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**Measurement of prison social climate: A comparison of an inmate measure in
England and the US**

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Abstract

Prison climate, environmental, social and personal, may have a major effect on recidivism, either on its own or in interaction with rehabilitation measures such as therapy, training and education, and role modeling of appropriate behavioral norms by staff and other inmates. However, before such questions can be tested, stable and replicable measures of prison climate must be found that are robust enough to measure salient dimensions and changes in them between penal systems as well as within them. Measurement of prison climate studies were reviewed, and differences in the perception and measurement of prison climate in the US (emphasizing structure, services and administration) and England (emphasizing social structure, care and interaction) were described. We then compared the factor patterns from three domains of the Prison Social Climate survey (PSC) (Environmental quality of life; Personal well-being; and Safety and security) and their stability. First, their stability was compared using randomly split halves of inmate responses from 10 randomly selected US Federal prison samples ($n=950$) using Amos factor comparison statistics. Data indicated that there were no significant differences between the two factor patterns. Second, factor patterns on the same instrument were compared between the US sample and an English purposive sample using the PSC ($n=186$) of inmates from three prisons of different security levels. Comparison between factor patterns on the US and English samples again indicated no significant differences between factor patterns, although at a slightly lower level of constraint of the factors. Differences were largely explicable by the high level of scale intercorrelations in both samples. Factors as factor-scored according to the US factor pattern showed significant differences between samples on the Environmental quality of life scales, no significant differences on the Personal well-being scales, and significant differences on only two of six of the Safety and security dimensions. Despite some

limitations in the selection of the English sample and its size, these data suggest that the PSC is stable within the US sample, and that it is also stable in its factor pattern between the US and English sample. These data further suggest that prison climate, as measured by the three domains selected of the PSC, is a stable measure across and within two similar Western penal systems and inmate cultures.

Measurement of prison climate: A comparison of an inmate measure in England and the US

Prison climate refers to the social, emotional, organizational and physical characteristics of a correctional institution as perceived by inmates and staff. It is often used synonymously with the term “prison environment”. The potential importance of measuring prison climate is central to understanding both what happens in prison, and what may happen on release. The statement that people are sent to prison *as* punishment, not *for* punishment, reflects the moral view that incarceration in and of itself is sufficient punishment for an offence. However, such a position tends to view prison as a kind of “black box” which is punitive just by virtue of the deprivation of liberty, and as such relatively equivalent in its impact across institutions for any given period of custodial sentence. However, actual prison conditions will vary in terms of the physical fabric of the institution, the harshness of the regime, and its social organization, by jurisdiction and the political perception of offenders, and by the perceptions of those associated with the prison. Thus, it is reasonable to assume that variation in prison climate (or perception of prison climate) may have an impact on offending and re-arrest rates, and type of offence, after release. It may also influence the impact of imprisonment on self-harm, violent behavior, or drug use among other variables, during incarceration. The issue has received recent attention from Lanza-Kaduce, Parker and Thomas (1999, p29) who argue (in the context of differences in recidivism outcomes between private and public prisons in the US) that it is reasonable to expect, given the stated objectives of many correctional programs to reduce recidivism, that prison management and ideology can influence reoffending. From a theoretical perspective, studies of prison climate rely on Murray’s (1938) Environmental Press theory, which holds that environmental conditions, in

interaction with individual characteristics, will influence behavior. It could be potentially considered as a penological equivalent to environmental criminology, where behaviors are influenced by place-based factors (Bottoms & Wiles, 2002).

Measurement issues: From a more immediate measurement perspective, we can ask if there is any commonality, and to what extent, between the salient environmental characteristics identified in two similar western prison systems. Cross-system comparisons, which have the advantages of making possible comparisons between larger systems and providing information on the impact of system and cultural-level variables, may also provide an opportunity for carrying out larger combined studies across several centers. This paper seeks to provide answers to several of these measurement issues.

In order to understand the role of prison climate, if any, on prison and post-release behavior, we need to measure prison climate reliably, validly and comprehensively. A first step is to understand the salient dimensions of prison climate and determine their universality in similar cultures. The US Federal Bureau of Prisons (BoP) has developed a measure of prison social climate, the Prison Social Climate Survey (PSC: Saylor, pers.com) for both staff and inmates which are comparable. In the UK, Liebling with Arnold (2004) has also developed a measure of prison climate to measure inmate perceptions of their environment in England and Wales.

Previous research on prison climate: Lutze (1998) notes that traditional prison settings affect prisoners in different ways – and that to support rehabilitation, prison environments should provide external controls to guide inmates' behavior as well as environmental attributes that support internal change and personal growth. Lutze's idea that prison environments should assist inmates to identify their deficits and provide programs to provide assistance in rehabilitation, however, cannot be tested without being able to measure prison climates and understanding their interactions with inmate

characteristics. Crises in correctional environments may be associated with issues of prison climate and specifically prison dynamics. Rison and Wittenberg (1994) indicate that the three major causes of major prison instability (“disaster environments”: p47) are bureaucratic instability at the organizational level; correctional staff dissatisfaction and unrest; and the social climate of the institution. A number of variables that may contribute to violence are associated with physical conditions in prisons. Suedfeld (1980) classes these as including spatial intrusions (having personal space invaded by others, especially unpredictably); monotony (both mental and physical); and external control (having the environment under the control of someone else). In addition to being physical environmental variables, all of these variables may also be reflected in cognitive and social aspects of prison climate.

