Not Criminally Responsible Offenders with Mental Illness in Finland: Social Control and Situational Characteristics of Offences

Miisa Törölä

VERTAISARVIOITU
KOLLEGIALT GRANSKAD
PEER-REVIEWED
www.tsv.fi/tunnus

Abstract

This paper examines how offences by individuals diagnosed with mental illness and evaluated as not criminally responsible (NCR) are socially situated in Finland. Data from mental state examination reports and records of psychiatric hospital treatment and criminal sanctions in 279 cases are used to examine the categorization of offences by situational features and to compare sources of informal and formal social control. Latent class analysis identifies three classes of offence: family-related, peer group-related, and property-centered or non-premeditated offences. Multinomial logistic regression and average marginal effects analyses are performed to identify differences in social control by class. The implications of these findings and suggestions for future research are discussed.

KEYWORDS: NCR offenders with mental illness, social control, Finland

Background

Approaches to understanding criminal behaviour are traditionally categorized as sociological, psychological or biological. In research on convicted offenders, it is quite uncontroversial to apply these perspectives in an overlapping manner, acknowledging the complex interactions between various factors. However, in the case of offenders with mental illness, current scientific knowledge is based almost exclusively on criminal psychological and forensic psychiatric research. Extensive research has been conducted on individual-level factors that affect criminal – especially violent – behaviour, but how offences by offenders with mental illnesses are socially situated has not been considered. This study is the first to address this lack of knowledge in relation to Finnish offenders with mental illness who have been evaluated as not criminally responsible (NCR).[1]

In the Finnish criminal sanction system, NCR of-

1 Because of the scarcity of sociological literature addressing the subject, the theoretical framework is based on criminological literature that has sociological emphases.

fenders with mental illness are separated from other offenders on the basis of a thorough mental state examination. In these cases, the offender's mental state, which has been affected by specific symptoms of mental disorders (e.g. Harris and Lurigio 2007; Link, Andrews, and Cullen 1992; Markowitz 2011), plays a crucial role in the offender's illegal behaviour (e.g. Haapasalo 2017, 238; Tapani and Tolvanen 2013, 363). In practice, being evaluated as NCR means that offenders are diagnosed with psychotic disorders (e.g. Kivimies et al. 2014; see also Törölä 2014). It has been estimated that fewer than 5% of people with schizophrenia have perpetrated criminal acts more than once during psychotic episodes (Hallikainen and Repo-Tiihonen 2015). A distorted sense of reality is not the sole determinant of illegal behaviour. Instead, criminal acts might result from a lack of access to appropriate social services and psychiatric care or from involvement in psychologically or physically stressful social situations. Psychiatric symptoms that eliminate self-control are associated with an elevated risk of violent behaviour among mental health patients (Link and Stueve 1994). Along with formal and informal social control, low self-control and lack of intent to commit an illegal act – that is, the crime was unintended – are important factors in the assessment of such rule-breaking behaviour.

This study applies Terence P. Thornberry and Marvin D. Krohn's (2001) developmental and life course criminological theory to cases of NCR offenders with mental illness. Thornberry and Krohn's theory focuses on the interactional relationships between individual characteristics and the features of the environment where crimes take place (Thornberry and Krohn 2001; see also Collins 2008; Farrington 2003; Wikström 2010; Wikström and Treibel 2016). The article begins with sections that describe this theory, its application to NCR offenders with mental illness, and current knowledge of the social-level characteristics of violent offences in Finland. The review of social characteristics related to criminality in Finland is limited to violent offences because the majority of Finnish offenders evaluated as NCR and in need of involuntary psychiatric treatment are determined to have committed violent crimes. The empirical section reports on latent class analysis (LCA) and multinomial logistic regression analysis, with average marginal effects presented, to explore the associations among the situational features of index crimes (i.e. the offences that are the focal point of the mental state examinations, hereafter "offences"), the features of patients' behaviour, and informal and formal social control. Contrary to the prevalent focus of medical research, the data include all forms of offences, not only violent crimes, in order to gain a general picture of NCR offenders with mental illness detained in forensic psychiatric units. Finally, the study asks in what situations NCR offenders with mental illness are likeliest to commit offences and what role is played by sources of social control.

Social Control and Social Support of NCR Offenders with Mental Illness

Criminological theories of social control have long been used to explain why most people do not commit crimes. The control approach focuses on individuals' conformity to shared norms and rules. A lack of individual connection to society is understood to increase delinquent tendencies (e.g. Barak 2009; Tierney 2009). Control theories have been developed and applied to explain the criminal behaviour of offenders who enter the criminal sanctions system (i.e., in the Finnish context, nonpsychotic offenders). These theories are premised on the assumption that human beings are rational decision makers. However, rational thinking is never context-free, and irrationality has its own rationality. The behaviour of NCR offenders with mental illness may have its

own rationality, that is, the motive for violence can be understood, but these individuals experience a reality that is distorted by control-overriding symptoms (Link and Stueve 1994).

In the case of persons with mental disorders, social bonding, which enables social control, is critical on both the structural and everyday levels. First, people with mental disorders usually have more restricted sources of informal social control, as they are less likely to achieve certain culturally defined transitions in adulthood (Silver 2006). Compared with persons without severe mental disorders, the milieu of persons with such disorders usually includes fewer sources of social control, both informal (e.g. spouses) and formal (e.g. work colleagues). In the Finnish context, people with mental disorders are likelier to have low education levels, experience unemployment, and lack stable relationships (Ostamo et al. 2007; Perälä 2013).

Second, it is suggested that the risk of violent behaviour may be higher when psychotic symptoms are at an acute stage (Eronen, Angermeyer, and Schulze 1998, 21). Carers in everyday life (e.g. family, friends, or psychiatric personnel) typically have opportunities and obligations to provide help and support during incidents of mental breakdown. Consequently, there is a need for lasting relationships with persons who are committed to providing help when necessary and who have the knowledge to recognize both acute and individual symptoms. However, maintaining social relationships with those who have severe mental problems can be challenging, as certain factors may cause more conflicts in social relationships. It is undisputed that alcohol and drug problems complicate family relationships and other important sources of social control. Furthermore, long-term cohabitation and financial dependency on family members increase the risk of violence toward others, regardless of the presence of mental illness (Estroff et al. 1998). As important as parental care is, when received in adulthood it may hinder individuals' efforts and opportunities to become independent and have their voices heard.

Thornberry and Krohn's (2001) interactional theory of the development of offending provides an applicable framework to consider social bonding on both the structural and individual levels. Their theory emphasizes reciprocal causation between offending and social bonding, as behavioural patterns are produced in interactions between persons and their environments. Furthermore, life course trajectories take place within particular social structures, which vary between social systems (Thornberry and Krohn 2001; see also Farrington 2003).

