from partner • Violence to and from partner • Co-dependent • Exploited/Taken advantage of • Multiple relationships / unstable relationships • Drug use • Reciprocal	
	C. Peer relationships	• Associates/ Only in context of drug or alcohol use/knows people on the streets – not friends • Financially exploited/bullied • Sexually exploited • Superficial • Supportive /close friendships • Reciprocal (not only in the context of drug and alcohol use) • Not known	• Code 1 if any mention of friends, associates, drug or alcohol buddies, use the subcategory to qualify the nature of the relationship • This category is distinct from partner or family (i.e. if client has a partner or family but no other peer relationships code peer relationships as 0 • If more than one subcategory go with the primary pattern E.g. for a code of 1: • Associates, mostly around use of spice • Superficial, hangs around with street performers • Stays with someone on/off, has a shower there
	D. Family	N/a	• Code 1 if current relationship with own family or partners family or adopted family

Appendix H: Details of the Joint Research Project

This project was conducted jointly with Alasdair Churchard, trainee clinical psychologist at UCL. All study planning was completed together, including deciding on study methodology, writing the ethics application, and liaising with the homeless outreach team and other interested parties.

Alasdair developed the DATHI (Appendix C) and I developed the Homelessness Structured Interview (Appendix D) and the Homelessness Questionnaire (Appendix E).

Both trainees conducted all parts of the screening interview including the DATHI, ASDASQ, and the Homelessness Interview. The workload was divided so that each trainee screened approximately half of all the cases on the team's caseload.

We assisted each other with the reliability checking process. I helped Alasdair with organising and sending scans of the DATHI and other documents to the supervisors, and Alasdair was the second rater for the reliability check of the coding frame. All data was inputted and analysed separately.

We collaborated on all aspects of increasing the 'impact' of the study.

Appendix I: Pathways into Homelessness – Subcategories

	EAT Group (n = 22)		Non-EAT Group (n = 72)	
	n	**% (/22)**	**n**	**% (/72)**
Adolescent Onset	**4**	**18.18**	**13**	**18.06**
- Don't know	0	**-**	1	1.39
- Transition from care – abandoned/evicted/unable to maintain accommodation	2	9.09	5	6.94
- Ran away from home/breakdown in family relationships	2	9.09	4	5.56
- Left home due to abuse	0	**-**	1	1.39
- Evicted by family due to behaviour	0	**-**	1	1.39
- Relationship breakdown	0	**-**	1	1.39
Unable to meet the demands of independent living in adulthood	**6**	**27.27**	**7**	**9.72**
- Parent/partner died	2	9.09	6	8.33
- Unusual response to change in accommodation circumstances	1	4.55	0	-
- Unable to maintain accommodation due to not coping (not in the context of drug or alcohol use or mental health issues)	2	9.09	1	1.39
- Evicted due to unreasonable behaviour (not due to drug or alcohol use or mental health difficulties)	1	4.55	0	**-**
Drug and or alcohol use, Mental health, Offences	**6**	**27.27**	**22**	**30.56**
- Drug and/or alcohol use or relationship/family breakdown in the context of drug or alcohol use	4	18.18	16	22.22
- Mental health issues or relationship breakdowns in the context of mental health issues	1	4.55	4	5.56
- Offence/prison and related difficulties returning to previous accommodation	1	4.55	2	2.78
Adverse life event	**0**	-	**6**	**8.33**
- Loss of employment	0	-	3	4.17
- Partner OD	0	-	1	1.39
- Abusive partner/influence of partner	0	-	2	2.78
Positive choice	**0**	**-**	**6**	**8.33**
Not known	**6**	**27.27**	**18**	**25.00**

Appendix J: Breakdowns in Statutory Accommodation Use – Subcategories

	EAT Group (n = 22)		Non-EAT Group (n = 72)	
Factors related to breakdowns in accommodation	**n=9**	**% (/22)**	**n=51**	**% (/72)**
Individual behaviours and preferences (not due to drug or alcohol use or primary mental health issue)	**4**	**18.18**	**16**	**22.22**
- Challenging behaviour	2	9.09	3	4.17
- Not engaged	1	4.55	0	0.00
- Does not want the stress of maintaining accommodation	0	-	1	1.39
- Difficulties adjusting – misses the street lifestyle	0	0.00	2	2.78
- Inflexibility	0	-	2	2.78
- Dislikes the environment (e.g. too chaotic)	1	4.55	4	5.56
- Unable to maintain	0	-	2	2.78
- Does not like the rules	0	-	1	1.39
- Feels not deserving of accommodation	0	-	1	1.39
Drug or alcohol use or mental health difficulties	**4**	**18.18**	**35**	**48.61**
Related to others	**1**	**4.55**	**0**	-
- Flat taken over by others	1	4.55	-	-

Factors related to declining accommodation	**n=11**	**% (/22)**	**n=19**	**% (/72)**
Drug or alcohol use or mental health difficulties	**2**	**9.09**	**6**	**8.33**
- Drug or alcohol use	1	4.55	3	4.17
- Mental health difficulties	1	4.55	3	4.17
Individual behaviours and preferences (not due to drug or alcohol use or primary mental health issue)	**9**	**40.91**	**12**	**16.67**
- Not engaged	5	22.73	2	2.78
- Inflexibility	2	9.09	3	4.17
- Dislikes the environment (e.g. too chaotic)	2	9.09	1	1.39
- Fear of change	0	-	1	1.39
- Lifestyle choice	0	-	4	5.56
- Feels undeserving	0	-	1	1.39
Prison	**8**	**36.36**	**28**	**38.89**
- Prison stay/s – due to conviction	6	27.27	26	36.11
- Prison stay/s – failure to comply with probation requirements	2	9.09	2	2.78
Sectioned	**4**	**18.18**	**9**	**12.5**
- Sectioned but released on tribunal (no discernible mental health difficulties)	2	9.09	2	2.78
- Sectioned appropriately	2	9.09	7	9.72

Appendix K: Social Network – Nature of Relationship Subcategories

	EAT Group (n = 22)		Non-EAT Group (n = 72)	
	n	**% (/22)**	**n**	**% (/72)**
Current partner	**3**	**13.64**	**18**	**25.00**
- Violent to partner	1	4.55	2	2.78
- Violence from partner	0	-	3	4.17
- Violence to and from partner	0	-	2	2.78
- Co-dependent	0	-	2	2.78
- Exploited/Taken advantage of	1	4.55	0	-
- Unstable	1	4.55	2	2.78
- Reciprocal	0	-	6	8.33
- Not known	0	-	1	1.39
Peer relationships	**11**	**50.00**	**57**	**79.17**
- Financially exploited	3	13.64	1	1.39
- Sexually exploited	1	4.55	0	-
- Superficial	3	13.64	2	2.78
- Associates/acquaintances only	2	9.09	35	48.61
- Reciprocal relationships	2	9.09	19	26.39
Family	**4**	**18.18**	**37**	**51.39**
Lack of reciprocal relationships	**16**	**72.73**	**14**	**19.44**
- No relationships	10	45.45	11	15.28
- Sexually exploited (partner or peers)	1	4.55	0	-
- Financially exploited (partner or peers)	3	13.64	2	2.78
- Superficial (peers)	2	9.09	1	1.39