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Contents

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The Robustness of Self-Control as a Predictor of Recidivism

- Recent research using a sample of Finnish male short-term prisoners (N=351) suggested that prior social adjustment and personal self-control are predictors of post-release recidivism (Kivivuori & Linderborg 2010).
- That study was based on self-assessed re-offending probability (SARP) as the dependent variable in a cross-sectional analysis.
- In this study, we expand on that study by replacing SARP with post-release recorded recidivism (RR), thus creating a longitudinal design.
- When SARP is replaced with RR, low self-control remains a significant predictor of recorded recidivism. Most social adjustment related variables no longer appear to be related to recidivism. Self-control is the only variable whose link to recidivism is robust in different analyses.
- However, two social bonds related variables were related to recidivism with at least marginal significance. Having been in the army as a conscript, and family visits during the prison term, appear to counteract recidivism.
- When SARP is used as a predictor of RR, it independently predicts subsequent recidivism. Inmates have insight into their own futures. While the problem of false positives is considerable, SARP measures may be useful as measures of desistance optimism because subjective beliefs about the future may function as self-fulfilling prophecies.
- The limitations of the current study include the following: the exclusion of unrecorded crimes from the RR measure, the extremely preselected nature of the study group, responding style bias in survey-based predictors, and limited available control variables.

1 Background

In prior research, we examined the correlates of self-assessed re-offending probability (SARP) in a sample of Finnish short-term prisoners (Kivivuori and Linderborg 2009 and 2010). We observed that multiple variables tapping the social adjustment and social deprivation of the prisoner were associated with SARP. Having few or no siblings, having lived outside nuclear family conditions during childhood, lack of parental supervision during youth, and negative events during adulthood increased the variety of offences the prisoner projected to his post-release future. Negative events were incidents that reflect poverty or the breaking of social ties: being fired from a job, divorce, being evicted from an apartment, need to seek social assistance, need to loan money from friends and relatives, and mental health problems.

The research additionally included two measures tapping the dimension of personal self-control. We observed that low self-control and high youth crime involvement were associated with increased SARP. One of

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the basic goals of the research is to examine social factors and self-control as correlates of SARP, when both are simultaneously controlled in a single model. In this respect, the core finding was that social factors and self-control were both significant correlates of SARP.

These findings were based on a cross-sectional survey of short-term prisoners in Finland (Kivivuori & Linderborg 2009 and 2010). The basic structure of the data was cross-sectional, even though the outcome variable was pseudo-longitudinal (offences subjectively projected to post-release future). In reporting the cross-sectional findings, we also anticipated the logical next step, namely, replacing the subjective and cross-sectional outcome variable (SARP) with a genuinely longitudinal outcome variable (Kivivuori & Linderborg 2010, 137). In this research brief, we build on this by using a genuinely longitudinal outcome variable of recorded recidivism (RR) after release from prison. Replacing SARP with RR enabled us to do three things: first, we examined whether the prisoners' estimates concerning their own future behaviour were correct. Second, we assessed whether variables associated with SARP remain robust predictors when their link to RR is investigated. Third, we tentatively assessed whether SARP itself, now conceptualised as prisoner desistance optimism during the prison term, is a predictor of recidivism.

2   Data

This Finnish short-term prisoner study combined a cross-sectional quantitative survey and qualitative interviews. In the current extension of the original study, we use only survey data. Collected in January 2008, the survey was targeted to all short-term prisoners serving a sentence of no more than 8 months (no sampling). Responses were kept private but not anonymous. The prisoners were offered free telephone time to induce a high response rate. The final dataset included 351 male prisoners, yielding a response rate of 72 percent. For the purposes of the current analysis, additional register-based outcome variables were added to the survey data (see below).

3   Independent variables

The variables we use to explain variation in SARP and RR were described in detail in the prior research on SARP (Kivivuori & Linderborg 2010; for a list of variables, see Table 2 below). Most of the variables measured social adjustment and social deprivation before and during adulthood. We will here re-describe the measures of self-control in greater detail because it emerged as a central variable in the current analysis.

