Housing Situation and Occupation in relation to Problematic Drug Use Risk Behaviour

Name: Esmee de With
Student number: 5656982
Email address: e.with@students.uu.nl

University: Utrecht University
Master: Youth Studies
Course: Master thesis
Supervisor: J. van Ditzhuijzen

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Abstract

Problem drug use (PDU) often results in risk behaviour, which is associated with decreased physical and mental health, and increased susceptibility for infectious diseases. Contextual factors appear to be important determinants in this relationship. The purpose of this study was to investigate contextual protective and risk factors by measuring housing situation and occupation in relation to three components of PDU risk behaviour (actively injecting drugs, poly injection, and needle sharing) among young problem drug users. A subsample (n=428) of a cross-sectional study was used. Participants were aged between 17-25 and were from Prague, Bratislava, Turin and Rome. Logistic regressions suggested that being a student (OR=.27) or engaging in undeclared work (OR=.41) negatively predicted active injection drug use. Having an unstable housing situation positively predicted poly injection (OR=4.09), as well as living with parents (OR=5.97), partner (OR=4.09) or friends (OR=2.11) compared to living alone. Being a student negatively predicted poly injection drug use (OR=.35). Being employed (OR=.45) or engaging in undeclared work (OR=.49) negatively predicted needle sharing. In conclusion, this study showed that housing and occupation are important factors associated with PDU risk behaviour. Therefore, interventions aimed at housing stability, independent housing opportunities and occupation, could decrease PDU risk behaviour.

Key words: Emerging adults, problem drug use, co-residence, housing stability, occupation, PDU risk behaviour.

Samenvatting

Probleemdruggebruik resulteert vaak in risicogedrag, wat geassocieerd wordt met een afname van fysieke en mentale gezondheid, en verhoogde kans op overdraagbare ziekten. Contextuele factoren blijken belangrijk in deze relatie. Deze studie onderzocht contextuele beschermende en risicofactoren door het analyseren van woon- en werksituatie in relatie tot drie componenten van risicogedrag op gebied van probleemdruggebruik (actief injectie druggebruik, poly injectie druggebruik en het delen van naalden). Een deelsteekproef (n=428) van een cross-sectionele studie is gebruikt. Participanten waren tussen de 17 en 25 jaar en woonden in Praag, Bratislava, Turijn of Rome. Logistische regressies suggereerden dat student zijn (OR=.27) en zwartwerken (OR=.41) negatief geassocieerd zijn met actief injectiedrug gebruik. Het hebben van een onstabiele woonsituatie was positief gerelateerd aan poly injectie druggebruik (OR=4.09), net als samenwonen met ouders (OR=5.97), partner (OR=4.09) of vrienden (OR=2.11) in vergelijking met alleen wonen. Student zijn was negatief gerelateerd aan poly injectie druggebruik (OR=.35). Het hebben van werk (OR=.45) of zwartwerken (OR=.49) was negatief gerelateerd aan het delen van naalden. Deze studie wijst uit dat woon- en werksituatie belangrijke factoren zijn in relatie tot risicogedrag probleem. Interventies die zich richten op stabiliteit in woonsituatie, zelfstandig wonen en het hebben van werk of studie, zouden risicogedrag kunnen verminderen.

Kernwoorden: Jongvolwassenen, probleem druggebruikers, woonsituatie, werksituatie, PDU risicogedrag.

Introduction

Problem drug use (PDU) is often associated with risk behaviours, such as high frequency of drug use, using multiple combined drugs (poly drug use), and sharing injection equipment (Gleghorn, Marx, Vittinghoff & Katz, 1998; Grinman et al., 2010; Mathers et al., 2008; Sears, Guydish, Weltzien & Lum, 2001). These behaviours are accountable for physical harms, such as transmission of HIV and hepatitis, overdose and vein damage (Gleghorn et al., 1998; Mathers et al., 2008; Neaigus et al., 2013). Furthermore, illicit drug use is associated with decreased mental and physical health (Briggs et al., 2009; Grinman et al., 2010). Public health discourses, explaining drug related harm issues, have seen a shift in focus from individual factors to contextual factors (Rhodes, 2002). It has been suggested that contextual factors, such as being homeless or unemployed, could be important determinants of PDU risk behaviour (Rhodes, 2002). Previous research has shown that housing stability and employment are negatively associated with PDU risk behaviour (Aidala, Cross, Stall, Harre & Sumartojo, 2005; Cheng et al., 2013; Cheng, Wood, Nguyen, Kerr & DeBeck, 2014; Koo, Chitwood & Sanchez, 2007; Sterling et al., 2001). As emerging adults are experiencing a transitional phase in life, in which they are not settled yet (Arundel & Ronald, 2015; Levinson, 1986), it is of particular importance to understand these relationships for emerging adults. This study addressed whether housing situation and occupation were associated with PDU risk behaviour (i.e., active injection drug use, poly injection drug use, and needle sharing) among young problem drug users. Different components of occupation and housing situation were taken into account. The role of housing situation, occupation, and the interaction between these two factors, was examined to determine the relative contribution of these factors to PDU risk behaviour.