Early correctional climate instruments: Moos (1968) measured social climate in psychiatric hospital settings, and adapted his correctional climate instrument from his Ward Atmosphere Scale (Moos & Houts, 1968). This was administered to inmates and staff in 16 correctional units, largely for juveniles and young adults. These units were characterized by small numbers of residents tested (range 17-32), young age (range of mean ages 14.9-26.3) and short length of stay (range of median stay, 1-54 weeks). Moos assumed that the same dimensions for psychiatric wards would hold for correctional institutions, and reported on the intercorrelations between scales and significant differences between scale scores and resident perceptions of the different units. Subsequent studies using Moos’ scale in correctional environments failed to produce a factor structure resembling the scales posited by Moos (Wright & Boudouris, 1982; Saylor, pers.com). Wright (1985, p259) notes regarding Moos’ instrument “there is little justification for the attributes of correctional climate specified by Moos, and whether they actually exist and have meaning for behavior within prison settings is questionable”.

Prison environment inventory: More recently, Wright (1985) developed the Prison Environment Inventory, using 80 items, based on Toch's (1977) research. Toch interviewed 900 inmates to identify the shared environmental concerns that were common to the correctional setting. Inmates were asked about their perceptions of difficulties that arose in prison environments, and how they managed them. Content analyses of these qualitative data identified eight themes, which Toch labeled privacy, safety, structure, support, emotional feedback, social stimulation, activity, and freedom. Wright (1985) notes that these are all dimensions which are global concerns for inmates and that are universally perceived. He confirms the difficulty, however, that all these variables are seen through the lens of the inmate's personal perception: they imply a standard of comparison (safe in relation to what – other institutions? The outside world?) that can be a source of random error.

Initially, Wright constructed a battery of 121 items that were related to the eight underlying dimensions. Two randomly selected samples of inmates from New York state medium security prisons pretested the instrument by completing it and commenting on it. After scale analyses, 80 items were used for primary data collection. The scale was then administered to randomly selected samples of inmates at five medium- and five maximum-security prisons, randomly selected from the prisons within each security classification. Factor analysis indicated that following deletion of items with poor item-scale correlations, the eight dimensions were empirically supported by loading on the appropriate factor with few crossovers. A final instrument of 48 items using the factor loadings as a guide was created. Using an additional six items rating perception of prison, safety, and self, Wright determined using analyses of variance across the ten prisons that only between 4 and 14% of the variance within each scale was accounted for by

individual differences, suggesting that individual effects in the Inventory can be largely discounted when comparing the contextual properties of prisons.

Inmate-assessment of programs and safety: A similar statistical approach was used by Camp (1999), who looked at the variables of inmate-assessed safety, noise, and job opportunities in over 3,000 inmates in 32 different US prisons. Using prison security level as an independent variable, he found that 5.6% of the variance in the number of hours worked in prisons was due to between-prison differences. However, on the two items measuring prison safety and comparison with safety on the street, the variance occurring between prisons was insignificant at less than 2%. For noise levels, almost 7% of the differences at inmate assessments was accounted for between prisons. Camp's data do indicate that systematic prison-level differences are measurable. However, their interpretation is more difficult. He notes that comparison of the relative performance of prisons within a given prison system has always been an interest of prison administrators in the public sector, but that the advent of private prisons has provided a new impetus to study prison differences. Camp specifically notes factors such as inmate safety, staff safety, quality of programs, quality of health care, inmate idleness, and the quality of food as being of importance to evaluators, but also that prison staff and administrators may regard the opinions of inmates as "little more than individual and collective whining" (p252). Indeed, some may argue that a poor assessment of conditions simply reflects prison staff and administration are doing a good, although strict, job, although Saylor, as cited in Camp (1999), points out that this is not a tenable argument for issues such as safety. Liebling with Arnold (2004, p434) correctly notes that safety and organization are as important to prisoners as to staff. Comparisons between dimensions derived from previous measurement studies appear in Table 1.

Table 1: Dimensions of Prison Climate from Three Studies

<u>Toch (1977)</u>	<u>Akers (1976)</u>	<u>Liebling (2004)</u>
Activity	Inmate work & employment	Well-being
Privacy	Personnel	Power/authority
Safety	Security & custodial programs	Safety
Structure	Administrative goals & structure	Order
Support	Education & training programs	Support
Emotional feedback	Counseling & treatment programs	Personal development
Social stimulation	Visits & outside contact	Family contact
	Classification & diagnosis	Prisoner social life
	Physical architecture	Respect
		Humanity
		Relationships
		Trust
		Fairness
		Decency
		Meaning

Inmate-staff measure concordance: One of the few studies that compared inmate and staff survey data was carried out by Camp et al. (2002) in the US, using a combination of four public and private prisons, built to the same architectural design, activated at about the same time, and generally holding the same number and type of inmate. A further six prisons were also surveyed to provide additional data for comparison of reliability and variation across institutions. Over 100 inmates per institution were randomly surveyed along with staff. Camp et al. (2002) report that had they just used the staff data, poor reliabilities and variability would have made cross-institution comparisons difficult. However, reliabilities from inmate measures had acceptable to excellent reliabilities. Camp's data showed that on the measures that were sufficiently reliable to be able to compare staff and inmate evaluations (sanitation in dining hall and sanitation in housing units) there were high and significant correlations (between 0.66 and 0.90). These correlations between inmate and staff and the scale reliabilities suggest that first, staff and inmates are evaluating the same situational variables, and second, that inmate surveys can be used to generate reliable measures to differentiate prison social and performance data.

Dimensions of prison climate across countries: Various dimensions of prison climate have been posited as describing the critical factors of inmate perceptions. In 1976, Akers, Gruninger and Hayner looked at inmates in prisons in the US, England, West Germany and Spain. Underlying this research was an attempt to determine which prisoners' characteristics were imported and which were a function of the institutional environment. They conducted on-site observations and interviews with senior administrators, and derived from these nine dimensions: physical architecture, administrative goals and structure, classification and diagnostic procedures, work and employment of inmates, education and training programs, counseling and treatment

programs, security and custodial programs, personnel, and policy on visiting and outside contact. They used a 9-point scale for each dimension to have the institutions rated on a custody-treatment continuum by independent judges. They found no apparent relationship between type of prison and the prisoner role-types they were studying, but some evidence to suggest that time in prison may influence roles. However, this was in opposite directions for English and German inmates. These data, in addition to describing some of the salient dimensions used in studying prison characteristics (although not as judged by inmates), suggest that country-level variation occurs and should be considered in addition to institutional variation, even in superficially similar western countries.