Self-control was primarily measured by a 9-item scale. The primary question was simple: "Could you describe your personality? Answer the following items, thinking about the *stable* features of your personality." The items were adapted from the self-control scales described by Tittle and Grasmick (2003) and included statements such as, "I do things for the excitement," "I like to take risks," and so on. There were four response options, ranging from "fully agree" to "fully disagree." The internal consistency of the scale was high (alpha=.81). Additionally, we used *variety of criminal involvement in youth* (under the age of 18) to capture individual behavioural propensities. We focussed on youth crime because it chronologically precedes the "difficulties in transition to adulthood" and "negative life events" scales. Only offence types that formed the basis of the SARP measure (see Table 1 below) were included. Since breaking and entering was probed with multiple items, this construct ranged from 0 to 8 (alpha .87). The self-control and criminality variables can be seen as attitude- and behaviour-based measures of a single construct capturing individual-level impulsivity.

4   Dependent variables

Our current focus is on two outcome variables: self-assessed re-offending propensity (SARP) and recorded recidivism (RR). These are described below.

Self-assessed re-offending propensity (SARP). The variable tapping into the prisoners' self-assessed future offending (SARP) was based on a 5-item scale, with items on the likelihood of committing specific offences in the future.[3] Each item was phrased as follows: "Think about what will happen to you in the future, after you are released from prison. Will you ever [commit another offence]?" The offences, response options, and distributions are shown in Table 1 below. For example, 64 percent of the prisoners estimate that after being released from prison, they will hit another person when angry. More than half believe that they will use marijuana or hashish. The responses were given numerical values, so that high scores reflected re-offending (no=0, possibly=1 and probably=2). The internal consistency of the full scale was strong (alpha .84). For analysis, this variable was dichotomised so that the highest quartile indicating high self-assessed re-offending probability was coded 1 and the other responses 0.

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[3] For other types of questions on self-reported future offending, see LeBel (2008, 142) and Dhami et al. (2006, 637)..

Table 1 Self-assessed likelihood of post-release offending among Finnish short-term prisoners (N=351).

After being released from prison, will you ever…	No	Possibly	Probably
Shoplift?	65	24	11
Use marijuana or hashish?	49	25	26
Drive a motor vehicle while having more than 0.5 per mille blood alcohol concentration?	57	35	8
Hit another person when you are angry?	36	48	16
Break in to a locked apartment, business, vacation home, or warehouse?	72	21	6

Note: Number of missing responses was relatively high in the items placed at the end of the questionnaire (about 6 percent / item). These figures are based on actual responses, while in the analysis, the missing values are replaced by means.

Recorded recidivism (RR). For recorded recidivism (RR), we used information from Finland's Prisoner Register Database. The follow-up time was 2 years. Recidivism was defined as a new crime, committed post-release, which resulted in a new sentence (unconditional prison sentence or community service).[4] According to the data, 41 percent of the prisoners had recidivated within a year of release. Nearly half (49 percent) had recidivated in two years' time.

This RR measure thus excludes undetected criminal behaviour. In analyses using RR, persons who died during the follow-up period and persons who returned to prison because of prior offences (offences committed before the most recent prison term) were excluded. The RR-based N is thus lower than the SARP-based N.[5]

To simulate the above-described SARP measure, we used a dichotomous variable, where the fastest recidivating 25 percent received the value 1, while all others received the value 0. This dichotomous variable flags that the prisoner belongs to a group of people who re-offended in 135 days or sooner after having been released from prison. In the multivariate analysis, we additionally specify a model where time to recidivism is used as the dependent variable.

5 Can prisoners predict their own post-release behaviour?

Since this research briefly examines how predictors of re-offending change as the outcome variable is changed from SARP to recorded recidivism (RR), there is reason to briefly examine how these two are related. In other words, we examined how well the prisoners forecasted their own criminal behaviour after release. For this purpose, we used a simple variety measure of future offending based on the five offences shown in Table 1. Prisoners who score zero on this variable responded that they would not commit any of the listed offences after release. Analogously, one crime type projected into the future would score one, two crime types two, and so on.

SARP was consistently related to future offending, as measured by official registers. Of the three measures of recidivism shown in Figure 1, membership in the fastest recidivating quartile was most consistently related to SARP variety scores (Figure 1). Thus, 14 percent of prisoners in the zero SARP group belonged to the fastest recidivating quartile, while 56 percent of the prisoners in the highest SARP group belonged to the highest recidivating quartile. Concordance, as indexed by bivariate association, is clear, but certainly not perfect. Thus, 44 percent of the former inmates in the highest SARP group (=inmates who had projected all five offence types into post-release future) did not belong to the fastest RR quartile. The prisoners' own predictions regarding their own behaviour thus appear to suffer from a considerable problem of "false positives." However, it is worth nothing that the accuracy of predictions is here judged on the basis of recorded offending. It is possible that the former prisoners have committed offences that have not become known to the police.