Individuals at different life stages have different predisposing factors for offending, leading to variations in the onset, continuation, and desistance of offending. Social adversity and poor parental supervision in childhood have been observed to have an association with early-onset offending. Individual and familial factors in offending are seen as interwoven with broader social contexts. In other words, early-onset offenders' families experience accumulated social disadvantage. Antisocial behavioural patterns developed in childhood tend to persist throughout the lifespan, affecting the quality of social networks and reducing the variety of social bonds. This structural adversity decreases opportunities for successful integration in school, thereby weakening controlling social bonds and increasing deviant opportunities. In contrast, later-onset offenders generally spend their childhoods in less disadvantaged families and begin to show signs of antisocial behaviour later in adolescence. In the process of gaining independence from their parents and starting life as young adults, their social networks inevitably transform and are likely to be influenced by delinquent peers (Thornberry and Krohn 2001).

Both the history of psychiatric treatment and the prevalence of earlier convictions vary among Finnish NCR offenders with mental illness, who can be classified as 1) first-time offenders with extensive histories of psychiatric treatment, 2) offenders with previous convictions and psychiatric hospitalizations, and 3) offenders without noteworthy criminal or psychiatric treatment histories. The frequency of problematic childhood circumstances (e.g. parents' heavy alcohol use, domestic violence, financial adversity) is significantly higher among NCR offenders with mental illness than in the general Finnish population. These childhood adversities are especially prevalent among patients with previous convictions (Törölä 2013, 2017). Following Thornberry and Krohn's (2001) theory, this suggests that there are likely to be variations in the quality and density of various sources of social control, as well as in the social positions of NCR offenders with mental illness.

Social Characteristics of Violent Offending in Finland

Violent offences are associated with individual characteristics such as low self-control (Gottfredson and Hirschi 1990), substance abuse, personality and adjustment disorders (Eronen, Kaltiala-Heino, and Kotilainen 2007; Markowitz 2011), and specific symptoms of mental illness (Harris and Lurigio 2007; Link, Andrews, and Cullen 1992; Markowitz 2011). However, individuals do not act in a social void; interactions with others and the exercise of informal and formal control play roles in the creation of violent and other kinds of criminal situations.

According to the World Health Organization's cause-of-death statistics, Finland has a similar homicide rate to other Western European countries. The Scandinavian countries, Switzerland, and older European Union countries report 0.0–1.9 homicides per 100,000 residents annually (Lehti 2015, 3–5). Unlike in many Western European countries, in Finland both offenders and victims in homicides are generally nonimmigrants. Furthermore, typically both offenders and victims know each other and are financially underprivileged; in most cases, at least one party is under the influence of alcohol (Aaltonen et al. 2012; Kivivuori and Lehti 2006; Lehti 2015). In the 1970s, the setting for homicides among drinkers shifted from outdoors to indoors as homelessness decreased in Finland (Kivivuori 2013).

In Finland, illegal violence goes hand in hand with social disadvantage, deviant behaviour, and social isolation. At an individual level, risk factors for violent criminality include male gender, youth (ages 15–20 years), being single, homelessness, and low education and income levels. The graver the offence, the more marginalized the offender generally is from the general population (Lehti 2015; Mattila 1988).

Violent offences with male and female victims occur in different types of scenario. A woman is likelier to be assaulted in a private setting than a public place (workplace violence is one exception; see Heiskanen 2007). Such differences by victim's gender are also prevalent when the offender has a mental disorder (Nordström and Kullgren 2003). About half of all assaults reported to the Finnish police during 2009–2012 occurred in public spaces (Lehti et al. 2013). Violent acts toward men in public spaces are usually one-off events, whereas women are likelier than men to be victims of recurring violence in private settings (Piispa et al. 2006), including when the offence is committed by an offender with a mental illness (Nordström and Kullgren 2003). The threshold for reporting violence is likely to be lower when the perpetrator is a stranger, and offences generally not considered serious are less likely to be reported to the police (Honkatukia 2011; Lehti et al. 2013).

In the case of offences committed by offenders with mental illness, the victim is likeliest to be a friend or family member of the offender (Steadman et al. 1998; see also Estroff et al. 1998; Häkkänen and Laajasalo 2006; Shaw et al. 2004). The most common explanations for this association are the offender's limited range of social relationships (presuming that mental illness is a cause of violence) and material dependency on families (presuming that psychological strain is a cause of violence). In both cases, the situational features of violent offences are related to the offender's informal and formal social networks. One might ask what happens if persons with mental disorders have no one to support them on a daily basis.

Research Questions

The objective of this study was to understand the relationship between social ties and the situational characteristics of offences by exploring the categorization of offences with different situational features, and by comparing the sources of informal and formal social control among NCR offenders with mental illness. The research questions are as follows:

1. What subgroups of situational features exist among offences committed by NCR offenders with mental illness?

2. How does formal and informal social control differ between these offence groups?

3. To what extent do hypotheses derived from developmental and life course criminological theory explain the association between social control and the situational features of offences committed by NCR offenders with mental illness?

The tentative hypothesis presumed that the situational characteristics of offences reflected offenders' social habitats, as victims were likeliest to be persons who were close to the offenders in everyday life (Steadman et al. 1998; see also Estroff et al. 1998; Häkkänen and Laajasalo 2006; Shaw et al. 2004). It was therefore hypothesized that 1) the situational characteristics of offences would vary according to the role of intimate relationships as sources of informal social control and 2) the role of intimate relationships as sources of informal social control would vary according to offenders' individual life trajectories.

Methods

Sample Members

The preconditions for a mental state examination in Finland are the following: 1) the defendant in the criminal case is determined to have committed, or admits to having committed, the offence; 2) remanding the defendant for a mental state examination is justified; 3) the defendant consents to the mental state examination, or the offence has resulted in a prison sentence of one year or more (Code of Judicial Procedure 2015/732, chap. 17, sec. 37). In practice, most defendants remanded for mental state examination have committed offences against a person (e.g. Niemi 2013; Pajuoja 1995, 93–94; Putkonen et al. 1998, 674). The purpose of the mental state examination is to determine whether the offender is mentally capable of "understand[ing] the factual nature or unlawfulness of his or her act," and whether "his or her ability to control his or her behaviour [was] decisively weakened" at the time of the criminal act (Criminal Code of Finland 19.12.1889/39, chap. 3, sec. 4).

The practice of mental state examinations in Finland entails gathering preliminary information from the examinees themselves and from official and informal sources (e.g. family members, school authorities, employers, psychiatric evaluations, standardized psychological tests, physical health examinations including possi-

ble brain imaging, and the healthcare facilities involved in any previous treatment) in addition to one to two months of monitoring in the facility where the examination is performed (Niuvanniemi Hospital 2017). To ensure objectivity, the multidisciplinary team conducting the examination consists of civil servants (Eronen et al. 2000). The mental state examination report presents information on the person undergoing the examination that is relevant to the stated diagnoses, including a detailed description of the person's socioeconomic and childhood circumstances and the person's ability to interact and function as a member of their school and society.