Occupation and PDU risk behaviour

Emerging adults are in the transition from high school to higher education or starting their career. This phase of life is a critical period for the development of professional skills and future life structure (Levinson, 1986; Skorikov & Vondracek, 2007). Early adulthood is a life stage with an abundance of opportunities for development, but is also a life stage in which individuals are prone to engaging in risky behaviours, such as drug abuse (Arnett & Hughes, 2012; Chen & Kandel, 1995; Sweeting & West, 2008). Therefore, it seems plausible that occupational status is associated with components of PDU risk behaviour, such as active injection drugs use, poly injection drug use, and needle sharing. Theoretical evidence, as well as empirical evidence, shows that not having an occupation can be a risk factor for PDU risk

behaviour, while having an occupation could be perceived as a protective factor (Cheng et al., 2014; Henkel, 2011; Huang, Evans, Hara, Weiss & Hser, 2011; Koo et al., 2007; Luchenski et al., 2015; Richardson, Wood, Li & Kerr, 2010; Sterling et al., 2001).

A theory supporting the influence of occupation on PDU risk behaviour is the capital theory (Bourdieu, 1986). This theory distinguishes several forms of capital, contributing to the position of an individual in society. Cultural capital refers to the knowledge, skills and education of an individual. Social capital refers to the individual's relationships, network and group membership. Lastly, economic capital refers to economic resources (Bourdieu, 1986). High levels of capital result in stronger positioning in society. Occupation, usually described as legal employment, contains all forms of capital and is therefore an important key in obtaining a strong societal position (Bourdieu, 1986). Due to gained capital through employment, the likelihood to engage in behaviour that negatively interferes with health and success, decreases.

Empirical research has shown that employment among problem drug users is related to higher levels of cultural, social and economic capital resources (Koo et al., 2007; Sterling et al., 2001). Employed problem drug users are more likely to have a sufficient income level and social support. Moreover, being employed increases the chance to retransition towards a conventional lifestyle by offering structure and reducing time to be involved in risk behaviours (Koo et al., 2007). The protective effect of employment on PDU risk behaviour among problem drug users results in lower levels of injection drug use and sharing injection equipment (Arria et al., 2013; Koo et al., 2007; Luchenski et al., 2015; Richardson et al., 2010; Sterling et al., 2001). Furthermore, being employed is negatively related to increases of drug use when becoming homeless (Cheng et al., 2014). With regard to unemployed problem drug users, there is strong evidence that unemployment is positively related to hard drug abuse and PDU risk behaviour (Henkel, 2011; Huang et al., 2011; Richardson et al., 2010). Unemployed people are more likely to use different types of hard drugs, use more frequently and initiate their drug use earlier (Huang et al., 2011).

In contrast to regular legal employment, undeclared employment (mainly sex work and drug dealing) is seen as a risk factor for more severe drug use patterns (DeBeck et al., 2007). Undeclared employment is usually practiced to afford illicit drugs. This type of work is therefore positively associated with PDU risk behaviour. Illegal income generation is strongly related to daily heroin injection and daily use of cocaine (DeBeck et al., 2007). In addition, those engaging in illegal income generating were positively associated with greater use of heroin, injection drug use and perceived need of addiction treatment (Luongo et al., 2017). This indicates that not all forms of occupation are in the same way associated with

PDU risk behaviour. It is therefore needed to be explicit about which type of occupation is incorporated.

To summarise, the literature suggests that employment is a protective factor, whilst unemployment and engaging in undeclared work seem to be risk factors for PDU risk behaviour. Focussing on occupation, previous research refers mostly to employment, unemployment and undeclared activities. Education as a form of occupation has not been incorporated in previous studies, but this could be highly important, especially among young drug users. Moreover, previous research focuses mainly on adults. Concentrating on early adulthood could be essential for targeting drug dependence. Among life long hard drug users, initiation of drug use is most likely to occur in early adulthood (Sweeting & West, 2008). This implies that early adulthood is a crucial phase in the development of severe drug dependence. Therefore, this study concentrated on young problem drug users, and included education as a form of occupation.

Housing situation and PDU risk behaviour

It seems plausible that the housing situation of a young problem drug user influences PDU risk behaviour. Emerging adults usually are in transition from leaving the parental house to living partially independent (shared living) or independently (Arundel & Ronald, 2015; Levinson, 1986). This transition is not a clear-cut process, as it often increases the complexity and instability in the life of an emerging adult (Arundel & Ronald, 2015; Levinson, 1986). Housing instability increases the likelihood to come in contact with drugs, which heightens the chance of PDU risk behaviour, including more frequent drug use, poly drug use and sharing of injection equipment (Coady et al., 2007; Linton, Celentano, Kirk & Mehta, 2013; Milby, Schumacher, Wallace, Freedman & Vuchinich, 2005; Phillips et al., 2015; Zivanovic et al., 2015).