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[4] Ideally, the follow-up time should be longer than two years due to the lengthy criminal process duration in serious crimes.

[5] Additionally, persons who were so-called total conscientious objectors were excluded.
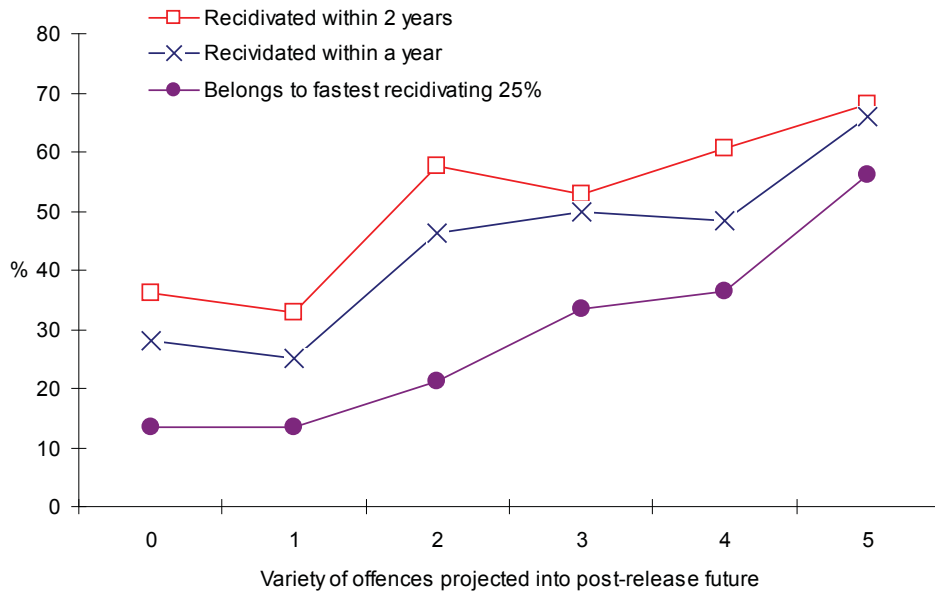
Figure 1 Percentage of recidivists by variety of offences projected into the future before release from prison.

6   Predictors of recorded re-offending

We used logistic regression to examine whether the predictors of recorded recidivism would differ from the correlates of SARP. We compare two models with identical predictors. In the first model, we use RR as the outcome variable (as opposed to SARP in our previous work). The analysis is now longitudinal because the predictors are measured before the outcome. The model uses a dichotomous variable where the fastest recidivating quartile scored 1 and all others scored 0. This is the closest approximation of the outcome variable we used in our previous SARP-based research (Kivivuori & Linderborg 2010). However, dichotomisation means that much information about individual differences in the rate of re-offending is lost. We therefore fitted a third model, using the Cox proportional hazards regression, which takes into account the time between release and re-offending. In Table 2, coefficients with statistical significance above the level of marginal significance (p<.10) are highlighted. This underscores the fact that only a few variables remain significant in this analysis using a longitudinal outcome.

In Model 1, only one variable emerges as a clearly significant predictor of recidivism: self-control. Prisoners who rated themselves as low in self-control were at significantly increased risk of being in the fastest re-offending 25 percent, net of other variables in the

model. Additionally, visits by family members to prison appear to be a marginally significant protective factor against post-release recidivism.[6]

Model 2 (the Cox model) corroborates the robustness of self-control as a predictor of recidivism. It also confirms that visits by family members (during incarceration) protect offenders from recidivism. Having served in the army as a conscript emerges as a marginally significant protective factor as well.

In prior SARP-based and cross-sectional research using the same survey data, the robustness of social causation (net of social control) was underscored. In the current analysis, social causation no longer appears to be a robust predictor of re-offending. Variables tapping various dimensions of social disadvantage, such as difficulties in transition to adulthood and negative life events, were no longer associated with re-offending. In regard to social adjustment variables, the sole exception is army experience, which appears as a protective factor. Army experience may teach social skills and enable these individuals to craft social ties to other men, so that men who have been in the army are better equipped to desist from crime (cf. also Sampson & Laub 1996).

