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Lars H Andersen

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Address:
The Rockwool Foundation Research Unit
Soelvgade 10, 2.tv.
DK-1307 Copenhagen K

Telephone +45 33 34 48 00
E-mail forskningsenheden@rff.dk
web site: www.en.rff.dk

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Lars H Andersen, Rockwool Foundation Research Unit, lha@rff.dk

ABSTRACT

Existing empirical literature on probation and parole shows that individual client characteristics matter for recidivism, but also characteristics of their assigned probation or parole officer have been shown to matter. And although theoretical accounts of probation and parole debate the relative importance of these client and officer characteristics, no study has provided an empirical benchmark of the total effects of officers and clients (i.e., their characteristics) on recidivism. In this paper I decompose the total variance in recidivism into components attributable to probationers and parolees and their assigned probation or parole officers, respectively, using register data that merges all probationers and parolees in 2002-2009 in Denmark with their assigned officer. Results show that although substantial variance components are attributable to both officers and clients, the component attributable to clients is around twice the size of the component attributable to officers. These estimates provide new evidence on the most common types of noncustodial alternatives to imprisonment, probation and parole, which affect millions of people each day.

Keywords: Community Supervision; Multilevel Models; Officer Characteristics; Parole; Probation; Recidivism; Variance decomposition

INTRODUCTION

Alongside the great American experiment in mass imprisonment, to which so much research attention has been devoted (e.g., Western, 2006), another experiment in mass probation and parole has been taking place since the early 1980s (DeMichele, 2014; Phelps, 2013). And even though the probation population decreased over the most recent years, around 4.8 million United States citizens are still under the purview of a probation or parole officer on any given day (Maruschak and Parks, 2012)—a number that greatly exceeds the 1.6 million currently in prison in the United States (Carson and Golinelli, 2013).

Probation—a court-ordered period of correctional supervision in the community—has become the most common noncustodial alternative to imprisonment. And as a consequence of mass imprisonment, the use of parole—a period of conditional supervised release in the community following a prison term—more than quadrupled in the United States since the early 1980s (Maruschak and Parks, 2012). Central to both types of community supervision is the idea that a probation or parole officer, by keeping close contact with the probationer or parolee, redirects the probationer or parolee by offering a series of control and support functions (Glaser, 1969). Thus, probation and parole officers, from now on referred to jointly as officers, not only oversee that probationers and parolees, from here on referred to jointly as clients, do not violate their terms of probation or parole, they also offer various support functions, such as helping their clients find employment and housing, and, more generally, guiding them in how to desist from criminal recidivism. Given this dual role of officers, theories on community supervision suggest that in addition to differences between clients, differences between officers could be important for how their assigned clients perform following supervision (e.g., Durnescu, 2012; Glaser, 1969; Klockars Jr., 1972).

Two sets of estimates are missing from the empirical research on probation and parole. First, we lack estimates of the total effect of officers and the total effect of clients on

recidivism. This lack is problematic, because even though existing empirical research shows that characteristics of officers (e.g., Palmer, 1995) and their workload (e.g., Jalbert and Rhodes, 2012), as well as individual characteristics of clients (e.g., MacKenzie and Li, 2002, Oleson et al., 2012), are important for recidivism—and the literature on community supervision debates the relative importance of officers and clients (e.g., Steiner et al., 2012)—we do not know exactly how important officers and clients are. Second, we lack estimates on just how much of the total effects of officers and clients on recidivism that can be attributed to officer and client characteristics which the literature emphasizes as important. This lack is problematic, because even though the literature on community supervisions discusses which features of clients and officers matter the most (e.g., Durnescu, 2012), we do not have an empirical benchmark for this discussion.

In this paper I seek to fill these two lacks in the empirical research on probation and parole. To reach this end, I merge data on all probationers and parolees in Denmark in 2002-2009 with information on their assigned officers, and apply a two-step analytic approach. The first analytic step decomposes the total variance in recidivism and estimates the variance components attributable to officers and clients, respectively. Results show that in addition to clients being accountable for approximately 17 percent of the total variance in recidivism, characteristics of officers account for a non-trivial share as well, approximately 10 percent. Thus, clients themselves are accountable for more variance than officers, almost twice the variance of officers, a finding that is especially true for parolees who are accountable for as much as 2.5 times more than their assigned officers (17 percent attributable to parolees, 7 percent to their officers). The latter finding is not surprising considering how parolees are more disadvantaged and might be harder for the officers to reintegrate. The second analytic step adds to the model a host of officer, workload, and client characteristics in order to try and explain away the variance components that were estimated in the first analytic step.