Climate and prison-based interventions: In a recent review of the criminological foundations of penal policy, Bottoms (2003) emphasizes the importance of climate and context on prison-based interventions. In a comprehensive review of the Incentives and Earned Privileges (IEP) experiment in English prisons in the late 1990s, Bottoms notes that the variable success in implementation and outcome of the IEP program rests on a number of factors at the administrative, institutional, staff and prisoner levels. Of chief importance to the argument that prison climate may impact interventions (and without detracting from the crucial importance of the administrative, institutional, financial, staff and penal concerns he also outlines), Bottoms noted the importance of climatic issues such as legitimacy, fairness and justice. Liebling with Arnold (2004, p448) has similarly warned about drifting from questions of morality in the name of performance. Indeed, Bottoms emphasizes that these occur at both the level of inmate perceptions and staff perceptions, making the point that prison climate and interventions to change behavior occur as an interaction between administrative, staff and prisoner attitudes, beliefs and values. Key issues identified by Bottoms include the centrality of legitimacy (p184), the importance of perceptions of fairness and justice (p125), consistency (p148), and issues of

prisoner *versus* staff control (p132). Most importantly, Bottoms (2003) notes that the climate within which interventions occur is not simply a passive substrate. Where the climate is seen as unjust or arbitrary, resentment occurs and has the effect of being counterproductive. Indeed, Bottoms (2003, p176) notes that the presence of emotions such as resentment can have a highly negative impact on the implementation of IEP, making it difficult or impossible for it to be perceived as legitimate and acting as a major barrier to participation in or acceptance of the program. Thus, prison climate may act as both a direct barrier and an interactive variable in the impact and outcome of prison interventions. However, Liebling, with Arnold (2004) summarizes the literature on measurement and evaluation of prison regimes and cautions that using prison climate to measure recidivism may ignore the relevant social milieu once out of prison.

“What matters” in prison climate: Liebling with Arnold (2004) make the important point that the search for the issues that “matter” in prison has often been overshadowed by the search for what can easily be measured. Their detailed and extensive study of qualitative and quantitative aspects of “what matters” to staff and inmates in five English prisons used the method of Appreciative Inquiry to illustrate positive and negative experiences of both staff and inmates. Staff and prisoners helped the researchers develop questions based on the themes that emerged from the qualitative aspect of the research. There was general consensus on key dimensions: respect shown toward prisoners, humanity of regime. Quality of staff-prisoner relationships, degree of support for prisoners, level of trust, perceived fairness, degree of order, safety, level of well-being, opportunities for personal development, amount of family contact, use or abuse of power, meaning attached to the penal experience, and decency shown to prisoners (p134). These show some overlap with the US Prison Social Climate (PSC) measures, including quality of physical environment, personal well-being, range and

operation of Staff services and programs, and Personal safety and security. Liebling and Arnold were able to produce reliable measures of the Chief Inspector of Prisons' "healthy prison" indicators: whether prisoners felt safe, felt treated with respect, and were able to and were assisted in maintaining meaningful contact with their families. Of particular importance as an issue of reliability and validity, Liebling and Arnold report that staff and prisoners produced the same set of dimensions, indicating a high level of "moral consensus or shared vision" (p148). Refining the dimensions through further focus groups revealed that the most important thing that mattered was relationships (between staff and management, and staff and prisoners: p151). Within this relationship theme, the concepts of respect, fairness, support, humanity, safety, order, opportunities for development, use of power/authority, level of trust, feelings of validation/appreciation, degree of communication, quality of relationships, levels of tension/well-being, alienation/belonging, degree of loyalty, and (for staff only) job satisfaction were key. These were subdivided into the major dimensions of relationship dimensions, regime dimensions, social structure dimensions, and individual dimensions. Importantly, they warn that it is misleading to believe that programs delivered in prisons are an answer, without also considering the context within which they are delivered (p166). The key dimensions of prison life derived by Liebling with Arnold (2004) all discriminated in differing degrees between the five prisons they studied.

Situational prison control: Situational prison control has tended to focus on the physical environment (Wortley, 2002). Wortley notes that situational approaches attempt to involve the specific manipulation of the prison environment to block or inhibit criminal behavior (and distinguished from attempts to change inmate behavior through counseling, anger management, assertion training, and psychotherapy: p4). The distinction can be made (Wortley, 2002, p13) that "Some situations *regulate* behavior by providing the

opportunity for individuals to behave in a way that will deliver benefits to them. Other situations actively *precipitate* behavior by prompting or provoking certain actions.” (italics in original). It is not too much of a stretch to postulate that social climate in correctional institutions may have an impact on subsequent behavior. Indeed, Clarke in the foreword to Wortley (2002, pxii) talks in more general terms of the power of the institutional environment to mold the behavior of inmates. What has usually been regarded as background noise may actually play a significant part in post-release behavior.

Need for stable and reliable measures across systems and cultures: While there is ample theoretical basis for anticipating that prison social climate may directly or indirectly impact inmate behavior in the prison (Wortley, 2002) as well as on release, empirical data to date have only looked for immediate situational effects. In order to determine what is any impact prison climate has on more distal behaviors after release or relating to interactions with prison training programs, effective, reliable and valid measures of prison social climate are required.