However, we underscore that the findings on social adjustment should not be taken as a refutation of social causation in recidivism (let alone in crime causation generally). The limitations of the current study are discussed below.

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[6] With p=.111, feeling remorse was also close to achieving marginal significance as a protective factor against real recorded recidivism in the logistic model, but this was not the case in the Cox model.

Table 2 Logistic and Cox regression explaining high recidivism. Odds and hazard ratios.

| | M1 | | M2 | |
| | Real recidivism (25 % fastest) (logistic) | | Time to first reoffending (Cox) | |
	OR	CI 95%	HR	CI 95%
Many siblings	0,98	0,51–1,87	1,12	0,77–1,61
High parental supervision	0,93	0,34–2,59	0,97	0,54–1,74
Years lived in nuclear family				
Some (6–17)	0,97	0,44–2,16	1,15	0,72–1,82
Many (18)	1,01	0,47–2,16	1,02	0,66–1,58
Military service as conscript	0,62	0,33–1,16	0,72[a]	0,51–1,02
Transition difficulties to adulthood				
Medium	0,93	0,44–2,00	1,01	0,65–1,57
High	1,02	0,46–2,26	1,2	0,77–1,86
Negative events				
Some	1,01	0,47–2,17	0,92	0,61–1,40
Many	0,66	0,30–1,45	0,71	0,46–1,09
Youngest child 0–5 years old	1,12	0,49–2,55	1,04	0,65–1,66
Youngest child 6–12 years old	1,24	0,57–2,72	1,14	0,75–1,76
Self-control				
Medium	2,46*	1.06–5,68	1,21	0,79–1,86
Low	4,22**	1,75–10,19	1,86**	1,17–2,95
Variety of criminality in youth				
Medium	1,21	0,53–2,75	1,21	0,77–1,89
High	2,06	0,80–5,29	1,41	0,82–2,40
Participation in alcohol treatment				
Medium	0,59	0,30–1,14	0,79	0,55–1,13
High	1,06	0,40–2,78	0,67	0,36–1,26
Work in open institution	0,76	0,35–1,65	1,02	0,67–1,53
Visits by family members	0,55[a]	0,27–1,12	0,55**	0,36–0,83
Remorse for crimes				
Medium	1,26	0,56–2,71	1,37	0,90–2,10
High	0,5	0,21–1,17	1,01	0,66–1,54

**=p<.01 * p<.05 a=p<.10 All prisoners were male. Models are adjusted for age. N=312. Omitted reference categories are not shown.

7   SARP as a predictor of recidivism

Our main goal was to determine what happens when the SARP-based outcome variable is replaced with a genuinely longitudinal RR-based outcome variable. A different question is how SARP functions as a predictor of RR. Now, SARP is seen as measuring prisoner desistance optimism/pessimism (instead of as a proxy outcome measure).

There is a strong bivariate association between SARP and belonging to the fastest recidivating RR quartile (χ2=38,1, df=5, p=.000; see Figure 1 above). The more a prisoner projects offences in his post-release future, the more likely he is to recidivate after the prison term. This would seem to suggest that SARP can be used as a predictor of post-release RR. While this question is outside the main purview of the current study, we fitted additional logistic and Cox models in which SARP was a predictor of RR. These tentative multivariate analyses indicated that SARP is a predictor of RR, net of other variables shown in Table 2. The finding also suggests that subjective desistance optimism can function as a "self-fulfilling prophecy" and therefore as a protective factor against recidivism (see also Dhami et al. 2006). The problem of false positives means that SARP type can hardly be used as instruments for making predictions about individual inmates. However, basic risk factor research could benefit from SARP scales as measures of (or controls for) desistance optimism.

8   Discussion

Main findings. A prior survey-based analysis (Kivivuori & Linderborg 2010) suggested that having many siblings, high parental supervision during youth, years spent in a nuclear family during childhood and adolescence, and having a child (aged 6–12) were associated with reduced likelihood of estimated re-offending. Feeling remorse for past offences was also related to reduced SARP. In contrast, negative life events (such as divorce, loss of job, and mental health problems) increased the projected likelihood of relapse to crime. Self-control and prior youth offending were also robustly related to SARP. The lower the self-control, the more likely the prisoner projected offences to post-release future. When self-control was added, the link between social ties and SARP was reduced but did not vanish; social causation appeared to be robust.

