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ORIGINAL ARTICLE

Susceptibility for criminal facilitation in social housing: a psychological perspective

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Abstract

In criminal networks, facilitators seem to play a subordinate role in terms of low financial profit and high risk of being identified in police investigations. Their role is hypothesized to be explained by factors related to poverty or, broadly stated, deprivation. This study explores these factors in a social housing context. Through standardized interviews with employees of social housing institutions, factors distinguishing between facilitators and non-facilitators were identified through univariate and network analyses. Drug use, unemployability, stress, one-person household, and high crime rate neighborhood discriminated most. Financial problems, deviant social relations, impulsivity, social isolation, and low self-esteem also appeared to be relevant. The conclusion that deprivation-related vulnerabilities might increase the risk of becoming a facilitator provides leads for future interventions and research.

Keywords Criminal facilitation · Poverty · Low SES · Deprivation · Social housing · Criminal networks

Introduction

Vulnerability in low SES neighborhoods

Vulnerabilities that are associated with living in poverty and low SES contexts are not restricted to monetary worries (Lever et al. 2005), but instead comprise deprivation of various natures (Callan et al. 1993), and involve increased risk for physical and mental illness (Freedman and Woods 2013; Wen et al. 2003), criminal victimization (Box et al. 1988), and criminal involvement (Agnew and White 1992; Algren

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et al. 2020; Aseltine et al. 2000; Sharkey et al. 2016; Spano et al. 2006). The associations between deprivation-related stressful life conditions and criminal involvement are in line with the General Strain Theory, arguing that the probability to engage in deviant or criminal behavior rapidly increases with more experienced strain and frustration (Agnew and White 1992). From a psychological framework, it is hypothesized that these relations might be explained by attentional biases, increased impulsivity, risk taking, short-term reward sensitivity, decreased cognitive abilities, and self-esteem (Sharkey and Elwert 2011; Roos et al. 2017; Duclos et al. 2013; Shah et al. 2012; Mani et al. 2013; Lever et al. 2005). At the neighborhood level, limited access to (mental) health care (Goosby 2007), and group-related mechanisms of witnessing crime, conformism to the nature of social interactions, and criminal norms might contribute to the relationship between deprivation and criminal involvement (Piil and Christian 2014; Moule et al. 2019; Schroeder et al. 2014; Fehr and Falk 2002; Sun et al. 2004).

Social housing institutions

Governments across western Europe and the United States consider themselves responsible for the provision of housing for low-income groups. Although the size and structure of the responsible social housing institutions differ substantially between countries, and a serious decline in governmental involvement has generally taken place over the last decades, the social housing institutions are still predominantly subsidized by governments and have a social task, including combating crime and deterioration (Boelhouwer 1999; Van Weesep and Priemus 1999; Nguyen et al. 2012). The described susceptibility to criminal involvement and victimization in low-income neighborhoods holds for both private and social housing, and is emphatically not specific for social housing (Santiago et al. 2003). However, the susceptibility of social tenants is a particularly relevant issue for social housing institutions because of their scale, their social responsibility, and their economic interest.

Criminal networks

Increasing international concerns about crime rates in social estates ask for more insight in the structure of criminal networks and their (apparent) preference for facilitators in social housing contexts (e.g., Whitehead and Scanlon 2007). For example, in the Netherlands, an increasing number of social dwellings is vacated after the discovery of marihuana plantations (Poort 2020). Tenants of dwellings used as production sites are regarded as a distinctive and specific type of criminal facilitators: although their contribution to the criminal business chain is indispensable, they are relatively easy to replace. They are generally the first to be identified in police investigations and encountered in drug production sites (Malm et al. 2008; Duijn et al. 2014; Spapens 2010). Yet, they are not the most central persons in criminal networks. The most central persons have more extended networks and knowledge, larger financial interests and benefits, and tend to be less frequently identified in police investigations, because of their geographical and administrative distance to

the criminal site (Malm et al. 2008). Considering the relative high risk (with serious legal, financial, and practical consequences) and rather low rewards for the tenants who serve as criminal facilitators, the question arises what factors increase the vulnerability to becoming a facilitator. This study aims to provide more insights in the psychological and contextual factors associated with the specific type of facilitator mainly (or only) playing a role in the provision of a room or entire dwelling in a social housing accommodation for criminal purposes.