Prison climates will themselves reflect the dominant penal systems and ideologies of the society within which they are embedded. With wider penal cultures, prevailing moral climates impact attitudes, which in turn shape treatment of prisoners (Liebling & Arnold, 2004, p424). Comparing prison regimes across any dimension, particularly between countries, is difficult: there may be as much variation within a national system as between systems. For example, in the US, the 50 state prison systems and the Federal prison system are derived from different legislatures and based on different histories and cultures. Even within a particular prison, the climate may vary between wings, between shifts, and between governors or wardens (Liebling & Arnold, 2004).

It can be argued that not only do penal systems reflect the broader political debate on what is appropriate in a penal regime, but that evaluation processes and instruments also reflect these differences. This is primarily, but not exclusively, a function of evaluation assessing measurable goals specified by correctional services, which have in turn has these goals approved or imposed by the legislature or political platforms endorsed by governments. The argument that evaluation of prison climate will reflect the dominant or prevailing public penal culture is itself simply noting that prison climate occurs within a more prevailing climatic system affected by the winds of political opportunism, popular sentiment, emotion, criminological research, the media, human rights and legal issues, and economic considerations. It can be argued that what is included in the instruments themselves are a reasonable reflection of not only what is listed in the goals of the particular correctional service, but what is within the political comfort zone to evaluate. There may also be some data that prisons are required by law or administrative request to report.

US and UK prison climate measures: There is a commonality of dimensions in the US (PSC) and English Measurement of quality of prison life (MQPL) instruments although they differ in tone. The PSC is based more heavily on managerial and efficiency models and reporting the distribution of relevant situations, whereas the MQPL is more heavily oriented toward a caring and decency model, with items emphasizing prisoners' response to situations. These differences probably reflect the ongoing political climate and debate on correctional care in the respective jurisdictions as much as academic approaches to evaluation. Nevertheless, the significant common dimensions between the PSC and the MQPL indicate that there is a sufficient basis to compare measurement and responses across countries, to assess differences and similarities between the US Federal

and English prison climates. We used the PSC in this study because recent random sample data were available and it was possible to collect similar PSC data in the UK.

The goal of the proposed study is to look at the measurement of prison climate in the US Federal prison system and in the English/Welsh system to assess the comparability of the measures used. There are three specific aims:

- 1) To determine the factorial validity and stability of the PSC instrument in a US;
- 2) To determine if the factor structure of the US PSC instrument is comparable between US and English inmate samples; and,
- 3) If the patterns are similar, to compare the factor-score dimensions between the US and English samples.

Methods

The study utilized a cross-sectional design in two countries with variation in level of security in each country. Three prisons were selected in England (one minimum, one medium, one high security) in order to control for security level effects. For each UK prison, a box of 200 questionnaires was delivered by the investigator to the study contact person (for Wayland, the deputy Governor; for Parkhurst and Spring Hill, the Director of the Health Service). In the US, the data were collected by the BoP in 10 Federal Correctional Institutions across the United States representing all regions of the continental US. A dedicated data collection team visited the prisons and data were collected between April and June 2000. The prisons were randomly selected and represented all regions of the US, and included one contract facility. Within each prison, inmates were randomly selected and invited to participate. In the UK, questionnaires were delivered to the selected cells during the lunch lock-down which gave the inmates approximately one hour to complete the instrument if they agreed to volunteer to

complete it. Questionnaires were collected at the end of the lunch lock-down by the study contact person, boxed, sealed, and collected by Federal Express for delivery to the investigator. Data were entered into SPSS using a template which allowed only for coded variable ranges and randomly selected records were checked for entry errors. Deidentified data were then maintained by the researcher in SPSS-readable format..

Instrument

The PSC (Prison Social Climate) Survey is composed of 5 sections: background data(16 items), quality of life (32), personal well-being (37), staff services and programs utilized (52), and personal safety and security (52)¹. Items were scored, as appropriate, either yes/no, or on 3 to 7-point Likert scales (for example, Poor, Fair, Good; Not at all, Slightly, Moderately, More than moderately, Very; or None, Very little, A moderate amount, A great deal, Complete; or Never, A few times, Once a month, A few times a month, Once a week, A few times a week, Every day (the latter for the Personal well-being items)).

Sample

The sample was purposive, designed to include a range of prisons (in the UK, categories B, C and D). Prisons were selected in discussion with HMPS Standards Audit Unit to ensure that no institutions that had been recently sampled or were about to be sampled in the next 12 months were included. The Category B prison was Parkhurst, Isle of Wight (a training prison). The Category C prison was Wayland, located in Norfolk. Spring Hill (Buckinghamshire) was the Open prison.

All inmates who had been in an institution for at least four weeks were eligible to participate. Those who read English were provided with the instrument package and a short pencil at a point in the prison routine agreed to between the investigator and the

prison administration. Questionnaires were anonymous. The study was initially approved by the Director-General of HMPS and study details further discussed and coordinated with the head of HMPS Standards Audit Unit, The study and consent form were approved by the BoP IRB. Data were obtained in August-September 2004 from the three English prisons, and data for the comparative US sample were obtained by the Federal BoP in 2000.

Analyses

Data were analyzed using SPSS version 11.5 (SPSS Inc., Chicago, Illinois) unless otherwise noted. All analyses compared the US (PSC) questionnaires from the US and UK samples. Demographic variables were described using frequencies for nominal or ordinal (categorical) data, and means, ranges and standard deviations for interval or ratio (linear) data. For frequency analyses, computations were carried out on valid data, and missing data excluded. Thus, percentages given are percentages of valid data, not total n . Differences in demographic variables were assessed using χ^2 statistics (with Yates correction for discontinuity where appropriate) for categorical data. For data with identical categories between country, or reducible to identical categories, the program <http://www.unc.edu/~preacher/chisq/chisq.htm> was used. After careful analysis of the “Staff services and programs” section of the PSC and discussion with colleagues, it was decided not to include this section in the comparisons. The US programs and nomenclature, and the emphasis on participation in religious programs, specific named educational and vocational programs, and health services, were felt to be too country-specific to allow reasonable comparisons of structure. Accordingly, and because of the relatively small n of the UK sample in order to maintain acceptable $i:n$ ratios, three domain-packages, all of which had multiple factors and items (Floyd & Widaman, 1995) comprising the three separate remaining domains of the PSC (Environmental quality of

life, Personal well-being, and Safety and security) were analyzed. Only items with Likert-scale responses were factor analyzed in order to maximize variance