Results show that whereas standard risk factors explain away almost the entire variance component attributable to clients, officer background characteristics and workload characteristics explain away little of the variance component attributable to officers. This last result is surprising given existing literature, and suggests that officer characteristics which are not observed in the data, such as their attitudes towards the supervision they perform or their empathetic abilities, could be more important than background characteristics such as age and sex, and workload.

BACKGROUND

Since the pioneering work of Glaser (1969) and Klockars Jr. (1972) scholars have emphasized the role probation and parole officers play in securing better outcomes for their assigned probationers and parolees. As already mentioned, this role of the officers is dual. Officers oversee that clients do not violate the conditions of probation or parole, and the officers have discretionary powers regarding when to file a report on the clients and transfer them to imprisonment. At the same time, officers serve a social welfare function, and support and guide clients in their search for housing and employment, assist them in achieving unemployment benefits, and provide assistance and strategies for the clients to cope with their criminal recidivism risk.

Considering these different roles of officers, and their discretionary powers, it should come as little surprise that it might matter for clients which officer they are assigned to. At the extremes, getting a hardliner who does nothing but control you and who files a report for a single minor breach of probation or parole conditions will almost inevitably have consequences for the client—be they good or bad—compared to getting a more lenient officer who assists and supports you in any way he or she can.

Throughout the history of probation and parole—from the early probation work of John Augustus (2012 [1852]), who was driven solely by his own characteristics and beliefs, and up until today—scholars of probation and parole have viewed officer characteristics as quintessential to the dual role of officers. And even though objectivity and the measurability of supervision programs and of officer skills are now valued to a far greater degree than officer characteristics, we may still expect the treatment that clients get to vary by their assigned officer (Durnesceu, 2012).

Research supports this expectation by showing that officer characteristics are important for the treatment clients get (Andrews, 2011). For example, research emphasizes the officer's communication style (Andrews and Kiessling, 1980), empathy (Andrews, 1980), and interpretation of client needs (Seng and Lurigio, 2005), just as the specific culture of supervision agencies (Taxman, 2008) along with local bureaucratic constraints (Grattet, Lin, and Petersilia, 2011) matters. And as the dual role of the officers has been shown to be stressful, differences between officers in how they cope with stress might be important for the supervision they perform (Gayman and Bradley, 2013). Recent research has also devoted attention to the relationship between client and officer (e.g., Andrews et al., 2011; Paparozzi and Gendreau, 2005; Schwalbe and Maschi, 2009; Skeem et al., 2007), suggesting that the matching of officers and clients might be important too.

A recent study (Andersen and Wildeman, 2014) uses a research design capable of identifying the causal effect of officer assignment on labor market outcomes and recidivism. They exploit a rotational procedure for assigning officers to clients in Copenhagen, Denmark to obtain variation in officer assignment that is unrelated to characteristics of clients. Their results show that officer assignment only has a minor—although statistically significant—impact on clients in terms of labor market outcomes and criminal recidivism within one (labor market outcomes) or two (recidivism) years.

Studies have also shown that background characteristics of the clients (e.g., MacKenzie and Li, 2002, Oleson et al., 2012) as well as the officers (e.g., Andrews, 2011; Steiner et al., 2011) are correlated with criminal recidivism. Over and above general risk factors (e.g., Shader, 2003), which are used to assess recidivism risk (e.g., Barnes et al., 2010; 2012), characteristics of the case that the client is under supervision for are correlated with criminal recidivism (Huebner and Berg, 2011; Huebner and Bynum, 2006; MacKenzie and Li, 2002). And even though Green and Winik (2010) finds no causal effect on recidivism of changing length of probation among offenders sentenced for drug-related crimes, supervision length might still be indicative of clients who are comparatively more disadvantaged.

Officer characteristics and skills such as age, sex, minority background, educational background, job experience, rank, training, attitudes towards the supervision they perform, attitudes towards agency directives, communication style, the ability to deliver empathetic supervision, and the ability to understand client needs, have all been shown to correlate with criminal recidivism (Andrews, 1980; Andrews, 2011; Andrews and Kiessling, 1980; Bonta et al., 2008; Dowden and Andrews, 2004; Grattet, Lin, and Petersilia, 2011; Lowenkamp et al., 2014; Makarios et al., 2012; Robinson et al., 2012; Seng and Lurigio, 2005; Steiner et al., 2011; Trotter, 1996).

The officers' workload has also been shown to matter for the treatment they provide to their assigned clients (Jalbert and Rhodes, 2012). This is because the effect of officers on clients is assumed to depend on the possibility of offering supervision and services, and it has been suggested that also the time available for these tasks is important (Jalbert and Rhodes, 2012; Steiner et al., 2011; however, see Clear and Hardyman, 1990).