The relationship between housing (in)stability and PDU behaviour can be explained by focussing on context-dependency of risk behaviour. The level of PDU risk behaviour is dependent of environmental factors, such as housing situation (Rhodes, 2002). Unstably housed people are under constant influence of stress (Sinha, 2001; Wong & Piliavin, 2001), which reinforces their motivation to find relief from stress temporarily by engaging in risk behaviour, such as poly drug use (Fishbein et al., 2006; Sinha, 2001). The broader context of an individual causes the mechanisms, which reinforce risk behaviour (Rhodes, 2002). Therefore, further understanding is needed on risk-environments, which will in turn create enabling environments for harm reduction (Rhodes, 2002).

Empirical research provides evidence of this theory by measuring the impact of change in one's housing situation. An increase in frequency of drug use is found after becoming homeless (Aidala et al., 2005; Cheng et al., 2013). Moreover, among unstably housed people it seems to be more acceptable to share injection equipment, as it is related to increased rates of needle sharing (Coady et al., 2007; Corneil et al., 2006; Des Jarlais, Braine & Friedmann, 2006; Neaigus et al., 2013; Topp, Iversen, Baldry & Maher, 2012). A significant reduction in drug use and needle sharing for people whose housing situation improved over time has been found, in comparison to people whose housing situation did not change (Aidala et al., 2005; Briggs et al., 2009). Stable housing emerges as a key structural factor in creating enabling environments for health (Briggs et al., 2009). This could be as a result of accumulation of capital (Bourdieu, 1986). The increase of capital due to change in housing situation leads to a habitus in which drug use is less common and broadens opportunities to succeed in life. Due to gained stability, the likelihood to engage in behaviour that interferes with health and success decreases. This statement is in accordance with Maslow's hierarchy of needs (Maslow, 1943), which suggests that people are primarily motivated to fulfil basic needs as safety and security before attempting to fulfil needs higher up in the hierarchy. Unstably housed people are striving for physical survival and are therefore less likely to pursue a successful life, including overcoming drug dependency.

Previous research concentrated mainly on the distinction between homeless and housed or unstably housed and stably housed. Further detail and distinction of different types of housing has not been investigated previously. However, drug use patterns could be influenced by whom a person is living with. For instance, there are strong indications that peers reinforce each other's drug use patterns. Social selection and social influence processes lead to similarities among friends and other peers (Cohen, 1977). Research shows that young problem drug users are likely to create a social network in which drug use is common (Chan, Kelly, Carroll & Williams, 2017) and risk behaviour is reinforced within social networks (Friedman et al., 1997; Latkin et al., 1994). On the contrary, parental disapproval and monitoring tend to reduce drug use and PDU risk behaviour (Chan et al., 2017). Currently, research focusing on living situation into further detail has not been undertaken. However, these findings could indicate that living with peers could reinforce engagement in PDU risk behaviour and living with parents could reduce engagement in PDU risk behaviour.

To summarise, research has found strong associations between level of housing stability and PDU risk behaviour. However, more knowledge of associations with different types of housing situation is needed. This knowledge is of particular importance for young adults as their housing status is in transition (Arundel & Ronald, 2015; Levinson, 1986).

Moreover, early adulthood seems to be a crucial phase in the development of severe drug dependency (Sweeting & West, 2008). Therefore, future intervention policy could benefit from more detailed insight in the associations between PDU risk behaviour and housing situation, which could guide policy towards a more specific approach of young problem drug users.

The current study

This study focused on the associations between housing situation and occupation and PDU risk behaviour among emerging adults. The investigated components of PDU risk behaviour included active injection drug use, poly injection drug use, and needle sharing. These components were selected as they have considerable impacts on physical and mental health, and increased susceptibility for infectious diseases (Briggs, 2009; Gleghorn et al., 1998; Mathers et al., 2008; Neaigus et al., 2013). The relationship between different types of housing situation and PDU risk behaviour, as well as the relationship between occupation and PDU risk behaviour were investigated. A broader definition of occupation, which also included education and undeclared work, was used. This provided further insight into the role that having an occupation may have, rather than only being employed on a legal and regular base.

The current study focused on the following overarching question: Are housing situation and occupation associated with PDU risk behaviour (i.e., actively injecting drugs, poly injection, and needle sharing)? The research questions and hypotheses were the following:

Q1: Is housing situation associated with PDU risk behaviour?

H1: Having an unstable housing situation is positively associated with PDU risk behaviour.

H2: Mainly living with friends or partner is positively associated with PDU risk behaviour, as compared to living alone.

H3: Mainly living with parents is negatively associated with PDU risk behaviour, as compared to living alone.

Q2: Is occupation associated with PDU risk behaviour?

H4: Being a student or being employed is negatively associated with PDU risk behaviour, as compared to being unemployed.

