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Is Cell Sharing Associated with Wellbeing, Misconduct and Prison Climate? Evidence from a Dutch Study

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Abstract

Despite international guidelines, it is common practice in many European countries for prisoners to share a cell. In many cases this may be a measure to cope with overcrowding, but in the Netherlands it is a policy measure to reduce costs and flexibly adjust capacity. While the harms of overcrowding are widely recognised, less is known about the effects of cell sharing in non-overcrowded conditions. This study considers the association between cell sharing, wellbeing, misconduct, and prison climate, using data from a national survey study among Dutch prisoners ($N = 3408$). Findings show that cell sharing is associated with poorer ratings of wellbeing and prison climate, especially for people who prefer a single cell. Prisoners in double cells who do not get along with their cellmate report more misconduct. These findings reinforce recommendations to house people in single cells, unless they prefer otherwise.

Keywords

cell sharing – imprisonment – overcrowding – Life in Custody Study – double bunking

1 Introduction

International guidelines are clear where it concerns cell sharing in prisons: prisoners should normally sleep in private cells, and exceptions to this should

be made in consultation with prisoners to take their preferences and suitability of cellmates into account. The European Prison Rules (EPR) state:

Prisoners shall normally be accommodated during the night in individual cells except where it is preferable for them to share sleeping accommodation. Accommodation shall only be shared if it is suitable for this purpose and shall be occupied by prisoners suitable to associate with each other. As far as possible, prisoners shall be given a choice before being required to share sleeping accommodation.¹

Similarly, the United Nations Standard Minimum Rules for the Treatment of Prisoners (the Nelson Mandela Rules) state:

Where sleeping accommodation is in individual cells or rooms, each prisoner shall occupy by night a cell or room by himself or herself. If for special reasons, such as temporary overcrowding, it becomes necessary for the central prison administration to make an exception to this rule, it is not desirable to have two prisoners in a cell or room. Where dormitories are used, they shall be occupied by prisoners carefully selected as being suitable to associate with one another in those conditions. There shall be regular supervision by night, in keeping with the nature of the prison.²

Nevertheless, many countries deviate from these rules and require prisoners to share cells with one or more others. The average number of persons in one cell in European countries is 2.5, with Slovakia and Turkey at the high end with averages of 10.1 and 11.0 persons per cell, respectively.³ In many countries this is due to severe overcrowding, because the number of prisoners far exceeds the capacity of prisons. While the Council of Europe's Committee of Ministers adopted Recommendation No. R (99) 22 in 1999 to address prison overcrowding and the inflation of the prison population, it still remains a pressing issue. Indeed, the European Court of Human Rights has found various violations of Article 3 of the ECHR in relation to overcrowding.⁴ There are also countries, including Croatia, Georgia and the Netherlands, where some prisoners share cells despite sufficient capacity to accommodate prisoners in single cells.⁵

1 European Prison Rules (EPR), 2006-2rev, rules 18.5–18.7.

2 The United Nations Standard Minimum Rules for the Treatment of Prisoners, rule 12.

3 M.F. Aebi and M.M. Tiago, *Prison Populations, SPACE 1 – 2020*, Council of Europe, 2021, p. 73.

4 For example, *J.M.B. and Others v. France*, 2020, Application no. 9671/15 and 31 others; *Varga and Others v. Hungary*, 2015, Application no. 14097/12 and 5 others.

5 Aebi and Tiago *supra note 3*.

This, then, appears a policy choice, which raises questions if this is in the best interests of the prisoners, and if cellmates are carefully selected for suitability. This article will address these questions using national survey data from individuals incarcerated in the Netherlands.

1.1 *Imprisonment and Cell Sharing in the Netherlands*

The Dutch tradition of incarceration is rooted in the Pennsylvania system, which promoted solitary cellular confinement from the idea that isolation of prisoners would bring about penitence and reform.⁶ In the early days of institutionalized incarceration this meant that contact among prisoners and with staff was very limited. Discontent with this system grew in the early 20th century, and after WWII there was a fairly general consensus on the harmful effects of solitary confinement. Moreover, the rehabilitation ideal also took hold in the Netherlands, which was accompanied by a greater availability of communal activities and interpersonal contact, as well as a strengthening of prisoners' legal position. Staff-prisoner relationships – as opposed to coercion – had a prominent role in the maintenance of order. The importance of contact between staff and prisoners was one of the main arguments against the introduction of double cells, when this possibility was suggested in the 1980's to cope with a growing prison population and budgetary constraints.⁷ Finally, at the start of the 21st century, confinement in single cells was regarded as untenable against a backdrop of an increased demand for prison places, financial pressures, and punitive political rhetoric.

In 2004, changes to legislation allowed for cell sharing across prison regimes. Policy measures since, particularly since 2014, have led to increased use of double cells. Initially this coincided with a surge in the prison population, but the use of double cells has continued even when prisons closed due to 'over capacity'. The primary reasons for this policy choice have been cost efficiency and the flexibility to increase capacity if needed.⁸ From 2013 to 2017 the number of beds in double cells increased from 2,500 to 6,146, although not all beds were in use; in 2017, 1,460 out of 8,346 prisoners shared a cell.⁹ Single cells were turned into double cells by placing an extra bed and furniture. In new facilities, the size of cells was increased from 10 to 12 square meters. The

6 H. Franke, *Twee eeuwen gevangen: Misdaad en straf in Nederland* [Two centuries imprisonment: Crime and punishment in the Netherlands], Boomcriminologie, 1990/2020.