Thus, there are many reasons to expect characteristics of officers and clients to matter for criminal recidivism, which have also been discussed in the literature on probation and parole (e.g., Steiner et al., 2011). Empirical evidence on the importance of officers and clients

is, however, limited, and lacks two sets of important estimates. First, no previous study has provided estimates of the total effect of officers and the total effect of clients on recidivism. In this paper I provide such estimates by decomposing the total variance in recidivism into components attributable to officers and clients, respectively. Second, even though the literature on probation and parole discusses which features of clients and officers matter the most for recidivism (e.g., Durnescu, 2012), we lack estimates on how much of the total effects of officers and clients on recidivism that is attributable to certain features of clients and officers. In this paper I provide such estimates by adding to the empirical model background characteristics of officers and clients, and information on the officers' workload, and results may serve as an empirical benchmark for theoretical debates on how important these features of officers and clients are.

No empirical study of probation and parole observes all of the officer and client characteristics that the literature emphasizes as important. And the same is true for the study presented in this paper. But the Danish case, which is explained in detail below, provides an opportunity to decompose the total variance in recidivism—measured by criminal reconviction—and present empirical estimates of the variance components attributable to officers and clients, respectively. These components include the total variance in recidivism that is attributable to officers and clients, respectively, and thus include the effects of observed as well as unobserved characteristics.

PROBATION AND PAROLE IN DENMARK

Similarities between Denmark and the United States

Probation in Denmark is a court-ordered period of correctional supervision in the community, and parole is a period of conditional supervised release in the community following a prison term, just like in the United States. Both types of community supervision imposes rules and

regulations on the offender, and the client might for example be subject to drug and alcohol tests, restrictions on employment, and unannounced home visits to control whether the requirements of probation or parole are followed. The typical probation length in Denmark is either one or two years, while the typical parole length is two years.

Prisoners sentenced to more than three months of imprisonment in Denmark are expected to achieve early release on parole upon having served two thirds of their sentence, provided that at least 30 days of the sentence remains to be served. However, to provide an incentive for inmates to use re-socializing initiatives (like pursuing education) while being imprisoned, it is possible to achieve early release on parole after serving half the prison sentence if an inmate shows devotion to achieving re-socialization.[i] In this sense, the time at which prisoners in Denmark become eligible for parole is not that different than in the United States.

Differences between Denmark and the United States

The number of people under community supervision in Denmark more than doubled since the 1980s, just like in the United States. Yet despite similar trends in the use of community supervision, the sheer volume in the United States greatly exceeds the use of this correction type in Denmark. Today 168 per 100,000 Danes are under community supervision, which is almost only one tenth of the 1,526 people under community supervision per 100,000 in the United States. And whereas the change in the United States since the 1980s is driven by increases in both probation and parole, the Danish increase is strictly attributable to an increase in the number of probationers. And, indeed, the number of parolees has been fairly stable (at around 60 per 100,000 Danes on any given day; the corresponding number is 270 per 100,000 in the United States) over the period, which reflects that Denmark did not

partake in the experiment in mass imprisonment (own calculations on numbers from Maruschak and Parks, 2012, and Danish Prison and Probation Service, 2012).

The assignment of officers to clients in Denmark follows a geographical principle, where each officer typically gets all cases within one or more municipalities. And even though some municipalities are larger than others or have the larger cities in them, and therefore also have more clients and more officers, one or a few officers generally suffice to perform the needed supervision within municipalities.

By law the assigned officer is required to meet with the client every two weeks during the first two months, and once a month thereafter. At the first meeting—which should take place within the first week following release for parolees, and within the first two weeks following conviction for probationers—central aims regarding reintegration should be agreed upon.

The vast majority of officers in Denmark are social workers, whereas the same is only true for probation officers in the United States (where parole officers usually are former police officers). And in Denmark, both probationers and parolees are overseen by the same social workers, so the distinction between probation and parole officers is somewhat artificial—they are one and the same social worker. All social workers undergo the same formal schooling, and in addition, social workers employed by the Prison and Probation Service undergo a training program tailored for the challenges they might encounter as probation and parole officers. Clients in Denmark are in this sense likely to receive a more homogenous treatment than we might expect in the U.S. context.

Last, there are differences between the amount of discretion that officers have in Denmark and in the United States. In the United States there are far more conditions of probation and parole than in Denmark, which might easily lead to more technical violations

simply because there are more conditions to violate, just as it provides the officer with more discretionary powers.

Advantage of the Danish Case

The Danish case has the key advantage that it provides full population data that are precise and rich in detail and may be linked across a host of administrative registers (for a discussion of the merits of Scandinavian register data, see Lyngstad and Skardhamar, 2011). These data allow for the pairing of clients with their assigned officer, which is required to decompose the total variance in criminal recidivism into components attributable to officers and clients, respectively. And these data further allow the inclusion of background information on both clients and officers, which is required to estimate how much of the variance components that can be explained away by background characteristics. In this way the Danish data are highly suitable for the purposes of this paper.