At the time of the data collection, 1,908 mental state examination reports from 2000–2012 were available. The inclusion criteria were that persons had been evaluated as NCR and in need of forensic psychiatric care, were born during 1950–1982, and had lived in Finland during their childhood and adolescence. All cases that met these criteria were included, resulting in a total of 279 sample members. The data from reports on all examinations that met the study criteria were coded statistically and combined with records of former psychiatric hospital care (at age 18 years or older), criminal sanctions (Criminal Code of Finland 20.8.1993/770), and terms of punishment (records available for persons sentenced in 1992 or later).

The ethics committee of the University of Eastern Finland approved the study protocol. Authorization for the use of documents and records for research purposes was sought and obtained from the Finnish National Institute for Health and Welfare, the Criminal Sanctions Agency, and the Legal Register Centre.

Sample Characteristics

The sample members ranged in age from 19 to 60 years. The median age was 36 years at the time of the offence, the same as the national median age of persons evaluated with full or diminished responsibility based on mental state examinations during 2000–2012 (n = 1,908). Men accounted for 83% of the sample members and women 17%. On average, women commit about 10% of violent offences in Finland, indicating that female violent offenders are evaluated as NCR more often than men (Honkatukia 2008; Putkonen 2003).

Table 1 shows the measures of social control utilized and the situational characteristics of the offences. Information gathered from mental state examinations was coded into dichotomous variables due to the nature of the source. Information on relationship and family status described the situation at the time of the offence, including cases where the victim was a spouse. The majority of patients had no spouses or children. About 20% received social or financial support from their parents. One fifth were homeless or living in temporary accommodation at the time of the offence or were described as having a "drifting and restless way of life," indicating a fluctuating housing status, an inability to retain a rented residence, or a tendency to move frequently between residences. The institutional profile variable was based on LCA using information on previous convictions and psychiatric treatment (see Table 1, and the statistical analysis section below). Eight in 10 NCR offenders with mental illness had received previous psychiatric hospital treatment, and fewer than half had previous convictions. About two in five NCR offenders with mental illness had both previous psychiatric hospitalizations and previous convictions, one third were first-timers with a history of psychiatric hospital treatment, and one fifth had profiles with no previous psychiatric hospitalizations or convictions. Further, two in three patients were diagnosed with substance abuse or dependence at the time of the mental state examination, while one third had trouble with alcohol, and one third with multiple substances.

TABLE 1: Distribution of demographic characteristics, social control and behavioral characteristics, n = 279 (%)

CHARACTERISTIC	STATUS	%
SOCIAL SUPPORT/CONTROL VARIABLES		
Spouse	Married/cohabiting/in a relationship = 1 (0 = not in a relationship)	16
Parental support	Receiving financial support from parents as an adult = 1 (0 = coping on his/her own)	19
Living conditions	Relatively stable place of residence = 1 (0 = homelessness/temporary accommodation/"drifting" way of life)	78
Institutional profiles	Ex-psychiatric service user	35
	Ex-psychiatric service user with conviction(s)*	44
	No previous psychiatric hospitalizations or convictions	21
BEHAVIORAL FEATURES		
Alcohol abuse/dependence	Diagnosed alcohol or psychoactive substance abuse (F10–F18.1) or dependence (F10–F18.2)	28
Multiple substance abuse/dependence	Diagnosed other/multiple psychoactive substance-related abuse (F19.1) or dependence (F19.2), or 2 > separate diagnoses of substance abuse or dependence	34

* Including community service, remand and imprisonment

Situational Features of the Offence

Table 2 shows the distributions of the degree of violence of the offence, the intoxication of the offender, the relationship between offender and victim, and the characteristics of the setting. The mental state examination reports gave detailed information on the offences. For the purposes of this study, violent offences included homicide, assault, sexual offences, robbery, and other offences against the person. Nonviolent offences included criminal acts without immediate victims, that is, actions where material or physical harm were by-products (e.g. sabotage, reckless driving, fire-setting). Here, the influence of alcohol or other substances was regarded as a factor that caused social disinhibition and increased the likelihood of conflict. Relationships with blood relatives and spouses were typically the NCR offenders' closest relationships, and hence an important source of informal social control. Victims who were unknown to the NCR offenders were distinguished from victims who were at work at the time of the offence, for example victims who were shop managers or social workers. In 10% of the offences, the victims worked in the locations where the crimes took place. The crime settings were described in terms of their privacy and accessibility: a space categorized as "public" had to be accessible to anyone, such as spaces in urban or suburban areas or population centers or buildings with public access.

Statistical Analyses

LCA was performed using Mplus Version 7 to classify the situational circumstances into three descriptive types of offence. LCA enabled the identification of underlying population subgroups using multiple observed categorical indicators. Although similar to cluster analysis, LCA had the

TABLE 2: Situational features of offence(s), n = 279 (%)

CHARACTERISTIC	STATUS	%
Violence	Single violent offence	56
	Multiple offences, at least one violent	24
	Non-violent offence(s)	20
Intoxication	Under the influence of alcohol (one or several offences)	33
	Under the influence of alcohol and other psychoactive substance (one or several offences)	15
	Sober	51
Relationship between victim and offender	Blood relative or (ex-)partner	27
	Acquaintance	34
	Stranger	13
	"On duty"/material damage without an immediate victim	26
Setting	Victim's home, or victim and offender's home	39
	Offender's home	13
	Other private residence	13
	Public space	36

advantage of using a statistical tool to identify the number of classes and statistical goodness of fit. This model-based approach estimated membership probabilities for every observation and produced more interpretable results than cluster analysis. The optimal number of latent classes was determined by estimating models with varying numbers of classes and comparing their model fit data. Smaller information criterion values (fit indices) were preferred, while classification had to be sensible given the content (Wang and Wang 2012). The same kind of analysis has been conducted in previous research using slightly different data to categorize sample members according to their previous psychiatric service use and convictions (Törölä 2017). This categorization was used as an institutional profile variable indicating previous formal social control (see Appendix tables 6 and 7 for more detail).

A multinomial logistic regression model was estimated to compare the risk odds related to social control and substance abuse/dependence for the reference offence group and other offence groups. A multinomial logistic regression model with best-fit and estimated average marginal effects was also run.