7 J.A. Moors et al, *Kiezen voor delen?* [Choosing for sharing?], Boom Juridische uitgevers, 2004, p. 35.

8 Dienst Justitiële Inrichtingen (DJI), *Masterplan DJI 2013–2018*, DJI, 2013.

9 Dienst Justitiële Inrichtingen (DJI), *DJI in getal 2013–2017* [DJI in numbers 2013–2017], DJI, 2018, p. 16.

maximum occupational capacity of these cells is two persons, and each occupant has some space to securely store items.¹⁰ As such, the size of cells meets the desired standard outlined by the CPT, which recommends that cells for two persons are at least 10 square meters.¹¹ The CPT also states that in-cell sanitary facilities should be fully partitioned.¹²

Every person is considered eligible for placement in a double cell, unless they receive a contraindication for cell sharing after their intake screening. Such a contraindication can be given on the basis of psychological or medical health issues, behavioural or addiction problems, the nature of a person's index offence, or imposed contact restrictions. Staff are also encouraged to consider the suitability of cellmates in terms of cultural background, language, and smoking behaviour.¹³ Prisoners who refuse placement in a double cell can be given a disciplinary measure of 14 days' confinement in segregation, which can be repeatedly imposed. Prisoners' appeals against these decisions with the Dutch Council for the Administration of Criminal Justice and Protection of Juveniles¹⁴ have been unsuccessful, as the absence of a contraindication is determined an appropriate basis for making decisions about allocating prisoners to double cells.¹⁵ In some cases, prisoners are offered to indicate a preference for a cellmate.¹⁶ It will be shown in this article that this may be a crucial protection from the harmful effects of cell sharing.

1.2 *Prior Research on Cell Sharing*

Recently, European researchers have started paying attention to the experiences and effects of cell sharing, separate from the experiences and effects of

10 Currently, only one prison in the Netherlands has larger cells that are shared by up to six people.

11 CPT, 'Living space per prisoner in prison establishments: CPT standards', CPT/Inf (2015) 44, para 16.

12 Ibid para 10.

13 Allocation of a non-smoker to a double cell with a smoker has been successfully challenged, see RSJ 14/3840/SGA, 20 oktober 2014, schorsing [suspension], http://puc.overheid.nl/doc/PUC_14999_21, and RSJ 15/1066/SGA, 9 april 2015, schorsing [suspension], http://puc.overheid.nl/doc/PUC_16278_21.

14 The Council acts as a Court of Appeal in reviewing decisions made regarding individuals serving prison sentences or custodial measures. Decisions are binding and cannot be appealed (<http://rsj.nl/english/>).

15 See for example RSJ 16/4281/GA, 25 april 2017, beroep [appeal], http://puc.overheid.nl/doc/PUC_18870_21 and RSJ 16/3325/GA, 16 januari 2017, beroep [appeal], http://puc.overheid.nl/doc/PUC_18966_21.

16 See for example RSJ R-19/3171/GA, 22 juni 2020, beroep [appeal], https://puc.overheid.nl/rsj/doc/PUC_312855_21/ and RSJ R-20/6806/GA, 9 november 2020, beroep [appeal], http://puc.overheid.nl/doc/PUC_622163_21.

overcrowding, with studies conducted in England and Wales, Northern Ireland, and the Netherlands.¹⁷ In general, this emerging body of literature gives the impression that the experienced disadvantages outweigh the advantages. On the one hand, cell sharing is experienced as an invasion of privacy and can create interpersonal tensions; on the other hand, a cellmate can offer practical and emotional support. From a staff perspective, the allocation process can be burdensome,¹⁸ cell sharing reportedly interferes with meaningful contact between staff and prisoners,¹⁹ and it is associated with reduced subjective safety.²⁰

Previous survey-based research found that the association between cell sharing and wellbeing was moderated by the relationship with a cellmate; that is, participants in double cells with a good cellmate relationship had higher wellbeing compared to those in single cells.²¹ These findings were based on survey data from 569 men in two prisons in Northern Ireland. In one of these prisons, double cells were mostly used to accommodate prisoners' preferences for a double cell and for purposes of physical and emotional support; in the other, double cells were mostly used to cope with overcrowding. The negative effect on wellbeing of a poor cellmate relationship was not significant when other factors were controlled for, which may have been due to relatively small number of people reporting a poor relationship. The beneficial association between cell sharing for people who got along well with their cellmate may have been due to emotional support and companionship. However, the size of the sample precluded further analyses, including whether it made a difference whether prisoners had a preference for a single or shared cell. In order to consider the exact conditions in which cell sharing may have positive and negative effects a sufficiently large sample is needed to control for individual characteristics, preferences, and cellmate relationships.

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- 17 T. Molleman and E.F.J.C. van Ginneken, 'A multilevel analysis of the relationship between cell sharing, staff-prisoner relationships, and prisoners' perceptions of prison quality', 59 *Int J of Offender Therapy and Comparative Criminology* (2015) 1029–1046. A. Muirhead, M. Butler and G. Davidson, 'Behind closed doors: An exploration of cell-sharing and its relationship with wellbeing', *Eur J of Criminology* (2021). A. Muirhead, M. Butler and G. Davidson, "You can't always pick your cellmate but if you can... it's a bit better": Staff and prisoner perceptions of what factors matter in cell allocation decision-making', 2 *Kriminologie – Das Online Journal* (2020) 159–181. A. Schliehe and B. Crewe, 'Top bunk, bottom bunk: Cell sharing in prisons', *The British J of Criminology* (2021).
- 18 A. Muirhead et al. 2020 *supra* note 13. J.A. Moors et al. 2004 *supra* note 7 pp. 70–85.
- 19 T. Molleman and E.F.J.C. van Ginneken *supra* note 12. Inspectie voor de Sanctietoepassing (ISt), *Meerpersoonscelgebruik [Cell sharing]*, ISt, 2011, p. 75.
- 20 J.A. Moors et al. 2004 *supra* note 7 pp. 70–73.
- 21 A. Muirhead et al. 2021 *supra* note 13.

It may be particularly difficult to achieve a good match between cellmates when capacity is tight, and staff have limited flexibility in cell assignment; this might result in placing people together in one cell when they are not a good match.²² Staff need to decide who are compatible cellmates, but also how placing people together may influence safety of the cellmate and the unit or wing more generally. Some staff members may also consider how cell sharing could affect the wellbeing of prisoners in a negative sense (e.g., causing distress to people with obsessive-compulsive disorder) and positive sense (e.g., through emotional support or situational prevention of self harm). The effects of cell sharing may indeed depend on a person's mental health; it is known that individuals in single cells are at a greater risk of suicide.²³ Such issues may also have an effect on the supporting cellmate that would need to be considered (i.e., vicarious victimisation). All these factors require a careful weighing of extensive information, which may not always be possible, especially if high turnover (i.e., many prisoners entering and exiting prison, causing frequent changes in the population) and capacity shortages increase the pressure on staff to decide quickly. The findings from this Northern Irish study show that cell allocation is not random, but also far from optimal; in research, it would be necessary to control for relevant background factors that may have influenced the allocation decision to a single or double cell, or the assignment of cellmates.