DATA AND VARIABLES

For this paper I merged data from the Danish Prison and Probation Service on all probationers and parolees in Denmark in 2002-2009 with information on the probation and parole officers that they were assigned to. Using personal identification numbers—which resembles Social Security Numbers in the United States, and which are linkable across many population registers available from Statistics Denmark—I added individual information on these clients, and on their assigned officers. From these data I produced an analytic sample of 22,319 cases on 18,112 clients, along with the 466 officers that they were assigned to. All supervisions began and ended during 2002-2009, and none of the clients were under supervision for DUI or sexual crimes, as such clients received their treatment outside the Prison and Probation Service.

To achieve this analytic sample, I excluded a number of cases from the raw sample of 27,069 cases. Table 1 shows these exclusions, and as is seen from the table, the analytic sample has more than 80 percent of the cases in the raw sample.

[Insert Table 1 about here]

I excluded mentally ill offenders because they receive their treatment outside the probation and parole service, and are not affected by their assigned officer. I dropped offenders older than 65 years of age because they were so few and because I do not expect them to relapse into crimes due to their old age. Some cases had exceptionally long supervision periods—most likely caused by registration errors—and some cases had missing information in one or more registers, and I also excluded these cases.

In order to decompose the total variance in criminal recidivism into components attributable to officers and clients, respectively, I follow each client in the registers from their supervision year and up to 2011 to make a panel of criminal recidivism by year for each client. The panel is unbalanced, and, for example, clients who began their supervision in 2007 have 5 observations in the panel, whereas clients who began their supervision in 2002 have 10 observations. Clients with more than one case during the data window are in the panel from their first supervision, assigned to the officer from their first case, yet from the year of their second supervision they are assigned to the officer from their second case, and so forth. As is seen from Table 1 the panel has 129,195 observations.

VARIABLES

Dependent Variable

The dependent variable measures new criminal convictions within each year from the supervision and through 2011. For each follow up year, a binary indicator takes the value one if the client was convicted of new crimes during that year and zero otherwise. Importantly, I

count technical violations of probation or parole as new convictions if they result in a conviction at court (which implies (re-)imprisonment). This prevents the incapacitation of the highest risk offenders, who are more likely to violate their probation or parole conditions and who are also more likely to commit new crimes, from influencing the results.

Probation and Parole Officers

I add 7 variables to describe officer characteristics. I add age, sex, marital status, whether they have children, and whether they have ethnic minority background. And even though the modal education background of officers in Denmark is social worker, I include years of education—and I add a dummy variable for 15 years of education, as this corresponds to social worker education.

Workload

In addition to background characteristics of the officers, I include information on the officers' workload, as existing research, as discussed, has shown that the time available for officers to perform their supervision might be important. I characterize workload using two variables, measured at the date the client is assigned to the officer. First, I include the number of cases currently assigned to the officer, the workload. Second, I include the share of parolees among the cases currently assigned to the officer. The first of these variables measures the amount of work that the officer has when the new client is assigned to him or her. The second variable reflects a qualitative aspect of the workload, as parolees are likely to be more time consuming and may place harder burdens on the officer (because of their less favorable characteristics). The variables only measure the officer’s workload when a client is assigned to him or her, and clients that were previously supervised by the officer or who will be supervised by him or her in the future are thus not counted as part of the officer’s workload.

Probationers and Parolees

I add 14 variables to characterize the clients, all chosen from the existing research that was already discussed. In addition to including case type, probation or parole, I include length of supervision, and I include dummy variables for crime type, indicating the three most common crime types in the sample: Violence, larceny, and drugs. The reference category is then other crime types, for example property crimes. As background characteristics I use age, sex, marital status, whether they have children, ethnic minority background, years of schooling, prior earnings, and previous convictions as well as previous imprisonment.

METHOD

The yearly outcome observations are nested within clients, who are nested within officers. Thus, the data structure is hierarchical, which makes multilevel models suitable for decomposing the total variance in criminal recidivism and provide estimates of the total variance components attributable to officers and clients, respectively (Kreft and Leeuw, 1998). I begin with a simple variance component model in which the total variation in criminal recidivism can be written as follows:

$$y_{tio} = \propto + \beta_1 t + v_o + u_{io} + \varepsilon_{io}, \qquad [1]$$
$$v \sim N(0, \sigma_v^2),\ u \sim N(0, \sigma_u^2), \varepsilon \sim N(0, \sigma_\varepsilon^2),\ t \in \{2002, 2003, \ldots, 2011\},$$

where y_{tio} is criminal recidivism at year *t* for client *i* assigned to officer *o*. The general (linear) trend in criminal recidivism throughout the follow up period is captured by the inclusion of observation year (*t*). The model intercept $\propto$, which measures the grand mean of the model, is supplemented by two random intercepts, capturing deviations from the grand mean that arise from the nesting within officers (v_o) and within clients within officers (u_{io}). The error term (ε_{io}) captures idiosyncratic statistical noise of clients within officers.