Factors associated with criminal involvement

Empirical studies on factors associated with criminal facilitation in this specific context are, to our knowledge, still lacking. Criminal involvement in a broader sense has extensively been studied and has been associated with a great variety of cognitive, psychological, behavioral, social, and situational factors. Increased levels of crime, for example, are associated with personal factors such as adolescent age (Loeber and Farrington 2014), male gender (Walsh 2011; Steffensmeier and Allan 1996), intellectual disabilities (Salekin et al. 2010; Hayes et al. 2007), and antisocial behavior (Moffitt 1993; Larrotta-Castillo et al. 2017). Social factors include social isolation (Johnson et al. 2018) and living in a neighborhood with high crime rates. A history of substance use and earlier crime have also been associated with criminal involvement (Amlung et al. 2017; Kluwe-Schiavon et al. 2020; Diekhof et al. 2008). A number of previous studies have investigated potential relevant interactions underlying the susceptibility to engage in criminal activities, such as impulsivity and neighborhood characteristics (Lynam et al. 2000) or social isolation and intellectual disabilities (Wilson and Brewer 1992). However, a more comprehensive understanding in the underlying psychological dynamics stimulating specific types of criminal involvement (e.g., interactions between deprivation, impulsivity, and neighborhood characteristics) is direly called for.

Differentiation in criminal involvement

To gain insight in the risk factors of becoming a facilitator, the first step is to differentiate between criminal roles based on characteristics such as the level of violence and the nature of the rewards. Firstly, the role of a facilitator is typically nonviolent by nature (as opposed to more violent roles within criminal networks). The idea that violent and nonviolent crime are associated with differential risk factors is gaining prominence (Loeber and Farrington 2012; Piquero et al. 2012). Women, for example, tend to use less violence in their criminal behavior than men (Austin and Irwin 2001; Shaw 1994; Collins 2010) and nonviolent crime in adolescents seems to be particularly related to peer deviancy, while violent crime is predominantly related to neurobiological predispositions and childhood and parenting factors (Kalvin and Bierman 2017; Lynam et al. 2002).

Secondly, this type of facilitation is hypothesized to be particularly rewarded by short-term, relatively small monetary, and social reinforcements (e.g., Erickson et al. 2019). In contrast, in other roles within the criminal network, rewards also include

prestige within the criminal network, and long-term benefits (e.g., Matsueda et al. 1992). Similar to criminal behavior in general, a great variety of factors have been identified to play a role. Impulsivity and sensitivity to financial and social rewards have been associated with tendency for substance use (Crane et al. 2018; Amlung et al. 2017; Diekhof et al. 2008), the experience of financial problems (Mullainathan and Shafir 2013), distress (Roos et al. 2017; Richards et al. 2015), low self-esteem (Bynner et al. 1981; Rhodes and Wood 1992; Zellner 1970), and social isolation (Cacioppo and Patrick 2008; Duclos et al. 2013; Otten and Jonas 2013; Twenge et al. 2003), which all appear to be particularly prevalent in high deprivation, low SES contexts. Suggestibility has also been directly associated with low IQ, memory problems, and low SES (McFarlane et al. 2002).

The current study

Summarizing, a variety of factors might, directly or indirectly, be associated with criminal facilitation in relatively deprived environments. In a heterogenous field of research, personal, social, and situational factors have previously, and generally independently, been associated with potential susceptibility for criminal involvement. The current study consequently aims to gain insight in factors that contribute to the risk of becoming a facilitator in a social housing context. We also aim to provide a more comprehensive insight in the underlying psychological mechanisms describing criminal facilitators.