Overall, little research exists on the effects of cell sharing on other outcomes than wellbeing, such as misconduct. Prison conditions associated with cell sharing, such as overcrowding and high turnover of the prison population, have been linked to harmful outcomes, including self harm²⁴ and misconduct.²⁵ The protective effect of cell sharing against suicide identified in a

22 A. Muirhead et al. 2020 *supra* note 13.

23 S. Fazel et al. 'Suicide in Prisoners: A Systematic Review of Risk Factors', 69 *J Clin Psychiatry* (2008) 1721–1731. S. Fruehwald et al. 'Suicide in Custody: Case-Control Study', 185 *Br J Psychiatry* (2004) 494–498. L. Marzano et al. 'Psychosocial Influences on Prisoner Suicide: a Case-Control Study of Near-Lethal Self-Harm in Women Prisoners', 72 *Soc Sci Med* (2011) 874–883. R. Reeves and A. Tamburello 'Single Cells, Segregated Housing, and Suicide in the New Jersey Department of Corrections', 42 *J Am Acad Psychiatry Law* (2014) 484–492.

24 S. Baggio et al. 'Association of overcrowding and turnover with self-harm in a Swiss pre-trial prison', 15 *Int'l J of Env'tl Res Pub Health* (2018) 601–606. L. Sharkey 'Does overcrowding in prisons exacerbate the risk of suicide among women prisoners?' *Howard J of Crim Justice* (2010) 111–124.

25 J. Wooldredge, T. Griffin and T. Pratt, 'Considering hierarchical models for research on inmate behavior: Predicting misconduct with multilevel data', 18 *Justice Quarterly* (2001) 203–231.

systemic literature review²⁶ may be nullified in conditions of overcrowding.²⁷ One study has considered the association between cell sharing and prison climate (i.e., the perceived quality of prison life), showing a negative link that may be partly explained by the reduced quality of contact between individuals in shared cells and staff members.²⁸

Research describing the lived experience of cell sharing shows that positive and negative experiences can exist alongside each other.²⁹ Cell sharing raises problems in relation to privacy, hygiene, personal habits, and it can emphasise the loss of autonomy associated with imprisonment more generally. The inescapable presence of another person in a very tight space constitutes an invasion of personal space that can be experienced as degrading and provoke anxiety. The lack of privacy when using the in-cell toilet was one of the greatest sources of distress among participants in this largescale interview-based study (N = 278). The study was conducted in England and Wales, where prisoners are often required to share cells in conditions of overcrowding, sometimes with few opportunities for meaningful activities during the day, or even in unsanitary circumstances.³⁰ Prisoners would come up with strategies – alone or together with their cellmate – to avoid tensions and make the situation manageable. Even in the face of these negative experiences and problematic circumstances, there was also room for ‘personal and social humanity’ in acts of kindness, emotional support, and deep conversations between cellmates.³¹ Overall, the cell is central to life in prison, so the impact of its conditions – including cell-sharing experiences – should not be underestimated.

The current study builds directly on these previous European studies by taking into account the potential impact of a person’s preference for a single or double cell, and the nature of the cellmate relationship, as moderators of the impact of cell sharing. We add to this by quantitatively examining the association between cell sharing and different outcomes, including wellbeing, misconduct, and experienced prison climate. Additionally, we control for the various factors that may have impacted the allocation to a single or double

26 S. Fazel et al. ‘Suicide in prisoners: A systematic review of risk factors’, 69 *J of Clinical Psychiatry* (2008) 1721–1731.

27 M.P. Huey and T.L. McNulty ‘Institutional conditions and prison suicide: Conditional effects of deprivation and overcrowding’, 85 *The Prison Journal* (2005) 499–514. E.F.J.C. van Ginneken, A. Sutherland and T. Molleman, ‘An ecological analysis of prison overcrowding and suicide rates in England and Wales: 2000–2014’, 50 *Int’l JL & Psychiatry* (2017) 76–82.

28 T. Mollemand and E.F.J.C. van Ginneken 2015 *supra note 13*.

29 A. Schliehe and B. Crewe 2021 *supra note 13*.

30 *Ibid* pp. 5–6.

31 *Ibid* p. 15.

cell, such as age, nationality, criminal history, index offence, physical health, mental health, and unit capacity and occupancy. We will answer the following research question using data from a national survey conducted among incarcerated individuals in the Netherlands: *Are there differences in wellbeing, misconduct, and perceptions of prison climate between individuals in single and double cells when controlling for potential confounding factors, and do these depend on personal preferences and cellmate relationships?*

2 Methodology

2.1 *Life in Custody Study*

To answer the research question, data was used from the Life in Custody Study, which is a national periodic survey among adult men and women incarcerated in the Netherlands.³² The Life in Custody Study is a collaboration between the Dutch Custodial Institutions Agency, which is part of the Ministry of Justice and Security, and Leiden University. For this article, the survey data collected in 2019 was used, which included questions about cell sharing. Research assistants from the Life in Custody Study visited all regular prisons in the Netherlands for one week each between February and May 2019. Prisons in the Netherlands house a mix of convicted and remand prisoners, and also have specialised regimes for vulnerable prisoners ('extra-care units') and individuals with a two-year custodial measure for persistent offending ('persistent offender units', or *Inrichting Stelselmatige Daders [ISD]*). All prisoners were eligible to participate, unless they could not be approached due to severe mental health or behavioural concerns.³³ Surveys were available in five languages (Dutch, English, Spanish, Turkish and Arabic), and participants who were unable to read or write were invited to complete the survey with researcher assistance. Eligible participants were approached in person to explain the study and were given a small token of appreciation (e.g., can of soda or sweets) regardless of their decision to participate or not. People who were willing to participate had to give informed consent for the use of their surveys for research purposes and the retrieval of administrative data, and were then given a questionnaire to complete in their own time. Research assistants returned one or two days later to collect the completed questionnaires. This method assured confidentiality

32 E.F.J.C. van Ginneken et al. 'The Life in Custody Study: The quality of prison life in Dutch prison regimes', *4 J Crim Res, Pol'y & Prac* (2018) 253–268.