The advantage of the model is that the total variance in criminal recidivism can be separated into variance components attributable to officers and clients (and noise):

$$var(y_{io}|t) = \sigma_v^2 + \sigma_u^2 + \sigma_\varepsilon^2, \qquad [2]$$

where σ_v^2 is the contribution from officers, σ_u^2 is the contribution from clients, and σ_ε^2 is the contribution from statistical noise. Rescaling the variance components into intra-class correlation (ICC) coefficients—which measure the share of the total variance that is attributable to each model level, officers and clients—makes the model suitable for answering the main research question in this study.

Another advantage of the model is that it allows for the inclusion of control variables of both clients and officers, while still taking the hierarchical data structure into account. Investigating how each ICC changes when adding control variables to the model shows how much of the variance components attributable to clients and officers that can be explained away by these control variables.

The analytic approach follows two steps. First, I estimate simple variance component models in order to analyze how much of the total variation in criminal recidivism that is attributable to officers and clients. I estimate the model jointly for all clients, but also separately for probationers and parolees, to see whether the variance components differ between probationers and parolees. Second, I add control variables to the model in three steps: Officer characteristics, workload, and client characteristics. This is to see how much the ICCs change as control variables, by level, are incorporated in the model.

RESULTS

Table 2 shows descriptive statistics (means and standard deviations) of the sample, by sentence type. The first column shows statistics for the total panel, while the latter two columns show statistics for the probationers and parolees separately.

[Insert Table 2 about here]

The first row of the table shows that on average one in five clients are convicted within each follow up year. For probationers, the recidivism rate is lower, around one in six, whereas for parolees it is higher (one in three). This difference should come as little surprise as parolees are generally more disadvantaged than probationers. Other differences exist between probationers and parolees, and probationers are better off, again not a surprise. For example, probationers in the sample have much higher prior earnings than their parolee counterparts, just as they have more schooling. Parolees have more prior convictions (almost 8, which is close to double of probationers), and around three out of four parolees were previously incarcerated (compared to just below half of probationers).

SIMPLE VARIANCE DECOMPOSITION

Table 3 shows results from the simple variance component models that decomposes the total variance in criminal recidivism and estimates the components attributable to officers and clients. Significant and important shares of variance in criminal recidivism are attributable to both officers and clients, both in general and separately among probationers and parolees.

[Insert Table 3 about here]

The client ICCs are generally higher than the ICCs for officers, suggesting that criminal recidivism is more correlated with individual characteristics than characteristics of the assigned officer. In the general model 17 percent of the variance in recidivism is attributable to clients, while 10 percent is attributable to officers, suggesting that clients are

accountable for 1.8 times the variance that is attributable to officers (all mentioned numbers are calculated from unrounded numbers). This difference makes sense, as the literature emphasizes individual risk factors as extraordinarily important for recidivism.

Results for probationers are very similar as the general results that were just mentioned. This is expected, as almost 75 percent of the sample is probationers. But because the variance component attributable to probationers is lower than in the general model, probationers are accountable for a little less, 1.6, times the variation that is attributable to officers.

The opposite result emerges for parolees. Here, the share of variation in criminal recidivism that is attributable to officers is lower, 7 percent compared to 10 in the general model, and parolees are thus accountable for as much as 2.5 times the variation that officers are. This result again shows that parolees are more disadvantaged than probationers, and that it might take greater effort from officers to reverse the strong risk factors that many parolees share.

All in all, the simple variance component models show that important variance components are attributable to clients as well as officers. Clients themselves are accountable for more variance than officers, which is especially true for parolees, who are accountable for more than double the amount of variation in recidivism than their assigned officers are.

EXPLAINING THE VARIANCE COMPONENTS

Table 4 shows results from the variance component model of criminal recidivism that takes observed characteristics of officers, their workload, and clients into account.

[Insert Table 4 about here]

The first column of Table 4 adds background characteristics of officers (Model 1). There are positive associations between criminal recidivism and several officer

characteristics. Criminal recidivism is higher among clients assigned to older officers, to female officers, to unmarried officers, and to officers of ethnic minority background. Yet comparing the officer ICC from this model (0.095) to the simple variance component model (0.096) yields no substantial decrease in the amount of variation that is attributable to officers after taking their background characteristics into account.