Methods

Participants

The study participants were new tenants at seven different social housing institutions from three western and southern provinces in The Netherlands between 2005 and 2020. Of these institutions, three are located in metropolitan areas (Rotterdam, Amsterdam, and Eindhoven); the other four are located in medium-sized urbanized areas. The data about the tenants were collected by proxy via 17 employees of the social housing institutions. These employees were all closely involved in the process of allocation of a dwelling and met the tenant at least once. Two employees were interviewed collectively about the same tenants. These interviews resulted in data about 25 facilitators, 16 tenants with considerable problems, and 13 controls. Facilitators were defined as "tenants in whose dwelling illegal activities took place, with proven or strong suspicions of other people (possibly criminal networks) taking initiative, taking most financial advantage and executing most tasks (including transportation, coordination, etc.)." The illegal activities comprise mainly marihuana plantations as well as drug/weapon storage or illegal prostitution. The problem group was defined as "tenants with considerable problems, such as excessive nuisance, illegal sublease of the dwelling, or prolonged rent arrears." Importantly, in these cases, there was no suspicion of any form of criminal facilitation and/or the

involvement in a bigger criminal network. Control tenants were defined as "tenants, living at least 6 months in the dwelling without indication for criminal facilitation nor considerable problems." At the start of the interview, the employee was asked to actively recall a tenant who he or she had met in person and who was either a facilitator, a tenant with considerable problems, or a control tenant.

Procedure

Employees of social housing institutions were introduced by their managers and approached by email or telephone to participate in the study. The interview was done by trained professionals who were instructed to maintain openness and non-judgement throughout the interview, that took place through an online video call (Microsoft Teams) and lasted approximately 90 min, with a minimum of 30 and a maximum of 120 min. At the start of the interview, ethical issues were taken into consideration including voluntary participation, the possibility to abort the interview at any time, and anonymity of the tenants. An explanation about the study and its purpose was given, and informed consent was obtained. The privacy of tenants and employees was guaranteed by not registering names, addresses, or personal details. Before and during the interview, participants were actively reminded that it was appropriate to answer questions with "I don't know."

Starting the interview, the employee was asked to actively recall a tenant who he or she had met in person and who was either a facilitator, a tenant with other considerable problems, or a control tenant. The group membership of each tenant was checked and elaborated upon according to the criteria mentioned above. The actual interview consisted of open questions about social background, former residence, and in the case of facilitators, about the discovery of the illegal activity or considerable problems. This was followed by 58 questions on a five-point Likert scale, with answers ranging from 1 (not at all applicable) to 5 (very applicable). Employees generally gave substantial extra information on the tenant; this was noted with particular attention for the defined constructs.

Measurements

A total of 16 constructs were selected for the quantitative analysis, based on scientific literature on risk factors for criminal involvement (directly) or through the mechanism of heightened sensitivity for short-term rewards (indirectly), as described above. These constructs included three dichotomous factors: gender (male or female), adolescence (younger or older than 25), and household composition (alone or with others). Five constructs were based on a single Likert-scale question: criminal neighborhood, criminal past, unemployment, experience of negative life events, and experience of chronic stress. Eight constructs were defined as a mean score of a set of questions regarding low self-esteem, impulsivity, unconventional social behavior, intellectual disability, social isolation, drug problems, deviant social relations, and financial problems. For example, questions about intellectual disability included "Was not able to do groceries or organize the household by himself/

herself," and "Had difficulties reading, writing, solving simple calculations and telling time." The questions on low self-esteem, impulsivity, and unconventional social behavior were all based on specific observable behaviors during the intake, such as "Apologized often," "Interrupted others," or "Showed rude or unsociable behavior, such as cursing." The structured interview is available upon request. The Cronbach's alphas for the seven constructs varied from 0.6 (satisfactory: deviant social relations), to 0.9 (strong: drug problems) (Gliem and Gliem 2003).

Some constructs were separately scored based on additional information explicitly mentioned by the employee. In those cases, the construct score was manually adapted to the maximum score (that is, 5). This holds for intellectual disability, life events, drug problems, financial problems, and social isolation. The absence of financial problems, intellectual disability, and drug problems was also explicitly mentioned a few times. In these cases, the construct score was manually adapted to the minimum score (that is, 1).