33 Individuals incarcerated in psychiatric penitentiary facilities and TBS institutions were not included in the study.

as much as possible and also contributed to the achievement of a high response rate of 76%. A total of 5757 people were approached, 4350 completed a survey, and it was possible to link surveys from 4113 participants to administrative data on demographics, sentence information, and criminal records.

2.2 *Sample*

For this specific study, only participants in regimes with regular double cells were included: regular prison regimes, remand regimes, and short-stay custody. Participants in minimum-security units, extra-care units, and units for persistent offenders were excluded. After application of these selection criteria, the remaining sample consisted of 3408 participants, of whom 3190 men (93.6%) and 218 women (6.4%). Due to this selection, the proportion of people who share a cell in the sample is higher (32.5%) than in the general prison population in 2019 (25.0%) (Dutch Custodial Institutions Agency, personal communication).

2.3 *Measures*

The variables – described below – were constructed from data collected with the Prison Climate Questionnaire³⁴ and administrative data from the Dutch Custodial Institutions Agency.

Cell sharing. A dichotomised variable was created (0 = single cell, 1 = double cell) based on the question ‘Do you currently share a cell?’ in the questionnaire.

Cellmate relationship. Three categories were created to reflect the quality of the relationship with cellmates reported by people in double cells in answer to the item ‘I get along well with my cellmate’: good cellmate relationship (completely agree / agree), neutral cellmate relationship (neutral), and poor cellmate relationship (completely disagree / disagree).

Cell preference. Three categories were created to reflect a participants’ preference for a single or double cell based on their answer to the item ‘It is nice to share a cell with another person’: preference for a double cell (completely agree / agree), no preference (neutral), and preference for a single cell (completely disagree / disagree). This item was only included for people who shared a cell.

Physical health. The item ‘My physical health is generally good’ was used as indicator for physical health, and was scored on a five-point scale from completely disagree to completely agree.

34 A.Q. Bosma et al. ‘A new instrument to measure prison climate: The psychometric quality of the Prison Climate Questionnaire’, 100 *The Prison Journal* (2020) 355–380.

Emotional wellbeing. Three items from the Mental Health Continuum-Short Form³⁵ were used to measure emotional wellbeing (e.g., 'How often in the past month did you feel happy?'). The average score was calculated if participants had answered at least two out of three items, and ranged from one to five, with higher scores reflecting higher emotional wellbeing. The Cronbach's alpha for this scale is 0.81.

Psychological distress. The Kessler Screening Scale (K6)³⁶ was used to measure psychological distress. This scale can be used as a screener for serious mental illness, and the items primarily reflect symptoms related to mood and anxiety disorders. This scale consisted of six items (e.g., 'How often in the past week did you feel that everything was an effort?') and the average score was calculated if participants had answered at least four out of six items. A higher score means greater experienced distress. The scale's Cronbach's alpha is 0.91.

Misconduct. Based on participant's self-reported misconduct in the past two months for a variety of infractions, the following dichotomous measures were created: total misconduct (including violence, theft, property damage, or possession of contraband items), violence against staff or peers, theft or property damage, possession of drugs, and possession of contraband items other than drugs.

Prison climate. Four scales and one separate item – all rated on five-point Likert-type scales – were selected as indicators of prison climate. The separate item concerned a general rating of the institution ('I am generally satisfied with this institution'). A scale score on staff-prisoner relationships ($\alpha = 0.94$) was calculated if more than half of the eight items were answered (e.g., 'Staff on this unit help me if I have problems'). A scale score on subjective safety ($\alpha = 0.89$) was calculated on the basis of five items (e.g., 'I feel unsafe in this institution'), which was recoded so that a higher score reflects higher experienced safety. An average rating on peer relationships ($\alpha = 0.86$) was calculated on the basis of five items (e.g., 'The prisoners here treat each other with respect'). Finally, autonomy ($\alpha = 0.86$) was measured with an average score on four items (e.g., 'I have enough freedom to move around').

Control variables. The control variables included in the analysis were age (in years), time served (until the survey date, in days), nationality (0 = non-Dutch, 1 = Dutch), sex (0 = male, 1 = female), and regime (prison, remand, and

35 S.M. Lamers et al. 'Evaluating the psychometric properties of the mental health continuum-short form (MHC-SF)', 67 *J Clin Psychology* (2011) 99–110.

36 R.C. Kessler et al. 'Short screening scales to monitor population prevalences and trends in non-specific psychological distress', 32 *Psychological Medicine* (2002) 959–976.

short-stay custody). This information was obtained from administrative data provided by the Dutch Custodial Institutions Agency.

2.4 Analysis

First, the characteristics of prisoners in single cells and double cells are described and compared. This also shows how prisoners experience sharing a cell. Following this, multivariate analyses are conducted to examine the association between cell sharing and wellbeing, misconduct, and prison climate, when controlling for relevant individual characteristics. In a separate model, cellmate relationship and cell preference are included to investigate their possible moderating effect. The effects of these variables should be understood with reference to people in a double cell with a neutral score on cellmate relationship and cell preference. Linear regression analyses were conducted for the models with wellbeing and prison climate as dependent variables, and logistic regression analyses were conducted for the models with misconduct-related dependent variables. Squared variables of age and time served were tested and omitted if they were not significant; if significant, they were included to show that these effects are non-linear. Analyses were conducted in SPSS 25.0.³⁷

3 Results

Table 1 displays the characteristics of the sample for this paper, which includes 3408 participants in regular prison regimes, remand regimes, and short-stay custody. The statistics are shown for the sample as a whole, and also split by cell status (single or double). The table shows that the proportion of people sharing a cell is highest among those in short-stay custody. However, this is the smallest group in terms of absolute numbers in double cells: 289 participants in short-stay custody shared a cell (86%), 322 in regular prison regimes (21%), and 495 in remand regimes (33%). A breakdown by age categories shows that younger prisoners share a cell more often than older prisoners (see Figure 1).