The second column of Table 4 adds characteristics of the officers' workload (Model 2), which shows three interesting results. First, the positive correlations between officer characteristics and criminal recidivism that were just mentioned are now largely insignificant, except that clients assigned to unmarried officers still have higher recidivism rates. This shows that the positive association between officer characteristics and recidivism is driven not so much by who these officers are, but more by characteristics of their workload. Second, it is not so much the size as it is the composition of officer workloads that is correlated with recidivism. The sheer amount of work an officer has when a client is assigned to him or her does not correlate much with recidivism, but the share of parolees among the officer's workload does, and clients assigned to officers with a higher share of parolees in their workload have higher recidivism rates. Importantly, this result might be driven partly by the selection of disadvantaged clients to certain officers who also have more parolees, and partly by officers with more parolees having less time to supervise their clients, because parolees are more time consuming for the officers. Third, adding workload to the model changes the ratio between the client ICC and the officer ICC, and when taking characteristics of the workload into account, "only" around 50 percent more variation in recidivism is attributable to clients compared to officers.

The third column of Table 4 adds background characteristics of clients (Model 3). The inclusion of client characteristics changes the model substantially, and the only officer characteristic that is correlated with criminal recidivism is whether the officer has children.

Even the correlation between recidivism and the share of parolees among the officer's workload, which was so strong in Model 2, is statistically insignificant in Model 3. Adding client characteristics to the model in this way shows that results regarding officer characteristics and workload characteristics were driven primarily by the selection of certain officers to certain clients.

Interpreting the correlations between client characteristics and criminal recidivism is straightforward, as they comply with the literature on risk factors. Thus, probationers have lower recidivism rates than parolees, and recidivism decreases with age, female gender, years of education, and prior earnings, but increases among clients charged with larceny and with ethnic minority background and criminal history.

The ICC coefficients in Model 3 show that the inclusion of client characteristics explains away a high share of the total variance in criminal recidivism that was attributable to clients. Thus, adding client characteristics decreases the client ICC (0.05) to only one third of the ICC in Model 2 (0.15). Five percent of the total variance in criminal recidivism is, however, still attributable to clients when the observed variables are taken into account, which suggests that there remain important differences between clients that are unaccounted for by the model. Such characteristics might be genes, temper, and the like, which the general criminological literature emphasizes as important.

To sum up, standard individual risk factors are able to explain away most of the variance component attributable to clients. But the variance component attributable to officers is not explained away by background characteristics such as age and sex, nor workload characteristics such as the share of parolees among an officer's workload. Other officer characteristics and abilities, such as attitudes and empathetic abilities, which the literature emphasizes as important, could still explain away the variance component attributable to officers, but with the current study it is not possible to pursue this idea further.

I also added observed characteristics of officers, their workload, and clients separately among probationers and parolees, to see whether results differ by sentence type (results not shown but available on request). Results are very similar to those presented for all clients in Table 4. Standard individual risk factors explain away by far most of the variance component attributable to clients, and the parameter estimates associated with these individual risk factors are remarkably similar for probationers and parolees. But even though no officer characteristics are associated with recidivism, the share of parolees among the cases assigned to an officer matters for the recidivism of probationers (probationers assigned to officers with a higher share of parolees have higher recidivism rates). The latter result implies that officers could matter more for probationer recidivism than for parolees, which is also indicated by the ICCs of officers: The total variance component attributable to probation officers is larger than the component attributable to parole officers, even when all of the observed variables are taken into account.

DISCUSSION

In this paper I decomposed the total variance in criminal recidivism—measured by criminal reconviction—among probationers and parolees, and provided estimates of the total variance components attributable to officers and clients, respectively. These estimates show how important officers and clients are for criminal recidivism, which is something scholars of probation and parole have debated but no previous empirical study has provided estimates on. In order to provide these estimates, I combined data on all probationers and parolees in Denmark in 2002-2009 with data on their assigned officers, to make a panel of officer assignment and criminal recidivism up to 2011. The hierarchical panel structure of the data allowed me to apply simple variance component models, and estimate just how much of the total variance that is attributable to officers and clients, respectively.

Results showed that even though substantial shares of the total variance in criminal recidivism is attributable to officers and clients, clients are accountable for a larger component than their assigned officers are. Estimates suggested that the total variance component attributable to clients is almost twice as large as the component attributable to officers. Running the analyses by probationers and parolees showed that this finding is even more pronounced for parolees, who are accountable for as much as 2.5 times more variance in recidivism than their assigned officers (and who also have much higher recidivism rates in the first place).

We now know that substantial variance in recidivism is attributable to officers and clients—and more so to clients than officers—when the total relationship between clients and their assigned officer is taken into account, and we should think of ways to capitalize on this knowledge. For example, re-socializing interventions aimed at clients could potentially generate good effects, simply because so much more variance in recidivism is attributable to clients. Zhang, Roberts, and Callanan (2006), in this vein, found reduced re-incarceration risks among parolees offered literacy training, employment services, housing assistance, and substance abuse treatment.