Statistical methods

Descriptive statistics were used to describe the observed data and to explore missing values. Missing values in the item scores resulted in missing scale scores. The missing data were assumed to be missing completely at random, accordingly the probability for missing data depends on other measured variables but not to the missing data itself (Rubin 1987). To contend with missing data, the construct scores were imputed with multiple imputation prior to the analyses. This was performed with package "mice" using predictive mean matching method to generate 100 imputed datasets using 25 iterations (van Buuren and Groothuis-Oudshoorn 2011). Multiple imputation contends with missing complete at random data and ensures unbiased results while restoring loss of power due to missing data (van Buuren 2020). The relation between the individual constructs and the dependent group variable was univariately analyzed in two sets of logistic regression analyses. Analyses were once performed with the variable facilitators versus controls as dependent variable, and once with the variable facilitators versus tenants with considerable problems as dependent variable. A gaussian graphical model further explored the relations between the factors for the facilitators. This model is an undirected network where the connections between the factors are the partial correlations. The main connections were selected with a stepwise model selection using a graphical LASSO algorithm (Epskamp et al. 2018). Evaluating the centrality measures helped to interpret the graphical networks. The strength shows how strong a factor is directly connected; the closeness shows how strong a factor is indirectly connected; and the betweenness shows how well factors connect to others. Since the network model was used for illustrative purposes, the model was only obtained for the first imputed dataset. As a sensitivity analysis, models to each imputed dataset were compared. All statistical analyses were performed in R statistical software (R Core Team 2020), and the network analyses were performed with the "bootnet" package (Epskamp et al. 2018).

Results

Descriptives

In Table 1, the descriptive statistics for factor are displayed per group. The differences between the facilitators and tenants with other problems appear to be small, whereas controls tend to score lower on the majority of the constructs.

Univariate analysis

Table 2 shows the odds ratio and corresponding 95% confidence interval for the univariate analyses for facilitators versus controls. These results show that stress, criminal neighborhood, drug problems, unemployment, and one-person household significantly relate to being a facilitator versus a control. Accordingly, when a tenant scores one unit higher on stress, the odds for being a facilitator are 2.5 times larger than for being a control. The odds for criminal neighborhood and unemployment are similar, i.e., 2.1 and 2.6, respectively. For drug problems, the odds are very large: 53.6. It is important to note, however, that the confidence interval is extremely wide

Table 1 Descriptive percentage or mean and standard deviation for the factors for the control group, facilitators, and tenants with other problems

	Controls			Facilitators			Considerable problems		
	n[a]	Mean	SD[b]	n[a]	Mean	SD[b]	n[a]	Mean	SD[b]
Male[c]	13	62%		25	72%		16	63%	
Adolescence[c]	13	8%		25	28%		16	13%	
One-person household[c]	13	31%		25	76%		15	73%	
Intellectual disability	7	1.21	0.39	10	3.15	1.97	9	2.09	1.32
Impulsivity	11	1.55	0.62	9	2.67	1.24	10	2.63	0.85
Stress	13	2.31	1.38	20	3.85	1.09	14	3.14	1.03
Unconventional social behavior	4	1.32	0.38	9	2.62	1.12	10	2.91	1.00
Social isolation	6	1.87	0.60	13	3.45	1.34	9	2.96	1.37
Low self-esteem	7	1.81	0.66	16	2.85	1.09	10	2.50	0.74
High rate crime neighborhood	10	2.50	1.35	22	3.73	1.24	16	2.91	1.27
Deviant social relations	5	1.50	0.50	18	4.11	0.96	10	3.60	1.35
Financial problems	4	2.42	0.14	5	3.08	1.45	6	2.85	0.88
Drug problems	12	1.06	0.15	16	2.69	1.53	13	2.81	1.83
Unemployment	9	1.89	1.54	20	4.05	1.28	13	3.77	1.30
Criminal past	4	1.50	0.58	10	3.30	1.42	6	3.83	0.98
Life events	6	4.00	1.10	16	4.63	0.81	10	4.75	0.54

[a]Sample size (n) does not always correspond with total group size due to missing data

[b]Standard deviation

[c]Percentage instead of mean and standard deviation, because variable is dichotomous

Table 2 Odds ratios and 95% confidence limits for the univariate logistic regression analyses with facilitator versus controls as dependent variable

	Odds ratio	95% Confidence interval	
		Lower limit	Upper limit
Intellectual disability	2.16	0.59	7.97
Impulsivity	2.52	0.88	7.17
Stress**	2.52	1.32	4.82
Unconventional social behavior	7.76	0.23	266.63
Social isolation	3.26	0.91	11.72
Low self-esteem	3.28	0.97	11.15
High crime rate neighborhood*	2.17	1.16	4.05
Deviant social relations[a]			
Financial problems	2.48	0.33	18.49
Drug problems*	53.66	1.29	2238.99
Unemployment**	2.64	1.44	4.81
Life events	2.28	0.79	6.54
Criminal past	1.76	0.46	6.73
One-person household*	7.13	1.60	31.72
Male	1.61	0.39	6.64
Adolescence	4.67	0.51	42.92