Family-Related, Peer Group-Related, and Property-Centered or Non-Premeditated Offences

Appendix table 8 presents the goodness-of-fit measures of different models: Akaike's and Bayesian information criteria (AIC and BIC), and the sample size-adjusted BIC (ABIC). Lower AIC and BIC values indicated better fit. AIC and ABIC favoured a four-class model, whereas BIC favoured a three-class model. In addition, the Vuong-Lo-Mendell-Rubin, Lo-Mendell-Rubin adjusted and bootstrapped likelihood ratio tests indicated a significant fit for the three-class model compared with the two-class and four-class models. Consequently, the three-

TABLE 3: Estimated means for the four indicators of three classes (% over average in bold font)

	FAMILY-RELATED OFFENCES	PEER GROUP -RELATED OFFENCES	PROPERTY-CENTERED OR NON-PREMEDITATED OFFENCES
	n = 66 (24%)	n = 98 (35%)	n = 115 (41%)
VIOLENCE			
One, violent	**80**	**61**	39
Multiple, violent	12	**39**	19
Non-violent	8	0	**43**
INTOXICATION			
Alcohol	0	**74**	21
Alcohol + other	9	**26**	11
Sober	**91**	0	**69**
VICTIM			
Blood relative or (ex-)partner	**78**	21	3
Acquaintance	22	**72**	11
Stranger	0	7	**25**
"On duty"/material	0	0	**61**
Setting			
Victim's home	**80**	**53**	4
Offender's home	6	12	**17**
Other private	5	**23**	10
Public space	10	13	**69**

class model was selected.[2] Table 3 shows the estimated probabilities (percentages) of the score values [1] for the four indicators of situational circumstances in the three-class model.

Of the 279 sample members, 66 (24%) were assigned to the class identified as family-related offences. This group's offences differed from the other two offence types in terms of the offender's sobriety (i.e. the offender was sober) and the setting of offence (i.e. it was in the victim's home, or the home shared by victim(s) and offender(s)). The family members likeliest to be victims were male NCR offenders' partners (24%), friends or acquaintances (23%) and mothers (19%), and female NCR offenders' children (65%). Peer group-related offences accounted for 98 NCR offenders (35%) who had committed a violent offence or offences in private settings while intoxicated. The likeliest victims were NCR offenders' friends or acquaintances (in the case of male NCR offenders 62%; in the case of female NCR offenders 63%). The

2 The contents of the three- and four-class models were very similar, the main difference being that in the four-class model the property-centered or non-premeditated offence group was divided into two classes.

scene of the offence was likeliest to be the victim's home or another private residence.

Property-centered or non-premeditated offences (n = 115, 41%) constituted the largest group. The prevalence of nonviolent offences was higher in this group than in the two other groups (43%). In most cases, the offender was sober. The most typical settings for nonviolent offences in this group were the offender's home (12%), another private residence (10%), or an open-access urban space such as a street, park or yard (6%). By contrast, violent offences were likeliest to take place in hospitals, office buildings, or other places providing public services (17%) or private-sector services (15%). Compared with the other offence groups, the offences in this group were likelier to be incidents of only potential harm: elements of violence may have been present, but the acts of others or of the NCR offenders themselves prevented serious outcomes. Violent offences typically targeted strangers or employees in their workplaces (e.g. police officers, bank tellers, salespersons, hospital staff).

Association Between Social Control and Features of the Offence

The cross-tabulation ratios of the offence groups (Appendix tables 9 and 10) indicated that more persons in the family-related offence group had spouses and received parental social and financial support than in the other groups. This group generally reported fewer experiences of homelessness, repeated psychiatric hospitalizations or previous convictions, but the number of ex-psychiatric service users was higher. This offence group had a higher representation of male NCR offenders than the property-centered or non-premeditated and peer group-related offence groups. Peer group-related offences were likeliest to have been committed by people with repeated psychiatric hospitalizations, previous convictions or diagnosed substance abuse. People with experiences of homelessness most commonly committed offences in public places. Ex-psychiatric service users with and without previous convictions were almost equally represented in the property-centered or non-premeditated offence group.

Using family-related offences as the reference group, multinomial logistic regression confirmed the effect of adults' social networks on the situational features of offences (Table 4). On average, more members of the family-related offences group had supportive parental relationships, and a relatively high number in that group had had romantic relationships as adults. Compared with the family-related offence group, those in the property-centered or non-premeditated offence group were younger, and they had experienced homelessness, lived in temporary accommodation or had a "drifting" way of life. In addition, the number of people with both previous convictions and hospitalizations differed between the family-related offence group and the property-centered or non-premeditated offence group. Compared with the family-related offence group, the other two groups had more persons with diagnosed alcohol or substance abuse or dependence. The peer group-related offence group had the most people diagnosed with other or multiple psychoactive substance-related abuse or dependence.

Table 5 shows the average marginal effects of the predictors of the probability of belonging to offence groups with different situational characteristics. The average marginal effect estimate for birth year indicated a change in probability when the value increased by one year. Estimates for spouse, parental support, living conditions, al-

TABLE 4: Multinomial logit model comparing Class 1 offences (family-related, n = 66) with other offence classes.

	PROPERTY-CENTERED OR NON-PREMEDITATED OFFENCES VS FAMILY-RELATED			PEER GROUP-RELATED VS FAMILY-RELATED		
Variable	Estimate	SE	95% CI	Estimate	SE	95% CI
Cons	-89.270*	41.980	-171.550, -6.991	-60.011	45.565	-149.317, 29.294
Birth year	**0.046***	0.021	0.004, 0.088	0.031	0.023	-0.015, 0.076
INFORMAL SOCIAL CONTROL						
Spouse	**-1.953*****	0.471	-2.875, -1.031	**-1.632****	0.474	-2.560, -0.703
Parental support	**-1,277****	0.420	-2.098, -0.455	**-1.817*****	0.478	-2.753, -0.880
Living conditions	**-1,261***	0.579	-2.394, -0.130	-0.835	0.600	-2.009, 0.340
INSTITUTIONAL PROFILES (REF. NO HOSPITALIZATIONS OR PREVIOUS CONVICTIONS)						
Ex-psychiatric service user	**0.864***	0.440	0.002, 1.726	0.142	0.484	-0.807, 1.092
Ex-psychiatric service user with convictions	**1.092***	0.535	0.043, 2.140	0.890	0.543	-0.174, 1.955
BEHAVIORAL FEATURES						
Alcohol	**1.120***	0.502	0.136, 2.104	**2,510*****	0,529	1.474, 3.547
Multiple substance abuse/ dependence	0.443	0.496	-0.529, 1.415	**1.569****	0.535	0.520, 2.615

*p <.05. **p <.01. ***p < 0.000. n=278. Likelihood ratio chi-square = 99.44, p < 0.000. Pseudo R2 = 0.1664

cohol, and multiple variables indicated a change of probability when the value changed from zero to one. The institutional profile estimates indicated the probabilities compared with the reference group "no earlier hospitalizations or convictions" (Williams 2017). The sample members who had committed family-related offences were likelier to be older, have been in relationships, have received financial and social support from their parents, and have relatively stable residences. They were less likely to have been convicted of offences or diagnosed with substance abuse. Peer group-related offences were likelier to have been committed by people who had less parental support in adulthood. Substance abuse and dependency were also more common. Finally, those who committed property-centered or non-premeditated offences were less likely to have been in relationships or diagnosed with alcohol abuse or dependence. They experienced more homelessness, and, interestingly, they were likelier to have been profiled as having previously used psychiatric services.