There are a few notable findings related to the experience of cell sharing. The majority of prisoners in double cells get along well with their cellmate (70%). Nevertheless, 43% prefer a single cell, while only 28% prefer a double cell, and 29% report no preference. These preferences appear to differ across groups: Figure 2 shows that a larger proportion of prisoners on remand prefer sharing a cell compared to prisoners in regular prison regimes and short-stay

37 IBM Corp. *IBM SPSS Statistics for Windows*, Version 25.0 (2017). IBM Corp.

TABLE 1 Sample characteristics

	Total			Single cell			Double cell		
	N (%)	M (SD)	N (%)	N (%)	M (SD)	N (%)	M (SD)	N (%)	M (SD)
Sharing a cell	3408		2302 (67.5%)			1106 (32.5%)			
Cellmate relationship (double cell only)									
Good relationship								724 (70.0%)	
Neutral relationship								226 (21.9%)	
Poor relationship								84 (8.1%)	
Cell preference (double cell only)									
Preference for double cell								285 (27.6%)	
No preference (neutral)								305 (29.6%)	
Preference for single cell								442 (42.8%)	
Physical health (1–5)	3502	3.34 (1.06)		2246	3.32 (1.07)		1075	3.42 (1.03)	
Emotional wellbeing (1–5)	3290	3.27 (1.03)		2224	3.29 (1.01)		1066	3.25 (1.06)	
Psychological distress (1–5)	3298	2.24 (1.00)		2230	2.27 (1.00)		1068	2.17 (0.99)	
Misconduct in the previous two months									
Total misconduct	604 (18.5%)			414 (18.8%)			190 (18.0%)		
Violent misconduct	193 (5.9%)			118 (5.3%)			75 (7.1%)		
Theft of property damage	134 (4.1%)			81 (3.6%)			53 (5.0%)		

Drugs possession	370 (11.3%)	256 (11.6%)	114 (10.8%)
Possession of other contraband items	213 (6.5%)	147 (6.7%)	66 (6.2%)
Prison climate			
Overall satisfaction with institution (1-5)	3350	2265	1085
Staff-prisoner relationships (1-5)	3340	2258	1082
Safety (1-5)	3373	2277	1096
Peer relationships (1-5)	3538	2259	1087
Autonomy (1-5)	3496	2261	1085
Age	3408	2302	1106
Sex			
Male	3190 (93.6%)	2149 (93.4%)	1041 (94.1%)
Female	218 (6.4%)	153 (6.6%)	65 (5.9%)
Time served (in days)	3390	2294	1096
Nationality			
Non-Dutch	569 (17.3%)	317 (14.2%)	252 (23.9%)
Dutch	2720 (82.7%)	1917 (85.8%)	803 (76.1%)
Regime			
Regular prison	1559 (45.7%)	1237 (53.7%)	322 (29.1%)

TABLE 1 Sample characteristics (*cont.*)

	Total		Single cell		Double cell	
	N (%)	M (SD)	N (%)	M (SD)	N (%)	M (SD)
Remand	1513 (44.4%)		1018 (44.2%)		495 (44.8%)	
Short-stay custody	336 (9.9%)		47 (2.0%)		289 (26.1%)	
Country of birth						
The Netherlands	1987 (62.1%)		1393 (64.4%)		594 (57.3%)	
Netherlands Antilles	245 (7.7%)		171 (7.9%)		74 (7.1%)	
Surinam	163 (5.1%)		98 (4.5%)		65 (6.3%)	
Morocco	104 (3.2%)		69 (3.2%)		35 (3.4%)	
Turkey	73 (2.3%)		49 (2.3%)		24 (2.3%)	
Poland	124 (3.9%)		63 (2.9%)		61 (5.9%)	
Other	505 (15.8%)		321 (14.8%)		184 (17.7%)	

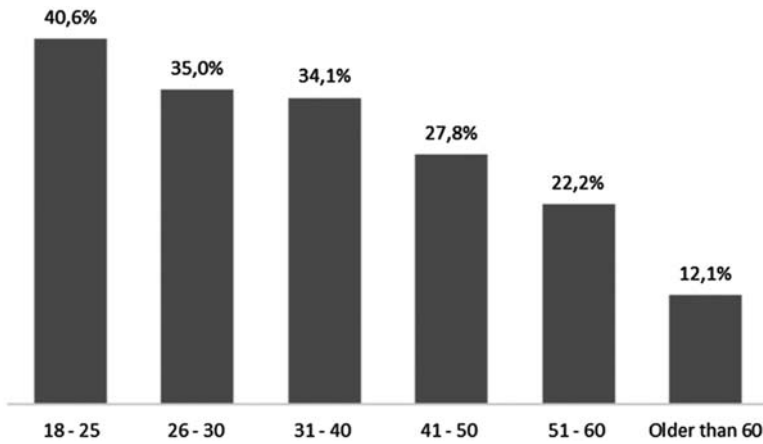


FIGURE 1 Cell sharing across age groups

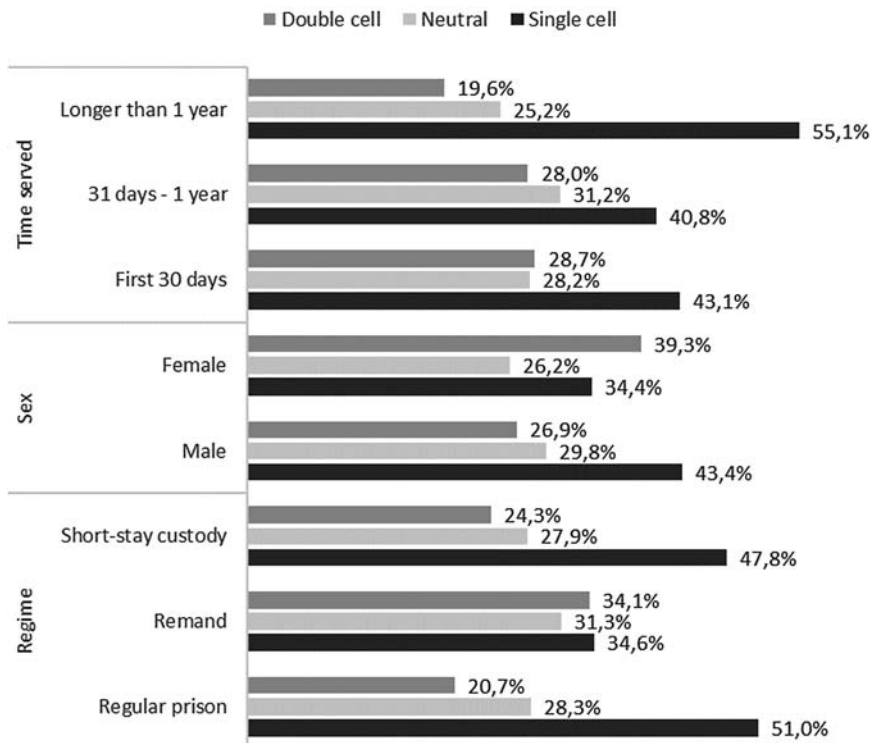


FIGURE 2 Cell preferences across groups (prisoners in double cells only)

custody. This matches with the finding that prisoners who have served more time prefer their own cell. Furthermore, women are more likely to prefer sharing a cell (39.3%) than men (26.9%).