*Significant with p value < 0.05

**Significant with p value < 0.01

[a]The logistic regression for deviant social relations cannot be estimated due to perfect separation

causing the estimate of 53.6 to hold significant uncertainty and should be interpreted with caution. Furthermore, it can be observed that the constructs of social isolation, impulsivity, and low self-esteem showed a trend relation with being a facilitator. The analysis for the facilitators versus tenants with considerable problems did not show any significant relation. Stress and high crime rate neighborhood showed a marginal positive relation with a facilitator versus a tenant with problems (stress: OR 1.89, $CI_{95\%}$ 0.95–3.74; high crime rate neighborhood: OR 1.65, $CI_{95\%}$ 0.96–2.84).

Network analysis

Figure 1a shows the gaussian graphical network for the facilitators with positive correlations in green and negative correlations in red. The thickness of the lines indicates the strength of the correlation. In Fig. 1b, the same network is shown, but here connections are selected with the stepwise graphical LASSO algorithm, resulting in a significantly less dense network, while highlighting the strongest relations. Financial problems, drug problems, deviant social relations, and high crime rate neighborhood appeared to be the factors that were, within this network, strongest related to the overall outcome defined as facilitator. Less prominent but significant constructs

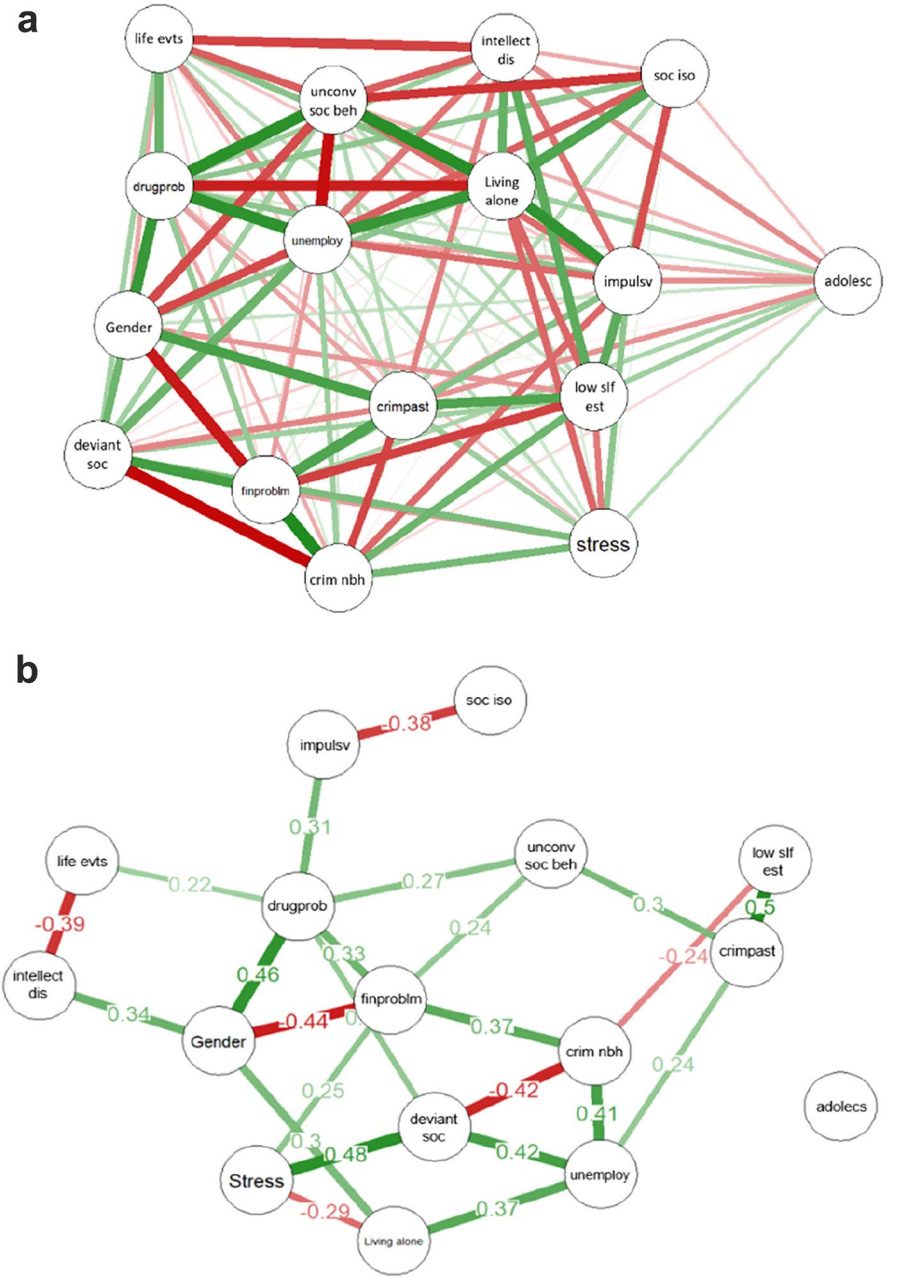