Discussion

This research sheds light on the social context and indirect factors involved in offences committed by NCR offenders with mental illness. More precisely, it produces novel information on social networks and received social support in these offenders' lives. The analysis identified three groups of offences committed by NCR offenders with mental illness based on the degree of violence, the intoxication of the offender, the relationship between offender and victim, and the setting of the offence. The data confirmed the hypotheses regarding the associations between the quality of informal social control and the subgroups of offences, and between life trajectories and intimate

TABLE 5: Average marginal effect estimates for multinomial logistic regression model '(reference group = Class 1, family-related offences).

	FAMILY-RELATED	PEER GROUP-RELATED	PROPERTY-CENTERED OR NON-PREMEDITATED
Model variable	n = 66	n = 98	n = 115
Birth year	-0.0052*	-0.0005	0.0058
Spouse	0.2888***	-0.0769	-0.2119**
Parental support	0.2254***	-0.1712**	-0.0542
Living conditions	0.1291*	0.0291	-0.1582*
INSTITUTIONAL PROFILE (REF. NO PREVIOUS HOSPITALIZATIONS OR CONVICTIONS)			
Ex-psychiatric service user	-0.0868	-0.0834	0.1703*
Ex-psychiatric service user with previous conviction(s)	-0.1417*	0.0305	0.1111
Alcohol	-0.2059***	0.3426***	-0.1367*
Multiple substance abuse/ dependence	-0.1177*	0.2425**	-0.1249

*p <.05. **p <.01. ***p < 0.000.

relationships. The results deepen the understanding of the situational nature of these offences and complement the psychological and biological view of offenders evaluated as NCR. However, without comparison data for criminally responsible offenders, the results of the analysis should be viewed as more descriptive than explanatory. Using a developmental and life course theoretical framework, the results are interpreted from the point of view that childhood social circumstances and accumulated social disadvantage are factors in adults' social embeddedness.

Family-related offences targeted the NCR offenders' parents, siblings, (ex-)partners, and children. Unlike other offence groups, members of this group had available informal social support or control. They had not been subject to formal control in the form of convictions or psychiatric hospitalizations as often as members of the other groups. Informal social control provided by intimate relationships strengthened their bonds with society. NCR offenders in this group had lived for a relatively long time without deviating from shared rules. Additionally, this group had a lower prevalence of previous convictions and alcohol and drug problems, which probably contributed to the continuity of relationships with their parents and spouses. From a life trajectory perspective (Thornberry and Krohn 2001), these group members' parental and other family relationships had lasted from childhood to adulthood but had had tragic endings. The mental state examination reports did not provide sufficient information about changes in patients' social networks, but they hinted at 1) cases of domestic violence against parent(s), which may have continued for years, indicated for example by restraining orders; and 2) possible changes in the carers', usually the mothers', health condition or coping abilities due to old age. From a service providers' perspective, such cases might be hard to address due to the private nature of domestic violence. When domestic violence occurs, even in so-called healthy families, seeking help may be complicated by victims' feelings of shame

on one hand and their hope for spontaneous change on the other. Furthermore, Thornberry and Krohn's (2001) suggestion that a transformation of social networks affects the occurrence of later-onset offending might be relevant to offenders' reduced access to sources of informal social control.

Peer group-related offences by NCR offenders with mental illness were very similar to Finnish homicides in general (described earlier; see also Aaltonen et al. 2012; Kivivuori and Lehti 2006; Lehti 2015). A common feature of those in this offence group was a high prevalence of diagnosed alcohol or multiple types of abuse or dependence. These sample members had been subject to both psychiatric and judicial control through repeated hospitalizations and previous convictions (see Appendix 3). At the same time, they lacked sources of informal social control, at least through romantic relationships and parental support. It is likelier that members of this offence group had peer groups of fellow drinkers, who may have exposed them to violent situations. Most members of this group had failed to achieve critical turning points for desistance, and instead had become embedded in a delinquent way of life (Thornberry and Krohn 2001). Furthermore, the social relationships in which they engaged were likely to maintain rather than reduce their opportunities to commit crime. A lack of parental support is highly likely to be connected to a socially deprived childhood and substance abuse in adulthood. This group of NCR offenders bears similarities with early-onset offenders who have sustained their criminal behaviour and often belong to peer groups that engage in significant substance abuse, which may hinder them from receiving treatment or other kinds of support. Forensic psychiatric patients with previous convictions have usually been treated in psychiatric hospitals as substance abusers for relatively short treatment periods (Törölä 2014).

Members of the property-centered or non-premeditated offence group were similar to peer group-related NCR offenders in their insufficient relationships and alcohol abuse but were less likely to have previous convictions. Members of this group were likelier to have diagnoses of alcohol abuse or dependence and had more experiences of unstable living arrangements. The most crucial social bonds determining the adult social positioning of this group appear to have been formal: psychiatric patient status and relationships with the service system. The frequent use of psychiatric services before the offence indicated that members of this group had previously been in the care of the psychiatric system. Hence, any earlier aggressive behaviour or substance abuse may have been interpreted as symptoms of mental illness. The classification of offence groups indicated that some offences were related to more disruptive or aggressive behaviour patterns, although these crimes require more thorough exploration. These types of offence often occurred in public places, and in the case of violent acts, the victims were often part of public- or private-sector services. These violent crimes were likelier to occur in spaces where preventive or coercive measures were legitimized. According to Thornberry and Krohn's (2001) theory, offenders' early access to psychiatric treatment will have led to more or less ongoing social control by the medical system, and their official identification as mentally disordered may have had positive implications for desistance. However, the lack of sources of informal social control may have left these ex-psychiatric patients in solitary or isolated situations.

In conclusion, the situational characteristics of the offences committed by NCR offenders with mental illness are quite similar to those of other offender groups in Finland. From the social control perspective, individuals with mental

illness are likelier to have everyday relationships with those who are committed to caring for them due to restricted opportunities to establish diverse relationships, for example with co-workers or people with the same cultural interests (Jungbauer et al. 2004). Individuals with mental illness may have very restricted social lives, making their few relationships prone to stress (Millier et al. 2014, 88). Close family relationships that endure over the years are important sources of control and support (Thoits 2011), but welfare services should be aware of and respond to the special needs of family members who care for close relatives (Magliano et al. 2002). Further, it is not self-evident that individuals with mental illness themselves, or the people who share their everyday lives, have the capacity to interpret their odd or deviant behaviour as symptoms of a mental disorder or are aware of their psychiatric condition (Chien 2010, 11; see also Lemert 1950, 70–75; Lemert 1972, 62–64). The result of my analysis suggest that NCR offenders with mental illness and substance abuse do not necessarily have sufficient care but rather are sharing their everyday lives and difficulties with peer substance users.