Even though the variance component attributable to clients is larger than the one attributable to officers, there is still a substantial variance component attributable to officers, which could be capitalized upon. In order to analyze how much of the total effects of officers and clients on recidivism that can be attributed to observed characteristics of officers and clients, and thereby learn which client and officer characteristics matter more, I added to the data various background characteristics of officers (including characteristics of their workload) and clients. Results showed that most of the variance component attributable to clients can be explained away by standard individual risk factors such as age and sex. But only little of the component attributable to officers could be explained away by officer

characteristics and characteristics of these officers' workload, echoing accounts of a historical movement in supervision away from officer characteristics and towards increased professionalism (Durnescu, 2012). In this sense, results provide an empirical benchmark for discussions of which features of officers that matter for recidivism, as they show that background characteristics and workload do not really matter all that much.

It is surprising that background characteristics of officers do not seem to matter much for recidivism. Previous research has found that, for example, older officers are likely to be more conservative or traditionalist, and female officers and officers of ethnic minority background are less likely to impose sanctions, as they are typically more liberal (for a discussion, see Steiner et al., 2011. But results from this paper suggest that such characteristics do not matter much for recidivism. The results in this paper might be better accounted for by officer attitudes and abilities, which the literature also emphasizes as important—but I unfortunately cannot test this hypothesis using the data for this paper. Thus, future research should search for ways in which we may capitalize on the substantial yet unexplained variance in recidivism that is attributable to officers.

Equally surprising, an officer's workload does not explain away much of the total variance in recidivism attributable to officers. This finding suggests that even though causal studies (Jalbert and Rhodes, 2012) found an effect of caseload on recidivism, results in this paper suggest that caseload, as well as the share of parolees among an officer's caseload, does not drive much of the total correlation between officers and recidivism. Running the analyses by sentence type showed, however, that the share of parolees among the officer's workload is positively associated with recidivism among probationers (and not among parolees). This result is interesting because parolees probably make up the officer's harder cases—in Denmark officers oversee both probationers and parolees, as discussed—and having more of such harder cases in one's workload might be time consuming and

demanding for the officer, which could affect recidivism. Thus, a tentative conclusion is that one should pay special attention to the distribution of "easier" and "harder" cases among probation officers. In this way we could help to alleviate the burden of hard cases on officers who, as a natural consequence of having to spend much time on hard cases, might neglect to provide their full range of control, support, and services to newly assigned probationers. This conclusion is, of course, a hypothesis in need of formal empirical testing.

Results in this paper are from Denmark, and, as was discussed at length, there are important differences between probation and parole in Denmark and in other countries, such as the United States. This, of course, raises the question of generalizability. But even if results are not directly transferrable to other countries, they might still be used as a stepping stone for advancing research on the impact of probation and parole officers on their clients. For now, the conclusion is that in Denmark a much larger share of the total variance in criminal recidivism is attributable to probationers and parolees than to their assigned officer, although substantial variance components are attributable to these officers too. When it comes to explaining these variance components, standard risk factors are important for all clients, while background characteristics of the officers do not seem to matter much.

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Table 1. Sample Selection

Clients	Description
27069	Probationers and parolees with assigned officer
-2014	*Missing register information on client prior to case*
-1016	*Mentally ill offenders*
-82	*Older than 65 years of age*
-1543	*Exceptionally long supervision periods*
-95	*Missing register information on officer prior to case*
22319	Cases
129195	Observations[a]
18112	Clients
466	Officers

[a]572 clients were deleted from the panel because of missing register information throughout the follow up years