H5: Engaging in undeclared work is associated positively associated with PDU risk behaviour, as compared to being unemployed.

Q3: Are the associations between housing situation and PDU risk behaviour strengthened or weakened by occupation?

H6: Being employed or being a student weakens the positive associations between unstable housing and PDU risk behaviour.

H7: Being employed or being a student weakens the positive associations between living friends or partner and PDU risk behaviour.

H8: Being employed or being a student strengthens the negative associations between living with parents and PDU risk behaviour.

H9: Engaging in undeclared work strengthens the positive associations between unstable housing and PDU risk behaviour.

H10: Engaging in undeclared work strengthens the positive associations between living friends or partner and PDU risk behaviour.

H11: Engaging in undeclared work weakens the negative associations between living with parents and PDU risk behaviour.

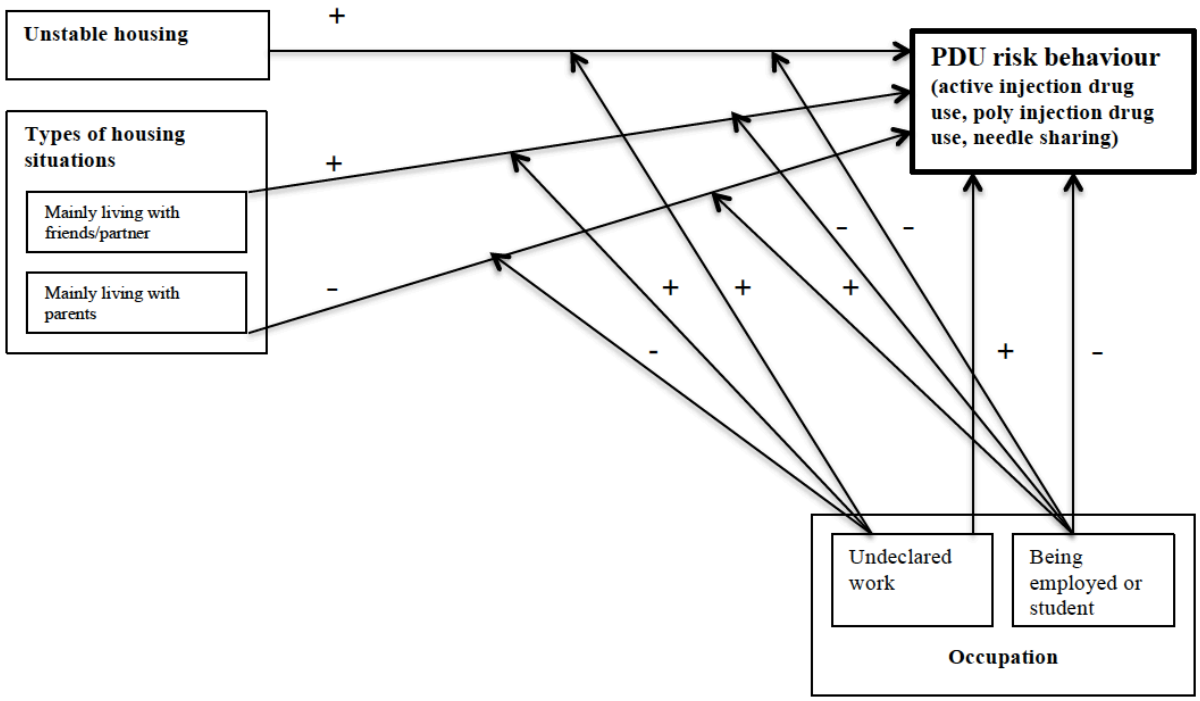

Figure 1. Research model

Methods

Setting

The used data for this study were obtained from the Improving Access to HIV/TB Testing for marginalized groups (Imp.Ac.T.) project, a European pilot project funded by the European commission, Executive Agency for Health and Consumers. The Imp.Ac.T. project provided free rapid HIV and TB tests to problem drug users (PDU's) in street units, drop-in centres and on the streets. The project took place in 2011 in four European cities: Rome, Turin, Bratislava and Prague.

Sample

A total of 4,855 individuals were asked to be interviewed, of which 2,352 individuals participated (response rate 48%). Response rates varied over the four cities: 53% in Rome, 75% in Turin, 45% in Prague, and 27% in Bratislava. Of all the interviewed persons, 2,191 were (problem) drug users. The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) defined problem drug use as 'injecting drug use or long duration or regular use of opioids, cocaine and/or amphetamines'. This study focussed on young problem drug users, which means that a subsample of participants between 17 and 25 years was used in the analyses (M_{age}=22.4, SD=2.3). This led to a total of 428 participants, of which 242 (57.2%) were men and 180 (42.6%) were women. Of all participants, 108 (25.2%) were from Rome, 42 (9.8%) participants were from Turin, 228 (53.3%) were from Prague and 50 (11.7%) participants were from Bratislava.