In answer to the research question, I will consider the association between cell sharing and wellbeing, misconduct, and prison climate while correcting for possible selection effects (e.g., physical health and psychological distress). First, there is no significant association between cell sharing and wellbeing without the consideration of preferences and cellmate relationship (see Table 2, model 1). However, when these are taken into account (see Table 2, model 2),

TABLE 2 Results from the linear regression analysis with emotional wellbeing

Variables	Emotional wellbeing			
	Model 1		Model 2	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Age	-0.00	0.00	-0.00	0.00
Sex (1 = man)	-0.02	0.06	-0.02	0.06
Nationality (1 = NL)	0.12**	0.04	0.12**	0.04
Time served (days)	0.00	0.00	0.00	0.00
Psychological distress	-0.45***	0.02	-0.45***	0.02
Physical health	0.16***	0.02	0.16***	0.02
Regime (ref = prison)				
Remand	-0.05	0.04	-0.05	0.04
Short-stay custody	-0.04	0.06	-0.04	0.06
Double cell (1 = yes)	-0.07	0.04	0.02	0.08
Preference (ref = neutral)				
Double cell preference			-0.08	0.08
Single cell preference			-0.19**	0.07
Cellmate relationship (ref = neutral)				
Good relationship			0.01	0.08
Poor relationship			0.21	0.12
<i>R</i> ² (explained variance)	0.281		0.284	

Note. B-values are unstandardised regression coefficients. *SE* is the standard error.**p* < .05.

p* < .01. *p* < .001.

results show that prisoners who share a cell but prefer a single cell experience lower emotional wellbeing compared to prisoners in double cells who report a neutral preference, and prisoners in single cells.

Second, there is no significant main effect of cell status on misconduct, but there is a clear and consistent association when considering cellmate relationship. Table 3 shows that participants who have a poor relationship with their cellmate are more likely to report misconduct than those with a neutral relationship or participants in single cells. This effect is consistently found across all types of misconduct (violent, property, drugs, and possession of other contraband items).

Third, participants in double cells experience prison climate more negatively than participants in single cells; there is a significant and negative main effect of cell sharing for the overall rating of the institution, staff-prisoner relationships, peer relationships, safety, and autonomy (see Table 4). For the overall rating and autonomy this effect is especially pronounced (and significant) for people who prefer a single cell. When people prefer a double cell, the effect is reversed for staff-prisoner relationships and autonomy, and mitigated for peer relationships. When people have a good cellmate relationship, the negative association between safety and cell sharing is mitigated. Overall, then, the association between cell sharing and prison climate is dependent on cell preference and cellmate relationship.

4 Discussion

Various European countries, including the Netherlands, incarcerate individuals in shared cells against the rules laid down in international guidelines. The results from this study further underscore that this practice is ill-advised, considering the negative associations with wellbeing and prison climate, and higher risk of misconduct. The survey results show that people in double cells report more negatively on prison climate. A negative association with wellbeing is found in combination with a single-cell preference, and an increased risk of misconduct in combination with a poor cellmate relationship.

This study is the first to examine the association between cell sharing and multiple variables on a large scale, while controlling for many potential selection effects. This solidifies earlier findings that cell sharing is not only a nuisance, but can have a more profound negative impact on wellbeing and

TABLE 3 Results from the logistic regression analysis with misconduct

Variables	Total misconduct						Violence					
	Model 1			Model 2			Model 1			Model 2		
	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>B</i>	<i>SE</i>	<i>OR</i>
Age	0.04	0.03	1.04	0.04	0.03	1.04	0.13*	0.06	1.14	0.13*	0.06	1.14
Age squared	-0.00**	0.00	1.00	-0.00**	0.00	1.00	-0.00**	0.00	1.00	-0.00**	0.00	1.00
Sex (1 = man)	-1.05***	0.27	0.35	-1.06***	0.27	0.35	-0.76	0.43	0.47	-0.78	0.43	0.46
Nationality (1 = NL)	0.35*	0.14	1.42	0.35*	0.14	1.42	0.26	0.22	1.29	0.30	0.22	1.34
Time served (days)	0.00***	0.00	1.00	0.00***	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00
Time served squared	0.00*	0.00	1.00	0.00*	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00
Psychological distress	0.28***	0.05	1.32	0.28***	0.05	1.32	0.23**	0.08	1.26	0.22**	0.08	1.24
Physical health	-0.06	0.05	0.94	-0.06	0.05	0.95	-0.18*	0.08	0.83	-0.17*	0.08	0.84
Regime (ref = prison)												
Remand	-0.25*	0.12	0.78	-0.24*	0.12	0.79	-0.30	0.19	0.74	-0.30	0.19	0.74
Short-stay custody	-0.10	0.20	0.90	-0.12	0.20	0.89	0.03	0.29	1.03	-0.00	0.30	1.00

Double cell (1 = yes)	0.06	0.12	1.06	0.10	0.26	1.11	0.35	0.18	1.41	0.06	0.43	1.06
Preference (ref = neutral)												
Double cell preference				-0.28	0.23	0.76				0.37	0.34	1.45
Single cell preference				-0.41	0.21	0.67				-0.32	0.34	0.73
Cellmate relationship (ref = neutral)												
Good relationship				0.16	0.24	1.18				0.18	0.40	1.20
Poor relationship				0.89**	0.34	2.44				1.40**	0.47	4.07
χ^2	180.84			190.73			72.35			85.38		
<i>df</i>	11			15			11			15		

Note. B-values are unstandardised regression coefficients. *se* is the standard error. *OR* is the odds ratio. * $p < .05$. ** $p < .01$. *** $p < .001$.