From a sociological point of view, NCR offenders with mental illness constitute a "hard-to-reach" population (Abrams 2010). This appears on both theoretical and empirical levels as a lack of research tradition and cumulated knowledge. In this study, my theoretical perspective and the use of nationwide medical data are unique in Finland. However, the data have some limitations, as the core was collected from sources originally produced for psychiatric diagnosis and evaluation for treatment. Even though the mental state examination procedure has been standardized, information on various elements – such as family relationships and living conditions – may be underrepresented. The descriptions of social circumstances may vary according to the examination results, that is, the diagnoses. Moreover, the data do not cover all crimes committed by offenders with mental illnesses or disorders, only those that met the criteria presented in the methods section and were committed by offenders evaluated as NCR based on the evidence provided for the mental state examination.

The social control approach may serve as a useful tool to analyse and explain crimes committed by NCR offenders with mental illness and to complement knowledge about the biological and psychological factors that contribute to criminal behaviour. In this research in particular, the social control approach may widen the picture of both offences and NCR offenders and raise doubts about the sufficiency of social support for persons with mental disorders and their caregivers in the era of dehospitalization. In future sociological research, it would be useful to compare the social factors involved in offences committed by criminally responsible offenders and persons with mental illness evaluated as NCR. Regarding the bigger picture, a critical view of the process from offence to mental state examination is needed, including the types of intersectionality that may occur and the roles that stigma may play, particularly in cases of nonviolent and disruptive offences.

References

AALTONEN, MIKKO, JANNE KIVIVUORI, PEKKA MARTIKAINEN, AND VENLA SALMI. 2012. "Socio-economic Status and Criminality as Predictors of Male Violence: Does Victim's Gender or Place of Occurrence Matter?" *British Journal of Criminology* 52: 1192–1211.

ABRAMS, LAURA S. 2010. "Sampling 'Hard to Reach' Populations in Qualitative Research: The Case of Incarcerated Youth." *Qualitative Social Work* 9: 536–550.

BARAK, GREGG. 2009. *Criminology: An Integrated Approach*. Lanham: Rowman and Littlefield.

CHIEN, WAI-TONG. 2010. Stress of Family Members in Caring For a Relative with Schizophrenia. New York: Nova Science Publishers.

CODE OF JUDICIAL PROCEDURE 12.6.2015/732. Helsinki: Ministry of Justice. https://www.finlex.fi/fi/laki/kaannokset/1734/en17340004_20150732.pdf.

COLLINS, RANDALL. 2008. *Violence: A Micro-sociological Theory*. Princeton: Princeton University Press.

CRIMINAL CODE OF FINLAND 20.8.1993/770. Helsinki: Ministry of Justice. http://www.finlex.fi/fi/laki/kaannokset/1889/en18890039.pdf.

ERONEN, MARKKU, MATTHIAS C. ANGERMEYER, AND BEATE SCHULZE. 1998. "The Psychiatric Epidemiology of Violent Behaviour." *Social Psychiatry and Psychiatric Epidemiology* 33: 13–23.

ERONEN, MARKKU, RIITTAKERTTU KALTIALA-HEINO, AND IRMA KOTILAINEN. 2007. "Vaarallisuuden arviointi: Missä tilanteissa ja miten väkivaltaisuuden vaaraa arvioidaan Suomessa." *Duodecim* 123: 2375–2380.

ERONEN, MARKKU, EILA REPO, HEIKKI VARTIAINEN, AND JARI TIIHONEN. 2000. "Forensic Psychiatric Organization in Finland." *International Journal of Law and Psychiatry* 23 (5–6): 541–546.

ESTROFF, S.E., J.W. SWANSON, W.S. LACHICOTTE, M. SWARTZ, AND M. BOLDUC. 1998. "Risk Considered: Targets of Violence in the Social Networks of People with Serious Psychiatric Disorders." *Social Psychiatry and Psychiatric Epidemiology* 33: 95–101.

FARRINGTON, DAVID P. 2003. "Developmental and Life-Course Criminology: Key Theoretical and Empirical Issues." *Criminology* 41: 221–255.

GOTTFREDSON, MICHAEL R., AND TRAVIS HIRSCHI. 1990. *A General Theory of Crime*. Stanford: Stanford University Press.

HAAPASALO, JAANA. 2017. *Kriminaalipsykologia, 2: Uudistettu painos*. Juva: PS-Kustannus.

HÄKKÄNEN, HELINÄ, AND TAINA LAAJASALO. 2006. "Homicide Crime Scene Actions in a Finnish Sample of Mentally Ill Offenders." *Homicide Studies* 10: 33–54.

HALLIKAINEN, TERO, AND EILA REPO-TIIHONEN. 2015. "Psykoottisen potilaan aggressio – ehkäisy ja hoito." *Duodecim* 131 (15): 1361–1366.

HARRIS, ANDREW, AND ARTHUR J. LURIGIO. 2007. "Mental Illness and Violence: A Brief Review of Research and Assessment Strategies." *Aggression and Violent Behavior* 12: 542–551.

HEISKANEN, MARKKU. 2007. "Violence at Work in Finland: Trends, Contents, and

PREVENTION." JOURNAL OF SCANDINAVIAN STUDIES IN CRIMINOLOGY AND CRIME PREVENTION 8: 22–40.

HONKATUKIA, PÄIVI. 2008. "Naiset rikosten tekijöinä ja uhreina." In *Rikollisuustilanne 2007: Rikollisuus- ja seuraamusjärjestelmä tilastojen valossa*, ed. National Research Institute of Legal Policy, 227–248. Helsinki: National Research Institute of Legal Policy.

HONKATUKIA, PÄIVI. 2011. "Naiset rikosten tekijöinä ja uhreina." In *Rikollisuustilanne 2010: Rikollisuus ja seuraamusjärjestelmä tilastojen valossa*, ed. National Research Institute of Legal Policy, 239–256. Helsinki: National Research Institute of Legal Policy.

JUNGBAUER, JOHANNES, KIRSTEN STELLING, SANDRA DIETRICH, AND MATTHIAS C. ANGERMEYER. 2004. "Schizophrenia: Problems of Separation in Families." *Journal of Advanced Nursing* 47: 605–613.