Following factor analysis, the rotated latent dimensions were factor-scored, and the resulting factor scores compared between the PSC questionnaires, by country (US, UK) sample. Calculations using factor scores used the US sample factors in all cases since this was the baseline, largest and random sample. Factor scores were computed using simple addition of item scores with no weighting. *T*-tests (separate variance estimates) were calculated using the means, SDs and *ns* of each sample using the program at <http://www.graphpad.com/quickcalcs/ttest1.cfm>. All analyses were 2-tailed and significance was set at the 5% level unless otherwise noted.

Stage 1: Initial exploratory factor analysis

The procedure used was exploratory factor analysis, both within the large US sample and then by comparison with the UK sample. As is recommended for confirmatory factor analysis (Floyd & Widaman, 1995), principal axis factoring was used rather than principal component analysis because principal axis does not require the assumption of multivariate normality. Because the UK sample was relatively small, the technique used was to factor analyze the subsections of the PSC, rather than the entire questionnaire. This approach of analyzing item parcels is preferable because there may be several hypothesized dimensions within each section, rather than each section being a single hypothesized latent dimension. Because Floyd and Widaman (1995) recommend that it is more useful to divide large samples for the purpose of replicating the factor solution rather than conducting one analysis with the entire sample (p290), we determined the stability of the factor solution in the US sample by initially conducting confirmatory factor analysis on random halves of the sample (using the SPSS procedure “Select cases”,

sub-procedure “Random sample of cases”) before confirming the US solution with the UK one.

The decision rule for the number of factors was based on a combination of rules. Initially, the Kaiser-Guttman criterion (eigenvalues ≥ 1) was used, although Floyd and Widaman (1995) note that this leads to an overestimation of the number of factors to retain. Following examination of the Scree plot, which Floyd and Widaman suggest usually provides the most satisfactory results, the analysis was re-run specifying the number of factors suggested by the Scree plot plus an examination of the factor pattern matrix. Where possible, factors which contained at least three unique loadings for that factor, or two high (>0.60) unique loadings, were retained, using Walkey and McCormack’s (1985) criteria (exclusion of factors with ≥ 3 items with unique loadings). Oblique rotation (direct oblimin, $\delta=0$) was chosen given the theoretical expectation that the derived dimensions within each section of the questionnaire would be correlated since they dealt with conceptually related measures of prison climate, and had been purposively constructed so that each section dealt with related concepts. This strategy was selected because principal axis factoring has the advantage of producing clearer latent structures (Floyd & Widaman, 1995) and where oblimin rotation allows the factor axes to be correlated. This comparison of baseline models (estimated for each group separately) represents the model that best fits the data from the perspective of parsimony and substantive meaningfulness, as well as an equivalent number of factors across groups (Byrne, 2004).

Stage 2: Confirmatory Factor Analysis

The second stage used Amos to test for stability of the factor structure and confirm the magnitude of loadings. Amos version 4.01 (Arbuckle, 1999; Byrne, 2004) was used as the structural equation modeling and confirmatory factor analysis statistical

package. In this stage, the large normative ($n=950$) US sample was randomly split into halves, and the structure and magnitude of the factor invariance was tested by comparing the two split samples, using a series of logically ordered and increasingly restrictive models that (a) are unconstrained; (b) constrain only loadings; (c) constrain loadings and variances; (d) constrain loadings and covariances; and (e) constrain loadings and error variances. A *non-significant* χ^2 and a comparative fit index (CFI) of >0.95 and Root mean squared error of approximation (RMSEA) of <0.05 for a model indicates acceptable goodness of fit (Byrne, 2004). This technique provides an index of the stability of the factors within the normative sample. Significance level was set at $p<0.01$ for all indices of fit in the confirmatory factor analyses: that is, unless the indices were significant at the 1% level, it was assumed that the factor comparisons were not significantly different. For missing values, in all analyses a full-information maximum likelihood method (Amos 4.01) was used.

Stage 3: Cross-country sample comparisons

The third stage used an identical Amos procedure as in Stage 2 to compare the invariance in factor structures between the US normative sample and the UK sample on the same questionnaire. Again, a series of models were calculated and the goodness of fit assessed to demonstrate degree of replicability (invariance) of the factors between the two prison system samples.

Thus, the data from the confirmatory factor analyses produces a series of comparisons between models. Here, the first set of comparisons are between the randomly split-halves of the larger US sample factor patterns to determine stability, and then second, between the US sample and the UK sample factor patterns to determine replicability.

Results

Demographic data on samples

Demographic data on the samples are presented in Table 2. Analysis indicated that there were no significant differences between the prisons on the return rate of the questionnaires. This is despite the fact that the Spring Hill/Grendon rates were depressed by the discarding of 50 completed questionnaires by a prison officer “because he didn’t know what they were for” before their return to the researcher. Table 2 illustrates those variables that were comparable between the US BoP sample on the PSC for 2002 and the data collected in the UK for the present study on the PSC (total UK sample). These data indicate that there were several significant differences between the characteristics of the US and UK samples. First, the UK sample contained significantly fewer young prisoners and more older prisoners, suggesting a prison population skew toward older inmates in the UK. Second, there are anticipated differences in race between the two samples, with a significantly higher proportion of Black prisoners and prisoners in “other” categories (partially reflecting the inclusion of American Indians as “other) in the US. Third, there are significant differences in the number of times the sample had been in prison, with a higher proportion of first-time offenders in the UK sample and higher proportions of inmates with multiple experiences of imprisonment in the US sample. Finally, there were significantly different proportions of prisoners with mid-level (2-9 years) sentences in the US sample and a higher proportion of those with more than 10 years and life sentences in the UK sample.