Table 2. Descriptive Statistics

	All		Probationers		Parolees	
Variable	Mean	SD	Mean	SD	Mean	SD
Criminal Recidivism	0.206	0.404	0.165	0.371	0.317	0.465
Year 2002	0.028	0.165	0.029	0.168	0.025	0.157
Year 2003	0.047	0.212	0.050	0.217	0.040	0.197
Year 2004	0.068	0.251	0.071	0.256	0.059	0.236
Year 2005	0.089	0.284	0.090	0.287	0.084	0.278
Year 2006	0.111	0.315	0.112	0.315	0.110	0.313
Year 2007	0.131	0.337	0.129	0.335	0.135	0.342
Year 2008	0.133	0.340	0.131	0.338	0.139	0.345
Year 2009	0.132	0.339	0.130	0.337	0.137	0.344
Year 2010	0.131	0.337	0.129	0.336	0.136	0.342
Year 2011	0.130	0.336	0.128	0.334	0.134	0.341
Officer						
Age	44.779	10.454	44.673	10.411	45.066	10.565
Female	0.749	0.434	0.738	0.440	0.779	0.415
Unmarried	0.444	0.497	0.431	0.495	0.481	0.500
Parent	0.422	0.494	0.430	0.495	0.400	0.490
Ethnic Minority Background	0.035	0.183	0.033	0.179	0.039	0.193
Years of Education	14.777	0.962	14.778	0.957	14.773	0.977
15 Years of Education	0.863	0.344	0.864	0.342	0.859	0.348
Officer Workload						
Caseload	17.372	8.985	17.470	9.175	17.106	8.438
Parolee Share of Caseload	0.253	0.190	0.201	0.158	0.395	0.198
Client						
Supervision Time	24.965	11.360	25.436	12.153	23.679	8.716
Probation	0.732	0.443	1.000	0.000	0.000	0.000
Violence	0.240	0.427	0.270	0.444	0.160	0.366
Larceny	0.401	0.490	0.389	0.487	0.434	0.496
Drugs	0.084	0.278	0.089	0.284	0.073	0.260
Age	29.406	10.337	29.285	10.751	29.738	9.106
Female	0.123	0.329	0.151	0.358	0.049	0.217
Unmarried	0.866	0.341	0.857	0.350	0.888	0.315
Parent	0.277	0.447	0.319	0.466	0.161	0.368
Ethnic Minority Background	0.142	0.349	0.120	0.325	0.200	0.400
Years of Education	10.077	1.996	10.202	2.017	9.736	1.896
Prior Earnings	72.756	108.889	88.203	116.920	30.632	66.985
Previous Convictions	5.346	6.957	4.346	5.823	8.074	8.817
Previously Incarcerated	0.557	0.497	0.471	0.499	0.790	0.408
Number of Observations	129195		94529		34666	
Number of Clients	18112		13594		5342	
Number of Officers	466		442		401	

[a]Prior earnings is measured in DKK 1,000 deflated to the 2005 level (DKK 1,000 ~ USD 162 in late June, 2005)

Table 3. Results from Simple Variance Component Models of Criminal Recidivism

	All	Probationers	Parolees
Mean	0.226	0.187	0.347
Variance Components			
ICC officers	0.096***	0.095***	0.068***
ICC clients	0.169***	0.153***	0.172***
ICC clients / ICC officers	1.8	1.6	2.5
Number of Observations	129195	94529	34666

Note: Significance of variance components tested by means of likelihood ratio tests. Observation year is also included in the model to remove general time trend.
*p < 0.05.**p < 0.01.***p < 0.001.

Table 4. Results from Variance Component Models of Criminal Recidivism, with Control Variables

	Model 1		Model 2		Model 3	
	Estimate	(SE)	Estimate	(SE)	Estimate	(SE)
Intercept	0.196***	(0.032)	0.172***	(0.031)	0.395***	(0.030)
Year	-0.010***	(0.000)	-0.011***	(0.000)	-0.011***	(0.000)
Officer						
Age	0.000*	(0.000)	0.000	(0.000)	0.000	(0.000)
Female	0.009*	(0.004)	0.001	(0.004)	-0.004	(0.004)
Unmarried	0.020***	(0.004)	0.013***	(0.004)	0.004	(0.003)
Parent	0.005	(0.004)	0.007	(0.004)	0.007*	(0.003)
Ethnic Minority Background	0.020*	(0.010)	0.017	(0.010)	0.006	(0.008)
Years of Education	-0.001	(0.002)	-0.001	(0.002)	0.000	(0.002)
15 Years of Education Dummy	0.003	(0.007)	0.005	(0.006)	-0.003	(0.006)
Officer Workload						
Caseload			-0.000	(0.000)	-0.000	(0.000)
Parolee Share of Caseload			0.192***	(0.009)	0.016	(0.009)
Client						
Supervision Time					0.000	(0.000)
Probation					-0.064***	(0.004)
Violence					0.003	(0.004)
Larceny					0.017***	(0.004)
Drugs					0.005	(0.006)
Age					-0.006***	(0.000)
Female					-0.039***	(0.005)
Unmarried					-0.000	(0.005)
Parent					0.001	(0.004)
Ethnic Minority Background					0.041***	(0.004)
Years of Education					-0.005***	(0.001)
Prior Earnings					-0.000***	(0.000)
Previous Convictions					0.010***	(0.000)
Previously Incarcerated					0.078***	(0.004)
Variance Components						
ICC Officers	0.095***		0.106***		0.120***	
ICC Clients	0.169***		0.151***		0.051***	
-2 Log-Likelihood	115857		115436		109606	
Number of Observations	129195		129195		129195	

Note: Significance of variance components tested by means of likelihood ratio tests.
*p < 0.05.**p < 0.01.***p < 0.001.

NOTES

[i]These rules were in effect from 2004 onwards. Before 2004 inmates were expected to serve their full sentence while good behavior could earn them an early release on parole after having served two thirds of a sentence.