Procedure

The Imp.Ac.T. project was a combination of a street intervention and data collection. All individuals, who made use of the services of the Imp.Ac.T. project, were asked to be interviewed. Interviews were performed by social workers before HIV and TB tests were administered. The participants gave informed consent before the interview and the participants were told they could stop the interview at any time. The questions of the questionnaire were read aloud by the social worker. The answers given by the participants were filled in by the social worker.

Measures

Housing situation. Housing situation was operationalised in two ways. First, the housing (in)stability of the participant was measured. Stable accommodation was defined as owning, renting or staying with family or friends for unrestricted time. Unstable accommodation was defined as living at a temporary address, or living on the streets. Participants were asked what housing situation described their situation best (1 = stable, 2 = unstable, 3 = in institution, 4 = other). The answer category 'in institution' was recoded into 'unstable'. If 'other' was the given answer, the specification of the answer was checked to determine whether it fitted the category 'stable' or 'unstable'. Second, participants were asked whom they live with (mostly) at the moment (1 = alone, 2 = with parents, 3 = with child(ren) alone, 4 = with partner, 5 = with partner and child(ren), 6 = with friends, 7 = other). The answer categories 'alone', 'with parents', 'with friends' and 'with partner' were included in the analyses to measure their associations with PDU risk behaviour. The answer category 'alone' was used as the reference category. The answer categories 'with child(ren) alone' were recoded into 'alone' and 'with partner and child(ren)' was recoded into 'with partner'. The answer category 'other' was recoded into one of the remaining categories if possible, based on the given specification. All cases that did not fit in any category were recoded into 'other'.

Occupation. Participants were asked what their current job status was (1 = regular employment, 2 = pupil/student, 3 = economically inactive, 4 = unemployed, 5 = other). The answer categories 'regular employment', 'pupil/student', 'unemployed' and 'undeclared work' were included in this research to measure their associations with PDU risk behaviour. The answer category 'unemployed' was used as the reference category. The answer category 'economically inactive' was recoded into 'unemployed', and 'other' was recoded into one of the remaining categories, based on the given specification.

Problem drug use risk behaviour. PDU risk behaviour was measured in this study by using three indicators, which were based on definitions of the EMCDDA. The first component was 'active injection drug use'. Participants were asked whether they had injected in the last four weeks (0 = no, 1 = yes), which was perceived as active injection drug use. The second component was 'needle sharing'. If participants reported to ever have been injecting drugs, they were asked whether they had ever shared needles (0 = no, 1 = yes). If the answer was positive, participants were asked with what frequency they had shared needles in the last year (1 = never, 2 = occasionally, 3 = about half the time, 4 = mostly, 5 = always). The answer 'never' was combined with the missing values, as they were generated by answering 'no' in the previous question, which meant no needle sharing had occurred the last year. The

other frequencies were combined into one answer category, defined as 'yes'. The last component of PDU risk behaviour measured in this study was 'poly injection drug use'. This was measured by asking which type(s) of drug(s) was/were injected in the last four weeks. When participants injected more types of drugs in this period, a participant was considered to be a poly injection drug user (0 = no, 1 = yes).

Covariates. In addition, the results were controlled for the following variables: level of education, city and age. The categories of 'level of education' were 'no education', 'primary school', 'secondary school' and 'higher education'. The variable 'city' indicated city of residence of the participants (Rome, Turin, Prague or Bratislava). The variable 'age' measured the age of the participants at the time of the interview.

Data analysis

SPSS version 24 was used to analyse the data. In the first stage of the analysis, the variables 'housing', 'occupation' and the different components of PDU risk behaviour were checked on missing values. The percentage of missing data varied from 0% to 5%. Due to the low rates of missing data, imputation was not necessary. Also, the data were checked on multi-collinearity. The VIF scores were between 1.02 and 1.40, which indicated a certain level of correlation, but is considered to be acceptable (Field, 2013). In the second stage of the analysis, descriptive statistics were produced. In the third stage of the analysis, logistic regression analyses were used to test the hypotheses. First, the effects of housing situation and occupation on the three components of PDU risk behaviour were tested. These analyses contained main effects and included the above-mentioned covariates. Second, interaction effects between housing situation and occupation were measured, also including covariates. The back step method was used to determine predictor variables. A significance level of $\alpha = .05$ was used to determine whether the effect was significant, for interaction effects results were considered significant at $\alpha = .01$.

Results

A total of 428 people between the age of 17 and 25 participated in this research (M_{age} =22.4, SD=2.3), of which 73.3% engaged in at least one of the measured risk behaviours. Table 1 displays the characteristics of the sample.

Table 1.