Data on additional characteristics of the two samples that were not directly comparable are also presented in Table 2. In the US sample, half were inmates and a significant proportion (more than a quarter) did not understand this classification of custody level. However, more than 80% were in the general prison population rather than specialized units. In comparison with the UK, US Federal prisons sampled contained in

more than two-thirds of cases dormitories with cubicles. For those not in dorms, the median number of people per cell was 2. In the English sample (Table 2), almost all the sample had been sentenced, and more than 90% reported not being locked up for more than 6 hours in the daytime. More than 70% were on an “enhanced” regime. One fifth had spent time in the segregation unit in their current prison, and 5% had experienced the use of Control and Restraint procedures in their current prison. Half had attended an Offending Behavior Course or its equivalent in their current prison, and two thirds received visits. One sixth reported substance misuse prior to their current sentence. The sample, as anticipated, was relatively poorly educated: the modal education was completing some schooling, followed closely by completing high school.

Domain 1: Physical environment: Prison Quality of Life, PSC

The first domain of the PSC relates to physical environment: accidents, noise, food, crowding, visits, and visit facilities. A five-factor model was obtained from the US sample (Table 3) and a six-factor model from the English sample. The US sample produced a model where the Noise and Crowding factors were combined, whereas the English model separated out the six areas. The English factor structure accounted for an additional 10% of variance with the extra factor. The US data suggest that noise and crowding cannot be separated in the sample obtained and are highly intercorrelated. Table 3 also illustrates the factor comparison between the randomly-split halves of the US sample. Both the measures of factor comparison (Comparative fit index, and RMSEA) were within acceptable limits for the loading and variance-constrained model, indicating that the factor structures obtained for the randomly split halves of the sample were closely comparable. Table 3 further illustrates the comparison between the full US sample and the English sample, using a five-factor model. Again, both the comparative fit and RMSEA indices were within acceptable limits for the model where the loadings on the

“Noise” and “Crowding” factors were constrained. This indicates that there is a close fit between the US and English factor structures where the loadings on these two factors are held invariate, and the other parameters are allowed to vary. Closely parallel 5-factor structures are produced for the US and English samples, although there was some factor fission in the English sample, splitting noise and crowding into separate factors.

Domain 2: Personal Well-being (PSC)

The personal well-being items in both samples produced two-factor structures with Psychological and Somatic factors emerging for the US and English samples (Table 4). Examination of the factor patterns reveals that with the exception of 3 items, the factors were virtually identical. Comparison of randomly split halves of the US sample indicated that with loadings constrained, the factors were replicates within the statistical limits of the indices of fit. Comparison of the two-factor structure of the US and English samples (Table 4) indicated that with the Somatic factor constrained, the factors were within the statistical limits of the indices of fit. Thus, parallel factor patterns (particularly for somatic symptoms) are produced for the US and English samples.

Domain 3: Safety and Security (PSC)

The Safety and Security items in the US questionnaire produced quite similar 6-factor pattern matrices (Tables 5), although there were differences in the order of extraction of factors and in the US sample, the items measuring the influence of inmates on inmate behavior were contained in the factor measuring staff and inmate safety. Two of the Assault frequency items in the US sample also appear in the staff and inmate safety factor in the UK sample. The comparison between randomly split halves of the US sample indicated that constraining the loadings on factors 3, 4 and 6 produced similar factor patterns in the split halves. Comparison between the US sample and the UK sample

(Table 5) indicated that a model with loadings and covariance constrained on all factors suggested no significant differences between the samples.

Comparison between factor scores on US and UK samples.

When items on these three domains were factor scored according to the US factor patterns, it was possible to compare means and SDs between the two samples (Table 6). For the Environmental domain, each of the five factor scales was significantly different between the two samples. For the Personal well-being factor scales, neither was significant between the US and UK samples. For the Safety and security factor scales, only the first two (Safety for staff and inmates, and Influence of staff on inmate behavior) were significant between the two samples (low means indicate greater safety or less influence).

Table 1: Comparisons of demographic variables between the US and UK samples

	<u>UK Sample (n, %)</u>	<u>US Sample (n, %)</u>
Age		
<30	46 (12.3)	303 (33.4)
31-40	120 (32.1)	320 (35.3)
41-50	94 (25.1)	172 (19.0)
>51	114 (30.5)	112 (12.3)
	($\chi^2=98.3$, $df=3$, $p<.001$)	

Race[‡]		
White	328 (87.7)	299 (43.1)
Black	24 (6.4)	227 (32.7)
Asian [*]	4 (1.0)	26 (3.7)
Other [†]	18 (4.8)	142 (20.5)
	($\chi^2=199.8$, $df=3$, $p<.001$)	

* Includes Pacific Islanders in US sample

† Includes 4.6% American Indians in US Sample

‡ 52.5% of the US sample considered themselves of Hispanic ethnicity

Times in prison

First time	208 (55.6)	210 (43.5)
Once previously	76 (20.3)	56 (11.6)
2-5 times	68 (18.2)	140 (29.0)
6-9 times	16 (4.3)	58 (12.0)

>10 times	6 (1.6)	19 (3.9)
	($\chi^2=45.4$, $df=4$, $p<.001$)	

Length of sentence

<1 year	12 (3.3)	7 (2.8)
>1 and <2 years	30 (8.2)	20 (7.9)
>2 and <4 years	38 (10.4)	47 (18.5)
>4 and <10 years	162 (44.3)	126 (49.6)
>10 years (including life)	110 (30.1)	54 (21.3)
	($\chi^2=12.4$, $df=4$, $p<.015$)	