Fig. 1 **a** and **b** Partial correlation network for the facilitators, confirming the central role of drug problems and high crime rate neighborhood, financial problems and deviant social relations as moderators on becoming a facilitator in the context of social housing

appeared to be gender and unemployment, as confirmed by the centrality plots (see Fig. 2).

Sensitivity analysis

Similar to the sensitivity analyses, the univariate logistic regression models were applied as a complete case analysis. The same factors were significantly associated to the odds of identifying facilitators versus controls; similar results were found for the analysis with facilitators versus tenants with considerable problems.

Conclusions

Summary

Earlier studies have associated multiple factors with criminal involvement. Yet, specific types of criminal facilitation directly or indirectly related to deprivation, low SES neighborhoods and social housing have, to the best of our knowledge, not been investigated before. In the present study, we explored the contribution of a variety of constructs to the risk of becoming a facilitator in a social housing context. Based on the assumption that individuals who are sensitive to *short-term, social* and *financial* rewards are particularly vulnerable to become a facilitator, different factors were defined such as financial problems, (Mullainathan and Shafir 2013), experienced

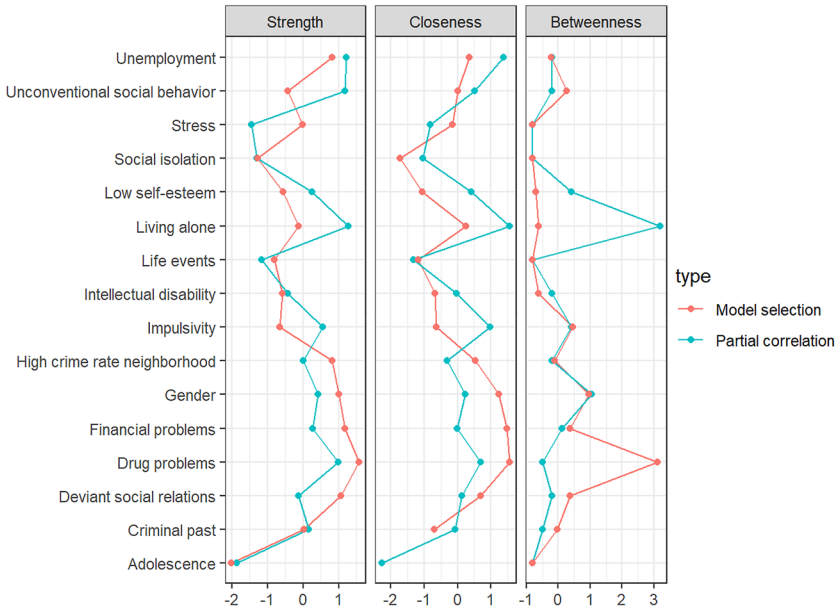

Fig. 2 Centrality plots capturing the relative contribution of constructs within the facilitators' subsample

stress (Roos et al. 2017; Richards et al. 2015), and social isolation (Cacioppo and Patrick 2008), which are all directly related to poverty and other forms of deprivation (Mullainathan and Shafir 2013).