Demographics and problem drug use of a subsample (range 17-25 years) of the Imp.Ac.T. participants (n=428)

Demographics	n	%
Gender		
Male	242	57.2
Female	180	42.6
City of residence		
Prague	228	53.3
Rome	108	25.2
Bratislava	50	11.7
Turin	42	9.6
Housing stability		
Stable	260	60.7
Unstable	168	39.3
Co-residence		
Living alone	64	15.3
Living with parents	129	30.8
Living with partner	95	22.7
Living with friends	109	26.0
Occupation		
Unemployed	263	61.6
Employed	68	15.9
Student	40	9.4
Undeclared work	56	13.1
Education		
No education	4	0.9
Primary school	191	44.8
High school	139	32.5
Higher education	92	21.6
Injection drug use		
Yes	288	69.4
No	127	30.6
Poly injection drug use		
Yes	143	33.4
No	285	66.6
Needle sharing		
Yes	150	35.4
No	274	64.6

Logistic regression analysis of PDU risk behaviour

PDU risk behaviour was categorised in three separately measured components: injection drug use, poly injection, and needle sharing. To measure the main effects and interaction effects of occupation and housing situation PDU risk behaviour, logistic regression analyses were performed with the back step method, starting with predictors and covariates.

Active injection drug use

Occupation predicted injection drug use significantly. Being a student (OR=.27, CI=.13 - .57, p<.00), as well as engaging in undeclared work (OR=.41, CI=.21 - .78, p=.01), was associated with less injection drug use, as compared to being unemployed. The odds to be actively injecting drugs were not significantly lower for employed people compared to unemployed people. As compared to living alone, living together with parents, partner or friends did not increase or decrease the risk to inject drugs. Furthermore, city of residence seemed to be a significant predictor (OR=1.61, CI=1.28 – 2.03, p=.00), so should be considered as a covariate. Housing stability was removed in previous steps of the back step method, which meant that it was not associated with injection drug use.

For injection drug use, two significant interactions between co-residence and occupation were found. First, students who were living with parents (n=20), were less often active injecting drug users than unemployed people living alone (OR=.15, CI=.05 - .45, p=.00). Second, people who were living with friends and engaging in undeclared work (n=15) were also less likely to be actively injecting drugs than unemployed people living alone (OR=.04, CI=.004 - .45, p=.01).

Table 2

Main effects and interaction effects of occupation and housing situation on active injection drug use (odds ratios (OR) and 95% confidence intervals (CI))

		OR	95% C.I.		*p*
			Lower	Upper	
Occupation				.	.00
Unemployed	Reference	1.00			
Employed		.76	.40	1.42	.38
Student		.27	.13	.57	<.01
Undeclared work		.41	.21	.78	.01
Living with					.08
Alone	Reference	1.00			
Parents		1.69	.82	3.48	.15
Partner		1.73	.80	3.73	.17
Friends		.80	.39	1.62	.53
City		1.61	1.28	2.03	.00
Living with parents X studying		.15	.05	.45	.00
Living with friends X undeclared work		.04	.004	.45	.01

Poly injection drug use

Having an occupation seemed to decrease the risk on poly injection drug use. The overall effect of occupation on poly injection is not significant, but compared to unemployed people, students (OR=.35, CI= .14 - .90, p=.03) have lowered odds of poly injection drug use. Young problem drug users living with parents (OR=5.97, CI=2.56 – 13.90, p=.00) or partner (OR=4.09, CI=1.84 – 9.09, p<.01) were more likely to engage in poly injection drug use, as compared to young problem drug users living alone. Living with friends was a marginally significant predictor of poly injection drug use (OR=2.11, CI=.97 – 4.57, p=.06). Age seemed to be a significant predictor (OR=1.11, CI=1.01 – 1.23, p=.04), so can be considered as a covariate. No significant interaction effects between co-residence and occupation were found for poly injection drug use.

Table 3

Main effects of occupation and housing situation on poly injection drug use (odds ratios (OR) and 95% confidence intervals (CI))

		OR	95% C.I.		*p*
			Lower	Upper	
Occupation					.07
Unemployed	Reference	1.00			
Employed		.64	.34	1.19	.16
Student		.35	.14	.90	.03
Undeclared work		.62	.32	1.20	.16
Living with					.03
Alone	Reference	1.00			
Parents		5.97	2.56	13.90	.00
Partner		4.09	1.84	9.09	<.01
Friends		2.11	.97	4.57	.06
Housing instability		4.09	1.84	9.09	.00
Age		1.11	1.01	1.23	.04

Needle sharing

The main effect of occupation on needle sharing was significant (p=.02). Being employed (OR=.45, CI=.24 - .82, p=.01) or engaging in undeclared work (OR=.49, CI=.25 - .95, p=.04) seemed to be negatively associated with needle sharing in the last year, as compared to unemployed participants. None of the forms of housing situation and housing stability seemed to be predictors for needle sharing. However, the city of residence seemed to be a significant predictor (OR=1.35, CI=1.09 - 1.68, p=.01), so should be considered as a covariate. No significant interaction effects between housing situation and occupation were found for needle sharing.