Additional demographic characteristics of the US sample*

Custody level	<i>(n, %)</i>	
Community	64	7.4
Out	76	8.7
In	436	50.1
Maximum	2	0.2
Other	49	4.6
Don't know	246	28.3

Prison population type

General population	714	83.6
Admission and orientation	19	2.2
Drug/alcohol	23	2.7

Holdover or segregation	17	2.0
Industries	14	1.5
Pre-release	20	2.3
Mental health unit	9	1.1
Medical unit	6	0.7
Other	32	3.7

Unit type

Dorm without cubicles	69	8.0
Dorm with cubicles	562	64.9
One-story unit with cells/rooms	60	6.3
Unit with cells or rooms, >1 tier	147	17.0
Other	28	3.2

	Mean	Median	SD
Number in cell (excluding dorms)	3.2	2.0	6.0

Additional demographic characteristics of the UK sample *

Status	<i>(n, %)</i>	
Convicted/unsentenced	4	1.1
Sentenced	366	97.3
License recall	6	1.6
Done induction course (yes)	336	89.4

Regime level

Basic	6	1.6
Standard	80	21.3
Enhanced	274	72.9

Spend >6 hours/day 9am-6pm

Locked in cell (no)	348	92.6
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In segregation unit (yes)	76	20.3
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Experienced use in this prison of

Control & Restraint on self (yes)	22	5.9
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Had problem with substance misuse

before came into this prison (yes)	62	16.8
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Done/doing accredited Offending

Behavior Course in this prison (yes)	202	54.6
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Receive visits in this prison (yes)	240	64.2
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Education prior to this prison

Some school	130	35.9
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Completed high school	116	32.0
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Finished technical/trade school	76	2.0
Some university	18	5.0
Bachelor's degree or higher	22	6.1

*Because of excluded missing values, n may not sum to total n : % is valid percent, not total percent.

**Table 2: Factor structures and comparisons on Environmental Quality of Life,
Exploratory Factor Analyses**

Factor structure, US sample

Factor 1: Safety and cleanliness

Loading

Frequency of accidents in housing unit	.80
Frequency of accidents in dining hall	.79
Frequency of accidents in work unit	.77
Frequency of clutter that could feed a fire	.69
Frequency of dirt in dining hall	.58
Frequency of dirt in housing unit	.54

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Factor 2: Noise and crowding

Noise in housing unit in evening	.83
Noise in housing unit in sleeping hours	.81
Crowding in housing unit	.74
Crowding outside housing unit	.63
Privacy in housing unit	-.58
Change in number of inmates in prison	.33

Factor 3: Visiting conditions

Frequency too many people in visiting room	.80
Frequency too much noise in visiting room	.78
Visiting room has enough furniture	.36

Visiting room has enough vending machines	.32
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Factor 4: Food

Quality of food in this prison	.85
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Variety of food at this prison	.85
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Amount of food for main courses	-.65
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Appearance of food at this prison	-.52
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Factor 5: Barriers to visits

Hard to visit because of prison location	.72
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Distance frequent visitor has to travel	.61
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Difficulty of frequency of visits because of prison rules	.51
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General quality of visits	-.35
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(61.1% of variance)

Factor structure, UK sample

Factor 1: Noise	Loading
------------------------	----------------

Noise in housing unit in sleeping hours	.72
---	-----

Noise in housing unit in evening	.63
----------------------------------	-----

Factor 2: Food

Quality of food in this prison	.96
--------------------------------	-----

Variety of food at this prison	.93
--------------------------------	-----

Appearance of food at this prison	.79
-----------------------------------	-----

Amount of food for main courses	.59
---------------------------------	-----

Factor 3: Visiting conditions

Frequency too much noise in visiting room	.90
Frequency too many people in visiting room	.79
Visiting room has enough furniture	-.55

Factor 4: Crowding

Crowding in housing unit	.89
Crowding outside housing unit	.71
Privacy in housing unit	-.38
Change in number of inmates in prison	.35

Factor 5: Barriers to visits

Visiting room has enough vending machines	.74
General quality of visits	.59
Hard to visit because of prison location	-.43
Difficulty of frequency of visits because of prison rules	-.40
Distance frequent visitor has to travel	-.29

Factor 6: Safety and cleanliness

Frequency of accidents in dining hall	.95
Frequency of accidents in housing unit	.92
Frequency of accidents in work unit	.72
Frequency of dirt in dining hall	.68
Frequency of clutter that could feed a fire	.67

Frequency of dirt in housing unit .54

(71.9% of variance)

Environmental Quality of Life model comparisons between randomly split samples of the US normative data.

Model	χ^2	df	$\Delta\chi^2$	Δ df	p
Unconstrained model	808.8	384			
Loadings-constrained model	835.6	400	26.8	16	.04
Loadings and variance-constrained model	1066	406	230.4	6	.01
Loading and covariance-constrained model	847.4	415	11.8	15	ns
Loading, covariance and error covariance-constrained model	852.3	417	4.9	2	.08

Final fit statistics:

Comparitive Fit Index	0.99
RMSEA	0.033

Environmental Quality of Life model comparisons between US Normative and UK samples

Six-factor Model	χ^2	df	$\Delta\chi^2$	Δ df	p
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Unconstrained model	723.2	384			
Loadings-constrained model	776.7	400	53.5	16	.001
“Noise” and “Crowding” factors only constrained	727.5	387	4.3	3	.23
Covariance-constrained model	753.5	398	30.3	14	.007

Final fit statistics:

Comparitive Fit Index	0.99
RMSEA	0.040

Table 3: Personal Well-Being factor structures and comparisons, Exploratory Factor Analyses