In this analysis, we used the same dataset as in the prior analysis, but we additionally utilised data on post-release recorded recidivism (RR). We thus moved from a cross-sectional to a longitudinal design. The main finding was that self-control emerged as a robust predictor of subsequent criminal behaviour, while general social adjustment-related variables no longer predicted RR. This finding is consistent with the self-control theory of crime (Gottfredson & Hirschi 1990) and suggests that self-control is a particularly relevant predictor of recidivism. At the same time, general social adjustment-related variables were not related to longitudinally measured relativism. This appears to suggest that in the current population, self-control may be more relevant than social adjustment as a predictor of recidivism. On the other hand, two variables still emerged as promising predictors of recidivism: having been in the army as a conscript, and visits by family members while in prison. Both tap into people's ties to social institutions and are thus consistent with social control theory.

Prior positive findings on alcohol treatment were not replicated. The small number of respondents, and the instability of findings with different outcomes variables, suggest that treatment-related results should be very cautiously interpreted.

There appears to be reason to continue developing SARP type measures. The rationale for this is, however, not that they can be used as proxy outcome measures. Instead, SARP type measures can be used as predictors of recidivism, as it appears that desistance optimism is linked to RR.

Limitations. This article elaborated on previous research using the same dataset with an additional/improved outcome variable. While prior research was cross-sectional, current findings are based on longitudinal analyses. Re-offending was measured independently of the prisoners' own projections and hopes. While this analysis yielded interesting findings, certain important limitations of the analysis warrant discussion.

(1) First, the RR measure *excludes all undetected offences and offences not resulting in conviction.* It is possible that self-control predicts the kind of offending which is most likely to come to the attention of the police. Offences that are serious, take place in public places, and reflect impulsivity may be more likely to become known to the police (and therefore included in the RR measure), and more likely to result in conviction, compared to other types of offences. It is therefore possible that a more inclusive outcome measure could have corroborated the significance of the social variables. After all, the strong link between social variables and SARP was observed within the realm of self-reported behaviours, and it is measured independently of official control processes. In the future, similar studies should utilise recidivism measures based on police statistics (without conviction criterion) and on self-report interviews. In the absence of such additional analyses, the jury is still out concerning the role of social adjustment and deprivation.

(2) Second, our study population is a *highly selected group of people*. The short-term prisoner project involved a control group randomly chosen from the general male population. Comparisons indicated that Finnish short-term prisoners are typically seriously socially disadvantaged when compared with a random age-adjusted sample of Finnish men (Kivivuori & Linderborg 2009, 17–58, 221–224). If social disadvantage does not emerge as a robust predictor explaining recidivism variation within the short-term prisoner population, this may be due to the fact that social deprivation, alcohol abuse, and negative life events are near constants in the highly selected prisoner population. On the other hand, it is interesting to observe that self-control still predicts re-offending within such a population. The extreme selection bias in the sample also means that the current findings are irrelevant from the point of view of general crime causation (as opposed to prisoner recidivism causation).

(3) Third, retrospective self-reports of one's past may be susceptible to *responding style and even mood biases.* In other words, people who see lots of problems in their past may be more prone to project offences to the future. Others who think "every cloud has a silver lining" may project fewer problems to their past and fewer offences to the future. Therefore, responding style or mood biases could account for the ease with which we found correlations between past and future problems in our previous analysis. Indeed, both the original analysis and the current research use retrospective survey reports as measures of life-course social adjustment. Studies using register sources have documented social causation in desistance: work and family ties do matter in this respect (Savolainen 2009). However, family visits and possibly the army experience findings in our research are consistent with such studies.

(4) Fourth, we *lack other personality variables than self-control.* The inclusion of variables tapping a

broader range of personality variation might increase our ability to predict future behaviour. In the future, studies such as these should consider incorporating general personality measures (such as BFI), measures of morality and moral emotions,[7] and measures of psychopathic personality traits. It is possible that our measure of self-control has caught some but not all of the relevant personality variations tapped by other such constructs. Furthermore, since such measures can include sub-scales that tap the dimension of impulsivity, their inclusion could address the question of whether self-control is a sufficient individual-level construct in criminological contexts. Clearly, more research is needed to examine the role of social causation and its interplay with personality variables.