KIVIMIES, KRISTIINA, EILA REPO-TIIHONEN, HANNU KAUTIAINEN, AND JARI TIIHONEN. 2014. "Previous Forensic Mental Examination Is a Useful Marker Indicating Effective Violence Relapse Prevention Among Psychotic Patients." *Nordic Journal of Psychiatry* 68 (5): 311–315.

KIVIVUORI, JANNE. 2013. *Rikollisuuden syyt*. Helsinki: Nemo.

KIVIVUORI, JANNE, AND MARTTI LEHTI. 2006. "The Social Composition of Homicide in Finland, 1960–2000." *Acta Sociologica* 49 (1): 67–82.

LEHTI, MARTTI. 2015. *Henkirikoskatsaus 2015*. Helsinki: Institute of Criminology and Legal Policy, University of Helsinki. https://helda.helsinki.fi/bitstream/handle/10138/154148/Katsauksia_1_2015_Henkirikoskatsaus_2015.pdf?sequence=4.

LEHTI, MARKKU, REINO SIRÉN, MIKKO AALTONEN, PETRI DANIELSSON, AND JANNE KIVIVUORI. 2013. "Pahoinpitely- ja ryöstörikokset." In *Rikollisuustilanne 2012: Rikollisuus ja seuraamusjärjestelmä tilastojen valossa*, ed. National Research Institute of Legal Policy, 53–96. Helsinki: Hakapaino.

LEMERT, EDWIN M. 1950. Social Pathology: A Systematic Approach to the Theory of Sociopathic Behavior. New York: McGraw-Hill.

LEMERT, EDWIN E. 1972. *Human Deviance, Social Problems, and Social Control*, 2nd edition. Englewood Cliffs: Prentice-Hall.

LINK, BRUCE G., HOWARD ANDREWS, AND FRANCIS T. CULLEN. 1992. "The Violent and Illegal Behavior of Mental Patients Reconsidered." *American Sociological Review* 57: 275–292.

LINK, BRUCE G., AND A. STUEVE. 1994. "Psychotic Symptoms and the Violent/Illegal Behavior of Mental Patients Compared to Community Controls." In *Violence and Mental Disorder: Developments in Risk Assessment*, eds. John Monahan and Henry J. Steadman, 137–159. Chicago: University of Chicago Press.

MAGLIANO, L., C. MARASCO, A. FIORILLO, C. MALAGONE, M. GUARNERI, M. MAJ, AND THE WORKING GROUP OF THE ITALIAN NATIONAL STUDY ON FAMILIES OF PERSONS WITH SCHIZOPHRENIA. 2002. "The Impact of Professional and Social Network Support on the Burden of Families of Patients with Schizophrenia in Italy." *Acta Psychiatrica Scandinavica* 106: 291–298.

MARKOWITZ, FRED E. 2011. "Mental Illness, Crime, and Violence: Risk, Context, and Social Control." *Aggression and Violent Behavior* 16: 36–44.

MATTILA, JUHANI. 1988. *Alttiudesta syyllistyä toistamiseen väkivaltarikokseen.* Psychiatria Fennica Monograph 15/1988. Helsinki: Kyriiri Oy.

MILLIER, A., U. SCHMIDTH, M.C. ANGERMEYER, D. CHAUCANE, V. MURTHYE, M. TOUMIF, AND N. CADI-SOUSSIG. 2014. "Humanistic Burden in Schizophrenia: A Literature Review." *Journal of Psychiatric Research* 54: 85–93.

NIEMI, HANNU. 2013. "Syyntakeisuusarviointien muutokset—syyt ja seuraukset." *Haaste* 1/2013. http://www.haaste.om.fi/fi/index/lehtiarkisto/haaste12013/syyntakeisuusarviointienmuutokset-syytjaseuraukset.html.

NIUVANNIEMI HOSPITAL. 2017. "Mental Examinations in Finland." http://www.niuva.fi/english/mentalex_2.htm.

NORDSTROM, ANNIKA, AND GUNNAR KULLGREN. 2003. "Victim Relations and Victim Gender in Violent Crimes Committed by Offenders with Schizophrenia." *Social Psychiatry and Psychiatric Epidemiology* 38: 326–330.

OSTAMO, AINI, TAINA HUURRE, KIRSI TALALA, HILLEVI ARO, AND JOUKO LÖNNQVIST. 2007. "Mielenterveys." In *Health Inequalities in Finland: Trends in Socioeconomic Health Differences 1980–2005,* eds. H. Palosuo, S. Koskinen, E. Lahelma, R. Prättälä, T. Martelin, A. Ostamo, E. Linnanmäki, et al., 87–103. Helsinki: Ministry of Social Affairs and Health.

PAJUOJA, JUSSI. 1995. Väkivalta ja mielentila: Oikeussosiologinen tutkimus syyntakeisuussäännöksistä ja mielentilatutkimuksista. Helsinki: Gummerrus, Suomalaisen lakimiesyhdistyksen julkaiuja A 201.

PERÄLÄ, JONNA. 2013. "Epidemiology of Psychotic Disorders." PhD diss. University of Helsinki. https://www.julkari.fi/handle/10024/104356.

PIISPA, MINNA, MARKKU HEISKANEN, JUHA KÄÄRIÄINEN, AND REINO SIRÉN. 2006. "Naisiin kohdistunut väkivalta 2005." *National Research Institute of Legal Policy* 225. http://www.optula.om.fi/37928.htm.

PUTKONEN, HANNA. 2003. *Homicidal Women in Finland 1982–1992.* KTL A5/2003. Helsinki: National Public Health Institute.

PUTKONEN, HANNA, JUTTA COLLANDER, MARJA-LIISA HONKASALO, AND JOUKO LÖNNQVIST. 1998. "Finnish Female Homicide Offenders 1982–92." *Journal of Forensic Psychiatry* 9 (3): 672–684.

SHAW, JENNY, TIM AMOS, ISABELLE M. HUNT, SANDRA FLYNN, PAULINE TURNBULL, NAVNEET KAPUR, AND LOUIS APPLEBY. 2004. "Mental Illness in People Who Kill Strangers: Longitudinal Study and National Clinical Survey." *British Medical Journal* 328: 734–737.

SILVER, ERIC. 2006. "Understanding the Relationship Between Mental Disorder and Violence: The Need for a Criminological Perspective." *Law and Human Behavior* 30 (6): 685–706.

STEADMAN, HENRY J., EDWARD P. MULVEY, JOHN MONAHAN, PAMELA C. ROBBINS, PAUL S. APPELBAUM, THOMAS GRISSO, LOREN H. ROTH, AND ERIC SILVER. 1998. "Violence by People Discharged from Acute Psychiatric Inpatient Facilities and by Others in the Same Neighborhoods." *Archives of General Psychiatry* 55 (5): 393–401.