TABLE 3 (CONTINUED) Results from the logistic regression analysis with misconduct

Variables	Property						Drugs					
	Model 1			Model 2			Model 1			Model 2		
	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>B</i>	<i>SE</i>	<i>OR</i>
Age	0.19*	0.07	1.20	0.18*	0.07	1.20	0.02	0.04	1.02	0.02	0.02	1.02
Age squared	-0.00**	0.00	1.00	-0.00**	0.00	1.00	-0.00	0.00	1.00	-0.00	-0.00	1.00
Sex (1 = man)	-0.41	0.43	0.67	-0.42	0.43	0.66	-1.55***	0.42	0.21	-1.55***	-1.55	0.21
Nationality (1 = NL)	0.17	0.25	1.19	0.21	0.25	1.23	0.20	0.17	1.23	0.20	0.20	1.22
Time served (days)	0.00	0.00	1.00	0.00	0.00	1.00	0.00*	0.00	1.00	0.00*	0.00	1.00
Time served squared	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00
Psychological distress	0.42***	0.10	1.52	0.40***	0.10	1.50	0.25***	0.06	1.28	0.25***	0.25	1.28
Physical health	-0.12	0.09	0.89	-0.10	0.09	0.90	-0.11	0.06	0.90	-0.09	-0.09	0.91
Regime (ref = prison)												
Remand	0.07	0.22	1.08	0.09	0.23	1.09	-0.29*	0.14	0.75	-0.28*	0.14	0.76
Short-stay custody	0.30	0.34	1.35	0.27	0.35	1.31	-0.27	0.25	0.77	-0.29	0.25	0.75

Double cell (1 = yes)	0.36	0.21	1.44	-0.38	0.56	0.68	0.00	0.14	1.00	0.11	0.31	1.11
Preference (ref = neutral)												
Double cell preference				0.43	0.40	1.54				-0.38	0.29	0.68
Single cell preference				-0.05	0.40	0.95				-0.41	0.26	0.63
Cellmate relationship (ref = neutral)												
Good relationship				-0.05	0.40	0.95				0.10	0.30	1.10
Poor relationship				1.79**	0.56	5.99				0.93*	0.39	2.52
χ^2	56.86			70.19			112.44			120.88		
<i>df</i>	11			15			11			15		

Note. B-values are unstandardised regression coefficients. *SE* is the standard error. *OR* is the odds ratio. * $p < .05$. ** $p < .01$. *** $p < .001$.

TABLE 4 Results from the linear regression analyses with prison climate

Variables	Overall satisfaction			Staff-prisoner relationships			Safety			
	Model 1		Model 2	Model 1		Model 2	Model 1		Model 2	
	B	SE	B	SE	B	SE	B	SE	B	SE
Age	0.02***	0.00	0.02***	0.00	0.02***	0.00	-0.01***	0.00	-0.01***	0.00
Sex (1 = man)	0.36***	0.08	0.35***	0.08	0.39***	0.07	0.04	0.06	0.04	0.06
Nationality (1 = NL)	-0.21***	0.05	-0.20***	0.05	-0.08	0.04	0.05	0.04	0.05	0.04
Time served (days)	0.00	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Psychological distress	-0.21***	0.02	-0.21***	0.02	-0.13***	0.02	-0.32***	0.02	-0.32***	0.02
Physical health	0.23***	0.02	0.23***	0.02	0.16***	0.02	0.15***	0.02	0.11***	0.01
Regime (ref = prison)										
Remand	-0.09*	0.04	-0.10*	0.04	0.04	0.04	0.01	0.03	0.00	0.03
Short-stay custody	-0.53***	0.08	-0.52***	0.08	-0.07	0.07	0.13*	0.06	0.14*	0.06

Double cell (1 = yes) Preference (ref = neutral)	-0.14**	0.05	-0.02	0.10	-0.21***	0.04	-0.16	0.09	-0.14***	0.03	-0.32***	0.07
Double cell preference		0.02	0.09			0.20*		0.08			0.02	0.07
Single cell preference		-0.33***	0.08			-0.10		0.07			0.01	0.06
Cellmate relationship (ref = neutral)												
Good relationship		0.04	0.09			-0.06		0.08			0.23**	0.07
Poor relationship		-0.07	0.14			-0.21		0.12			0.05	0.10
R ² (explained variance)	0.169	0.176			0.118	0.124			0.202		0.206	

*p < .05. **p < .01. ***p < .001.

TABLE 4 (CONTINUED) Results from the linear regression analyses with prison climate

Variables	Peer relationships						Autonomy					
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Age	-0.00**	0.00	-0.00*	0.00	0.01***	0.00	0.01***	0.00	0.01***	0.00	0.01***	0.00
Sex (1 = man)	-0.23***	0.05	-0.24***	0.05	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Nationality (1 = NL)	-0.11**	0.03	-0.10**	0.03	-0.17***	0.04	-0.15***	0.04	-0.15***	0.04	-0.15***	0.04
Time served (days)	-0.00	0.00	-0.00*	0.00	0.00*	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Psychological distress	-0.10***	0.01	-0.10***	0.01	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02
Physical health	0.11***	0.01	0.10***	0.01	0.15***	0.02	0.14***	0.02	0.14***	0.02	0.14***	0.02
Regime (ref = prison)												
Remand	-0.00	0.03	-0.02	0.03	-0.21***	0.04	-0.22***	0.04	-0.22***	0.04	-0.22***	0.04
Short-stay custody	-0.01	0.05	0.00	0.05	-0.46***	0.06	-0.45***	0.06	-0.45***	0.06	-0.45***	0.06

Double cell (1 = yes)	-0.06*	0.03	-0.27***	0.07	-0.13**	0.04	-0.05	0.08
Preference (ref = neutral)								
Double cell preference			0.15*	0.06			0.25**	0.08
Single cell preference			-0.04	0.06			-0.17*	0.07
Cellmate relationship (ref = neutral)								
Good relationship			0.26	0.06			-0.08	0.08
Poor relationship			-0.02***	0.10			-0.11	0.12
R ² (explained variance)	0.074		0.090		0.147		0.157	

p* < .05. *p* < .01. ****p* < .001.

behaviour.³⁸ Prior research suggests that the mechanisms responsible for these effects may be related to the lack of privacy that causes distress and interpersonal friction,³⁹ and reduced opportunities for meaningful interactions between staff and prisoners.⁴⁰ To gain further insight into causal processes, it would be worthwhile to randomly assign incoming prisoners to single and double cells (treatment as usual, with consideration of contraindications), and measure experiences of imprisonment, behaviour, and wellbeing over time.