Table 4

Main effects of occupation and housing situation on needle sharing (odds ratios (OR) and 95% confidence intervals (CI))

		OR	95% C.I.		*p*
			Lower	Upper	
Occupation					.02
Unemployed	Reference	1.00			
Employed		.45	.24	.82	.01
Student		.67	.31	1.42	.29
Undeclared work		.49	.25	.95	.04
City		1.35	1.09	1.68	.01

Discussion

The aim of this study was to investigate whether occupation and housing situation were associated with components of PDU risk behaviour (i.e., active injection drug use, poly injection drug use, and needle sharing). This study presented first signs that housing situation and occupation are related to PDU risk behaviour among young problem drug users. Occupation seemed to be a protective factor for PDU risk behaviour. Being a student and engaging in undeclared work seemed to be negatively associated with PDU risk behaviour. With regard to housing situation, having an unstable housing situation seemed to be a risk factor for components of PDU risk behaviour. The same applied to living mainly with parents, partner or friends, as compared to living alone. However, not all hypotheses were confirmed.

Occupation and PDU risk behaviour

Being a student seemed to be a protective factor for active injection drug use and poly injection drug use, but being a student was not related to needle sharing. This partially confirmed the hypothesis that being a student is negatively associated with PDU risk behaviour. The results were in accordance with the theory of Bourdieu (1986). This theory underlines the importance of cultural, social and economic capital. These forms of capital establish the individual's habitus and position in society. Due to higher levels of capital, students could be less likely to engage in PDU risk behaviour. This could imply that future orientated occupation, such as studying, contributes to an enhanced life perspective.

The likelihood to have been sharing needles in the last year was lower for employed people, as compared to unemployed people. This confirmed the hypothesis that employment is associated with less PDU risk behaviour. However, in contrast to the hypothesis and the outcomes of previous research (Arria et al., 2013; Koo et al., 2007; Luchenski et al., 2015; Richardson et al., 2010; Sterling et al., 2001), the likelihood of stronger intensity of drug use was not lower for employed problem drug users, as compared to unemployed problem drug users. This concerned the indicators 'active injection drug use' and 'poly injection drug use'. The results could possibly be explained by considering the sample of problem drug users. Previous research, focussing on the relationship between employment and PDU risk behaviour, did not focus on young problem drug users (Arria et al., 2013; Koo et al., 2007; Luchenski et al., 2015; Richardson et al., 2010; Sterling et al., 2001). These studies contained a wide age range. For the current study, only participants between the age of 17 and 25 were included. Perhaps being employed is not a strong protective factor in this age group. Further research is required to investigate whether age significantly matters with regard to the relationship between employment and PDU risk behaviour.

Engaging in undeclared work was negatively associated with actively injecting drugs and needle sharing, but was not related to poly injection drug use. This implied that having undeclared work could be a protective factor for PDU risk behaviour. These outcomes contradicted the hypothesis that people with undeclared work are more likely to engage in PDU risk behaviour, based on previous studies (DeBeck et al., 2007; Luongo et al., 2017). The most common types of undeclared work are sex work and drug dealing, which is associated with more risk behaviour (DeBeck et al., 2007; Luongo et al., 2017). However, it is uncertain which type of undeclared work the participants were performing, as it remained unspecified. It could be possible that the participants of the current study did not engage in sex work and drug dealing, but were engaging in different types of undeclared work. This could be explained by focussing on the variety of undeclared work. In different European societies different types of undeclared work are performed (Pfau-Effinger, 2009). In Southern and Eastern European a new type of undeclared work had developed: the 'poverty escape type' (Pfau-Effinger, 2009). Fostered by the financial crisis, high unemployment rates, low payment and job insecurity enforce the existence of undeclared jobs (Pfau-Effinger, 2009). Having undeclared work could give a greater feeling of independence, stability and financial gain, as compared to legally employed people (Pfau-Effinger, 2009). The contradicting outcomes between this study and previous studies with regard to undeclared work should be further investigated.

To summarise, occupation was related to needle sharing and active injection drug use. This implied that having an occupation might protect against PDU risk behaviour. Being a student or engaging in undeclared work appeared to be stronger protective factors than being employed. This could possibly be related to low wages and job insecurity of employed people in countries such as Italy, Czech Republic and Slovakia (Pfau-Effinger, 2009). Therefore, studying or engaging in undeclared work might be a stronger protective factor in these countries, among this specific group.

Housing situation and PDU risk behaviour

Confirming the hypothesis, young problem drug users having an unstable housing situation were more likely to be injecting poly drugs. However, having an unstable housing situation was not related to active injection drug use and needle sharing. Therefore, the hypothesis that people with an unstable housing situation are associated with more PDU risk behaviour is partially confirmed. Furthermore, none of the forms of housing situation were significantly related to needle sharing. A possible explanation could be that needle sharing mainly occurs in networks of homeless people (Coady et al., 2007; Neaigus et al., 2013). Despite the fact that 39.3% of the participants of the current study reported having an unstable housing situation, most of them also reported living with friends, parents or partner. This implied that these participants were probably not mainly living on the street, and were therefore not significantly related to needle sharing.