TAPANI, JUSSI, AND MATTI TOLVANEN. 2013. *Rikosoikeuden yleinen osa: Vastuuoppi.* Helsinki: Talentum.

THOITS, PEGGY A. 2011. "Perceived Social Support and the Voluntary, Mixed, or Pressured Use of Mental Health Services." *Society and Mental Health* 1: 4–19.

THORNBERRY, TERENCE P., AND MARVIN D. KROHN. 2001. "The Development of Delinquency: An Interactional Perspective." In *Handbook of Youth and Justice,* ed. S.O. White, 289–305. New York: Kluwer Academic/Plenum Publishers.

TIERNEY, JOHN J. 2009. *Key Perspectives in Criminology*. Maidenhead: Open University Press.

TÖRÖLÄ, MIISA. 2013. "Oikeuspsykiatristen potilaiden sosiaalinen tausta." In *Huono-osaisten hyvinvointi Suomessa*, eds. Mikko Niemelä and Juho Saari, 80–107. Helsinki: Kelan Tutkimusosasto.

TÖRÖLÄ, MIISA. 2014. "Oikeuspsykiatristen potilaiden hoito- ja rikoshistoria." In *Sosiaalityö ja sosiaalinen tuki rikosseuraamusalalla*, eds. Henrik Linderborg, Mari Suonio and Tytti Lassila, 275–292. RISE Publication Series 01/2014.

TÖRÖLÄ, MIISA. 2017. "Kolme polkua huono-osaisuuteen – oikeuspsykiatristen potilaiden laitosurat, yhteiskunnallinen asema ja paranoidisuus." ["Three Pathways to Social Disadvantage – Institutional Profiles, Social Status and Paranoia of Finnish Forensic Psychiatric Patients"]. *Sosiaalilääketieteellinen aikakauslehti* 54: 42–55.

WANG, JICHUAN, AND XIAOQIAN WANG. 2012. *Structural Equation Modeling: Applications Using Mplus*. Chichester: Wiley.

WIKSTRÖM, PER-OLOF H. 2010. "Situational Action Theory." In *Encyclopedia of Theory*, Vol. 2, eds. F.T. Cullen and P. Wilcox, 1001–1008. Thousand Oaks, CA: Sage.

WIKSTRÖM, PER-OLOF H., AND KYLE TREIBEL. 2016. "Social Disadvantage and Crime: A Criminological Puzzle." *American Behavioral Scientist* 60 (10): 1232–1259.

WILLIAMS, RICHARD. 2017. "Marginal Effects for Continuous Variables." https://www3.nd.edu/~rwilliam/stats3/Margins02.pdf.

TABLE 6: Estimated means for six indicators of three classes, %

	EX-PSYCHIATRIC SERVICE USERS	NO PREVIOUS HOSPITALIZATIONS OR IMPRISONMENTS	EX-PSYCHIATRIC SERVICE USERS WITH PREVIOUS CONVICTIONS	TOTAL
	n=98	n=59	n=122	n = 279
Convicted	0	25,4	98,4	48
Conviction(s) under 21 years	0	3,6	54	23,7
Psychiatric service users under 21 years	37,6	8,2	48,6	34,8
Hospitalization 1–7 days	64,5	7,2	82,9	57,7
Hospitalization 8–365 days	95,5	15,5	89,7	72,8
Hospitalization more than 365 days	17,5	0	8,6	9,3

TABLE 7: Goodness-of-fit measures of latent class models of institutional profiles

	TWO-CLASS MODEL	THREE-CLASS MODEL	FOUR-CLASS MODEL	FIVE-CLASS MODEL
AIC	1792.365	1735.860	1734.271	1735.836
BIC	1839.570	1808.484	1832.314	1859.297
ABIC	1798.349	1745.066	1746.699	1751.486
c1	165	98	71	68
c2	114	59	74	17
c3		122	117	107
c4			17	62
c5				25
Entropy	0.786	0.842	0.830	0.793
LMR LR*	0.0000	0.0869	0.4251	0.0121
ALMR LR**	0.0000	0.0910	0.4285	0.0132
BLRT***	0.0000	0.0000	0.1000	0.2000

* Vuong-Lo-Mendell-Rubin likelihood ratio test for k-1 (H0) vs k classes
** Lo-Mendell-Rubin adjusted likelihood ratio test
*** Parametric bootstrapped ratio test for k-1 (H0) vs k classes

TABLE 8: Goodness-of-fit measures of latent class models of situational features of offences

	TWO-CLASS MODEL	THREE-CLASS MODEL	FOUR-CLASS MODEL	FIVE-CLASS MODEL
AIC	2313.638	2271.693	2236.425	2247.007
BIC	2389.894	2387.892	2392.567	2443.093
ABIC	2323.305	2286.423	2256.218	2271.864
c1	104	115	52	48
c2	175	98	96	44
c3	-	66	65	56
c4	-	-	66	35
c5	-	-	-	96
Entropy	0.876	0.848	0.851	0.865
LMR LR*	0.0000	0.0001	0.2971	0.8878
ALMR LR**	0.0000	0.0001	0.3029	0.8892
BLRT***	0.0000	0.0000	0.0000	0.8300

* Vuong-Lo-Mendell-Rubin likelihood ratio test for k-1 (H0) vs k classes
** Lo-Mendell-Rubin adjusted likelihood ratio test
*** Parametric bootstrapped ratio test for k-1 (H0) vs k classes

TABLE 9: Distribution of variables in multinomial logistic regression analysis by latent class, %

	FAMILY-RELATED	PEER GROUP-RELATED	PROPERTY-CENTERED OR NON-PREMEDITATED	TOTAL
	n=66	n=98	n=115	n = 279
Male	79	85	84	83
Spouse***	33	13	9	16
Parental support**	33	12	18	19
Living conditions**	92	76	72	78
INSTITUTIONAL PROFILE***				
Ex-psychiatric service user	42	25	40	44
Ex-psychiatric service user with previous conviction(s)	20	58	45	35
No previous hospitalizations or convictions	38	17	15	21
Diagnosed alcohol problem**	15	41	24	28
Diagnosed psychoactive substance abuse/ dependence**	20	43	35	34

TABLE 10 Distribution of previous psychiatric hospitalizations and imprisonments and recidivism of violent criminality, %

	FAMILY-RELATED OFFENSES N = 66	PEER GROUP-RELATED OFFENSES N= 98	PROPERTY-CENTERED OR NON-PREMEDITATED OFFENSES N = 115	TOTAL
Previous psychiatric hospitalization more than twice***	45,5	64,3	60,9	58,4
Previous imprisonment more than twice [1]***	7,7	12,2	15,8	12,6

[1] Includes remand and imprisonment.
*p <.05. **p <.01. ***p < 0.000