In the univariate analyses of the present study, drug use, unemployability, reported experienced stress, one-person household, and high crime rate neighborhood appeared to be the main discriminatory factors between (confirmed or strongly suspected) facilitators and control tenants in social housing. To provide a more comprehensive insight in the underlying psychological mechanisms, a network analysis was executed, and from this multivariate analysis over the facilitators' subsample, drug use and high crime rate neighborhood similarly appeared as significant factors. Additionally, the previously nonsignificant factor financial problems and deviant social relations emerged as relevant factors modifying the effect of at least some of the identified univariate factors (see Fig. 1b).

Finally, from the univariate analyses, the three psychological characteristics, impulsivity, low self-esteem, and social isolation, demonstrated a trend toward a significant contribution in becoming a facilitator. Although the current data do not provide convincing evidence for these factors, they are theoretically related (through the mechanisms of sensitivity for short-term financial and social rewards) and more research incorporating these factors is suggested.

Limitations

Interestingly, the relative subtle psychological factors impulsivity, low-self-esteem, and social isolation, contained the most significant percentages of missing data in the present data set: 4–69% missing. This contrasts with objective information that was already part of the standard rental process, such as gender, age, household size, and monthly income: 0–4% missing. This might be considered a missed opportunity since these psychological characteristics could be directly observed by a trained professional, for example, in a social housing institution. Additionally, as scores of each subject relied on a single interview at one point in time, no information was obtained about the inter-rater nor test–retest reliability of the interview format. Future studies with the current interview format could be strengthened by design adaptations to gain more insight in its reliability.

With regard to missing data, it is relevant to mention that specific objective information was explicitly excluded from the rental process for reasons of privacy sensitivity, such as debt problems, criminal past or being previously excluded from a social dwelling. From a theoretical perspective, the high amount of missings (24–63%) might be considered an omission because they might be relevant to identify vulnerable individuals. Due to ethical and privacy considerations and/or laws and guidelines, assessment that is necessary to provide adequate support and care is obstructed.

To reliably cope with the percentages of missing data, suitable methodology was applied. Multiple imputation results in unbiased estimates when missing data are systematically related to other variables. By imputing the missing data multiple times, missing data uncertainty is taken into account while restoring

the power lost by missing data (van Buuren 2020). Optimally, the missing items scores are handled by imputing the item scores prior to computing the construct scores (Eekhout et al. 2014). Nevertheless, even with handling the missing values, the sample size remains small, which can hamper finding significant associations due to lack of power. In the current explorative study, therefore, not all data challenges could be accommodated and/or solved.

Conclusion

The current study set out to investigate the psychological mechanisms behind the involvement of individuals in criminal activities in the context of social housing, in particular as facilitators. This topic has received little or no attention in scientific research. Despite the limitations due to the small sample size and methodological challenges, the results of the present study support the idea that specific individuals might be more vulnerable to become a facilitator than others.

Overall, factors that are related to living in disadvantageous circumstances, directly or indirectly related to deprivation and stress, seem to contribute to the risk of becoming a facilitator, such as unemployment and high rate crime neighborhood (from the univariate analyses), and financial problems and deviant social relations (from the network analysis). For some psychological characteristics, such as impulsivity, social isolation, and low self-esteem, these effects are not convincingly found in the current data; however, a trend was observed. Importantly, the number of missing data was particularly high for these constructs. By training professionals in the rental process, it might nevertheless be possible to adequately assess such constructs, even without necessarily violating ethical and/or privacy guidelines and standards. Based on the current findings, it is not unreasonable to hypothesize that they play a significant role in the vulnerability in becoming a facilitator and provide clear perspectives for (social) care and support to mitigate potential harmful outcomes for the individuals involved.

This exploratory study confirms the perspective that there is a specific group of vulnerable individuals who get involved in criminal activities without any significant financial or other benefits. Their problems might even be cumulating into a more or less permanent vicious circle of strain and temporary relief. This perspective provides leads for future interventions, aimed at social support and care, and future research, to further examine the psychological mechanisms behind criminal facilitators. Specifically, a prognostic study design would be suitable to overcome many of the described methodological obstacles, thereby transcend the level of an exploration. Finally, in line with the present study, more awareness about the distinction in criminal roles, in the contexts of both policy and scientific research, is advocated to recognize vulnerable individuals for criminal facilitation in an earlier stage.

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Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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