References

Dhami, M. K. & Mandel, D. R. & Loewenstein, G. & Ayton, P. (2006). Prisoners' Positive Illusions of Their Post-Release Success. Law and Human Behavior 30, 631–647.

Gottfredson, M. R. and Hirschi, T. (1990). A General Theory of Crime. Stanford: Stanford University Press.

Kivivuori, J. & Linderborg, H. (2010). Negative life events and self-control as correlates of self-assessed re-offending probability among Finnish prisoners. European Journal of Criminology 7:2, 123–139.

Kivivuori, J. & Linderborg, H. (2009). Lyhytaikais-vanki. Tutkimus lyhytaikaisvankien elinoloista, elämänkulusta ja rikollisuudesta. Oikeuspoliittisen tutkimuslaitoksen julkaisu-ja 248, Helsinki. [English summary: Short-Term Prisoners in Finland: A Study of Their Living Conditions and Criminality.]

Laub, J. H. and Sampson, R. J. (2001). Understanding Desistance from Crime. In Michael Tonry (ed) Crime and Justice. A Review of Research. Volume 28. Chicago, Chicago University Press.

LeBel, T., Burnett, R., Maruna, S. and Bushway, S. (2008). The ʹchicken and eggʹ of subjective and social factors in desistance from crime. European Journal of Criminology 5: 2. 131–159.

Sampson, R. J. & Laub, J. H. (1996). The Military as a Turning Point in the Lives of Disadvantaged Men. American Sociological Review 61:3, 347–367.

Savolainen, J. (2009). Work, Family and Criminal Desistance. Adult Social Bonds in a Nordic Welfare State. British Journal of Criminology 49, 285–304.

Tittle, C. E., Ward, D. R. and Grasmick, H. (2003). Self-control and crime/deviance: Cognitive vs. behavioural measures. Journal of Quantitative Criminology 19:4, 333–365.

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[7] Of these, we had only remorse. Propensity to feel guilt, shame, and forgiveness are other candidates.

Suomenkielinen tiivistelmä

Lyhytaikaisvankitutkimuksessa havaittiin, että useat sosiaalista taustaa, elämänhistoriaa ja yksilöominaisuuksia kuvaavat tekijät olivat yhteydessä siihen, kuinka todennäköisenä vangit pitivät uusien rikosten tekemistä vapautumisen jälkeen (Kivivuori & Linderborg 2009 ja 2010). Havainnot perustuivat yhtenä ajan-kohtana tehtyyn kyselyyn. Tässä verkkokatsauksessa asetelma on laajennettu pitkittäisasetelmaksi, jonka tavoitteena on tarkas-tella, selittävätkö samat taustatekijät vankien todellista uusinta-rikollisuutta vapautumisen jälkeen. Tuloksena on, että alhainen itsekontrolli pysyy uusintarikollisuuden riskiä lisäävänä tekijänä eri asetelmissa ja tilastollisissa malleissa, sen sijaan sosiaalista huono-osaisuutta mittaavien muuttujien kyky ennustaa todellista uusimista näyttäisi olevan heikompi ja epävakaampi. Toisaalta tutkimuksessa saatiin viitteitä siltä, että armeijan käyminen sekä vierailut ja tapaamiset vankeuden aikana voivat suojata vankeja uusimiselta, mikä viittaa sosiaalisten siteiden merkitykseen. Se, miksi sosiaaliset taustatekijät eivät nousseet tässä tutkimuksessa vahvoiksi uusimisen selittäjiksi, voi johtua metodologisista sei-koista sekä siitä, että vankipopulaatio on alun perinkin vahvasti valikoitunut sosiaalisesti huono-osaisista ryhmistä. Tutkimuksessa havaittiin myös, että vankien subjektiiviset käsitykset omasta va-pautumisen jälkeisestä rikollisuudestaan vaikuttavat uusimiseen. Luottamus rikosuran päättymiseen näyttäisi jossain määrin toi-mivan itsensä toteuttavana ennusteena, kun muiden tekijöiden vaikutus on laajalti vakioitu.