This study did not find associations between living with parents and active injection drug use. However, the odds to be a poly injection drug user were much higher for people living with parents. Similar results were found for living with friends or partner, which also seemed to be a risk factor for poly injection drug use. It was expected that living with parents would be a protective factor and living with friends or parents would be risk factors for PDU risk behaviour. However, these results implied that all forms of co-residence were related to higher levels of PDU risk behaviour. This could be explained by the theory of capital (Bourdieu, 1986). Social network is an important form of capital that shapes ones habitus (Bourdieu, 1986). The social network of a young problem drug user seemed to enforce a habitus in which PDU risk behaviour occurs, even when participants were living with parents. The result that parents also seemed to be a risk factor could possibly be explained by the relationship between parents' and adolescents' addiction (Biederman, Faraone, Mounteaux, & Feighner, 2000; Flora & Chassin, 2005). Having addicted parents is a strong risk factor for PDU among emerging adults (Biederman, et al., 2000), which implies that having addicted parents predicts addiction among adolescents. So within this specific group,

it could be that parents are not a protective factor because they influence the drug addiction of their children. Future research should investigate whether this possible explanation is correct.

To summarise, housing situation was only related to poly injection drug use. This could imply that housing situation is of importance in more severe drug use patterns only, which include using multiple types of drugs. All forms of co-residence were related to higher levels of poly injection drug use. Co-residence seemed to be a risk factor for poly injection drug use among young problem drug users. This emphasised the importance of social network, which in this specific group was related to more PDU risk behaviour, as compared to living alone.

Interactions

Interaction effects were only found for active injection drug use, not for the other outcomes. Living with parents was a protective factor only when participants were studying. This indicates that young problem drug users were supported by their parents, only if they were studying. This fits the assumption that studying is associated with higher levels of capital, which have a preventive effect on PDU risk behaviour, such as active injection drug use. The protective effect of living with friends was significant only for young problem drug users engaging in undeclared work. This outcome seemed to be less self-evident. However, it could be that participants engaging in undeclared work also had friends that engage in undeclared work. Via the process of social selection, people connect with similar peers (Cohen, 1977). If it is true that undeclared work provides stability and financial gain (Pfau-Effinger, 2009), which is negatively associated with active injection drug use, living with friends could increase the chance to not actively use injecting drugs. These interaction effects should be interpreted with caution, due to the small group sizes. Future research using a larger sample is needed to confirm these findings.

Strengths and limitations

This study contained strengths as well as weaknesses. The first strength of this study was the focus on young problem drug users. This marginalised group in society is difficult to reach and has therefore not been investigated sufficiently. However, the Imp.Ac.T project succeeded in reaching these participants. The second strength was the innovative character of this study. The detailed forms of housing situation and occupation in regard to PDU risk behaviour had not been investigated before.

This study also had some limitations. First, the data used for this study were cross-sectional. Therefore, no causal relationships could be ascertained. The results of this study

merely show associations. Second, this study contained relatively small and unequal group sizes. This was a result of the study's focus on young problem drug users only, where housing situation and occupation were investigated in further detail than previous studies. Therefore, to maintain the required demarcated age group, the majority of the participants of the Imp.Ac.T. project had to be excluded from the sample. Additionally, the extensive number of investigated types of housing situation and occupation contributed to the small and unequal group sizes.

Conclusions and implications

In conclusion, occupation seemed to be related to PDU risk behaviour. Being a student, being employed and engaging in undeclared work seemed to be protective factors for components of PDU risk behaviour in comparison to being unemployed. Furthermore, having an unstable housing situation seemed to be a risk factor for PDU risk behaviour. Living together with parents, partner or friends also seem to be a risk factor, as compared to living alone. However, the results were not congruent for all outcome measures. Active injection drug use and needle sharing seemed to have stronger associations with occupation than with housing situation. Poly injection drug use seemed to have stronger associations with housing situation than with occupation. These varying results made interpretation complex.

This study provided first indications of the possible relationship between occupation and housing situation and PDU risk behaviour. Due to the explorative and innovative character of this study, further investigation is needed to confirm these findings. A recommendation for future research is to investigate the role of different housing situations and occupation for young problem drug users in further depth. Furthermore, longitudinal or quasi-experimental research needs to be done to increase causal inference.

Beside theoretical implications, this study also has societal implications. Despite the fact that not all results were congruent and more research needs to be done, housing situation and occupation appear to be key factors associated with PDU risk behaviour. Thus, interventions should take housing situation and occupation into consideration when providing services to problem drug users. Focussing on having an occupation could protect for severe drug use patterns or risk behaviour. Also, living alone could be seen as a protective factor as all forms of co-residence were positively associated with PDU risk behaviour. For interventions addressing housing it would be useful to focus on providing a stable residence, independent from the individual's social network. However, as stated before, future research first has to provide more evidence of the role of housing situation and occupation.

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