The findings necessitate a closer look at the protective effect of cell sharing in relation to suicides.⁴¹ While, on the one hand, cell sharing may introduce guardianship to prevent suicides, it can, on the other hand, cause psychological distress. Previous research identified that some people derive support from a cellmate, but this is related to personal preferences, coping style and cellmate relationships.⁴² In the current study, no positive associations between cell sharing and wellbeing were identified, but a negative association was conditional upon a preference for a single cell. This means that prisoners who preferred a double cell or had no preference either way did not report lower (nor higher) wellbeing. An important policy implication would be to consider a person's preference in assigning them to a single or double cell, in line with the European Prison Rules.⁴³ This would also accommodate cultural differences in the preference for a single versus double cell.

The findings also point to the importance of careful assignment of cellmates. Cell allocation is a process that often takes place under time and space constraints, which can lead to a suboptimal pairing of cellmates.⁴⁴ Nevertheless, this process deserves care and attention in order to achieve a safe environment for staff and prisoners. The findings consistently pointed to an increased risk of all types of misconduct when people reported a poor cellmate relationship. There are multiple possible explanations, which should be investigated further. For example, a person's misconduct may be responsible for the poor relationship, as causal direction could not be established in the current study. It is also possible that interpersonal conflict triggered violent behaviour or property misconduct in response to arguments. Alternatively, tension between cellmates may cause strain, which may in turn lead to people acting

38 A. Muirhead et al. 2021; A. Schliehe and B. Crewe 2021; T. Molleman and E.F.J.C. van Ginneken 2015 *supra* note 13.

39 A. Schliehe and B. Crewe 2021 *supra* note 13.

40 T. Molleman and E.F.J.C. van Ginneken 2015 *supra* note 13.

41 S. Fazel et al. 2008 *supra* note 21.

42 A. Muirhead et al. 2021; A. Schliehe and B. Crewe 2021 *supra* note 13.

43 EPR 2006-2rev, rule 18.7.

44 J.A. Moors et al. 2004 *supra* note 7 pp. 73–75. A. Muirhead et al. 2020 *supra* note 13.

out. While this is not part of the current study, it should be recognised that this can threaten the safety of the people sharing a cell, as well as other prisoners on the unit, and members of staff; this is in line with previous research that found that staff felt less safe when double cells were introduced. Additionally, it can create problems with identifying people responsible for misconduct, because both occupants are considered responsible when contraband items are discovered in a cell.⁴⁵ It would therefore be advisable to give prisoners a voice in the choice of a suitable cellmate, so that poor cellmate relationships and associated unsafe situations are avoided as much as possible.

Overcrowding can be regarded as an especially pressing problem in light of the results from this study; it means that individuals are required to share cells that are not designed for this purpose, and is often coupled with inadequate resources in the prison as a whole. This means that prisoners may not have access to meaningful activities or efficient care, resulting in unsafe conditions.⁴⁶ In overcrowded conditions it may not be possible to facilitate alone-time for each cellmate, or to arrange for each prisoner to have space to securely store personal items. Moreover, overcrowding diminishes flexibility in cell allocation and increases the likelihood of interpersonal conflict between cellmates. It is highly likely that the results from this study – found in Dutch prisons operating at or below capacity – will be more pronounced in conditions of overcrowding. This, then, supports the Council of Europe's recommendations to halt the growth of the prison population by making less use of custodial sentences and considering the decriminalisation of certain offences.⁴⁷ A further policy recommendation is to reduce the use of remand imprisonment,⁴⁸ which is also relevant for the Netherlands, given its relatively large population of untried prisoners (32% in 2020).⁴⁹

A few limitations of the current study are important to mention and address in future research. First, the sample only included men and women incarcerated in regular prisons. Individuals in immigrant detention were not included, even though they are normally housed in double cells or rooms in

45 RSJ 18/1326/GA, 15 februari 2019, beroep [appeal], http://puc.overheid.nl/doc/PUC_268622_21.

46 M. McDonald, 'Overcrowding and its impact on prison conditions and health', 14 *Int'l J Prisoner Health* (2018) 65–68. C. Haney, 'The wages of prison overcrowding: Harmful psychological consequences and dysfunctional correctional reactions', 22 *Wash. UJL & Pol'y* 265–294.

47 Council of Europe, *White paper on prison overcrowding* (2016) European Committee on Crime Problems V.a. 84–103, V.b. 104–115.

48 *Ibid* V.a. 85–89.

49 M.F. Aebi and M.M. Tiago 2021 *supra note* 3 p. 50.

the Netherlands.⁵⁰ This means it is more difficult to study the effects of cell sharing, because only individuals with a contraindication are individually housed. Given the findings from the current study, it would be recommended that this policy is examined and possibly revised, with attention to the wellbeing and safety of detained individuals.

A second limitation is the cross-sectional research method, which did not account for the timing or duration of cell status. It is possible that survey answers were influenced by prisoners who had only recently been transferred to a double cell and had not yet been able to adjust to this situation (although, note that total time served was controlled for). Future research would benefit from a longitudinal design and the inclusion of administrative data on cell assignment. Based on the current study, it is not possible to draw conclusions about the causal direction of effects. However, various potential confounding effects – such as age, physical health, time served, and psychological distress – were controlled for, to rule out any selection effects as much as possible.

Overall, then, a general policy of cell sharing in prisons is not in the best interest of the prisoner. The only circumstances where this practice appears defensible considering the wellbeing and safety of prisoners, is when their preference for a single or double cell and choice of a cellmate are taken into account. On the basis of existing research, personal preferences are currently the best available indicator of suitability for cell sharing, and taking these into account is the best way to minimise harmful effects. This supports research and legal opinions on the need to reduce overcrowding, and it urges governments to reconsider policies of cell sharing as a cost-reducing measure.

⁵⁰ Ist 2011 *supra* note 15.