Factor structure, US Sample

Factor 1: Psychological well-being	Loading
Feeling everything is going wrong	.96
Feeling nothing turns out right for you	.90
Personal worries bother you	.83
Feeling frustration from being locked up	.83
Feeling that worrying too much	.76
Feeling of sadness, emptiness or depression	.74
Difficulty in understanding directions	.70
Questioning if anything is worthwhile	.67
Feeling of hopelessness	.62
Feeling very angry	.57
Worry about money problems	.56
Worry about your family	.55
Difficulty in concentrating	.45
(51.6% of variance)	
Factor 2: Somatic complaints	
Headache	.73
Digestion-related stomach problem	.70
Concern that something is wrong with your body	.70
Poor appetite	.65
Disturbed or restless sleep	.63

Muscle aches	.61
Back problems	.60
Feeling tense or anxious	.52
Feeling weak all over	.49

(7.4% of variance)

Factor structure, UK Sample

Factor 1: Psychological well-being **Loading**

Feeling nothing turns out right for you	.96
Personal worries bother you	.88
Feeling everything is going wrong	.88
Feeling of hopelessness	.83
Feeling that worrying too much	.81
Feeling frustration from being locked up	.76
Feeling very angry	.74
Questioning if anything is worthwhile	.72
Feeling of sadness, emptiness or depression	.68
Feeling tense or anxious	.65
Worry about money problems	.63
Feeling weak all over	.61
Difficulty in concentrating	.58
Worry about your family	.53

(58.8% of variance)

Factor 2: Somatic complaints

Digestion-related stomach problem	.83
Muscle aches	.75
Back problems	.69
Headache	.66
Difficulty in understanding directions	.60
Poor appetite	.53
Disturbed or restless sleep	.53
Concern that something is wrong with your body	.42

(6.7% of variance)

Personal Well-Being model comparisons between randomly split samples of the US normative data.

Model	χ^2	df	$\Delta\chi^2$	Δ df	p
Unconstrained model	2000.4	416			
Loadings constrained	1671.2	430	19.9	20	ns
Covariance constrained	1672.2	431	1.0	1	.31
Variance constrained	1722.0	432	49.8	1	.001

Final fit statistics:

Comparative Fit Index	0.959
RMSEA	0.056

Personal Well-being model comparisons between US Normative and UK samples

Model	χ^2	df	$\Delta\chi^2$	Δ df	p
Unconstrained model	1374.0	410			
Loadings constrained	1916.5	430	42.5	20	.002
Covariance constrained	1375.7	411	1.7	1	.19
Constraining somatic factor only	1378.9	419	3.2	8	.92

Final fit statistics:

Comparitive Fit Index	0.947
RMSEA	0.64

Table 5: Factor structures and comparisons on Safety and Security, Exploratory

Factor Analyses

Factor structure, US Sample

Factor 1: Safety for staff and inmates **Loading**

Safe for male staff members	.87
Safe for female staff members	.82
Safe for inmates who are not gang members	.82
Safe for inmates who are gang members	.77
Feel safe from being hit/punched/assaulted by other inmates	.59
Likelihood that staff member would be physically assaulted	.50
How safe you feel your property has been	.42
How likely that inmate would be assaulted in his living unit	.33
Inmates used physical force on staff members	.20

(25.0% of variance)

Factor 2: Influence of staff on inmate behavior

Influence of staff on inmate behavior, night	.98
Influence of staff on inmate behavior, day	.91
Influence of staff on inmate behavior, morning	.86

(10.9% of variance)

Factor 3: Influence of inmates on inmate behavior

Influence of inmates on inmate behavior, day	-.96
Influence of inmates on inmate behavior, night	-.95
Influence of inmates on inmate behavior, morning	-.88

(7.6% of variance)

Factor 4: Frequency of assaults

Number inmates sexually assaulted in past 6 months	- .79
Number inmates pressured for sex in past 6 months	- .70
Fights among inmates involving weapons in past 6 months	- .64
Times inmates injured in assaults not involving weapons past 6 months	- .50
Heated arguments among inmates not involving weapons past 6 months	- .42
Frequency inmates have had weapons past 6 months	- .33
(7.4% of variance)	

Factor 5: Freedom of movement around prison

Inmates free to move about prison, day	.80
Inmates free to move about prison, morning	.64
Inmates free to move about prison, night	.56
(7.1% of variance)	

Factor 6: Searches and shakedowns

Frequency shakedowns in past 6 months	.62
Frequency strip/pat searches past 6 months	.56
Frequency staff used physical force on inmates past 6 months	.37
(5.2% of variance)	

Factor structures, UK Sample**Factor 1: Safety for staff and inmates/Influence of inmates** **Loading**

Times inmates injured in assaults not involving weapons past 6 months	.87
Number inmates pressured for sex in past 6 months	.80
Heated arguments among inmates not involving weapons past 6 months	.70
Influence of inmates on inmate behavior, day	.66

Influence of inmates on inmate behavior, night	.60
Influence of inmates on inmate behavior, morning	.56
Number inmates sexually assaulted in past 6 months	.56
Feel safe from being hit/punched/assaulted by other inmates	.46
Fights among inmates involving weapons in past 6 months	.46
How safe you feel your property has been	.41
Frequency inmates have had weapons past 6 months	.30
(36.9% of variance)	

Factor 2: Influence of staff on inmate behavior

Influence of staff on inmate behavior, night	.88
Influence of staff on inmate behavior, day	.87
Influence of staff on inmate behavior, morning	.81
(11.9% of variance)	

Factor 3: Searches and shakedowns

Frequency shakedowns in past 6 months	.78
Frequency strip/pat searches past 6 months	.63
(10.1% of variance)	

Factor 4: Freedom of movement around prison

Inmates free to move about prison, day	.93
Inmates free to move about prison, morning	.79
Inmates free to move about prison, night	.46
(7.7% of variance)	

Factor 5: Overall safety for staff and inmates

Safe for male staff members	.93
Safe for inmates who are gang members	.91

Safe for female staff members	.89
Safe for inmates who are not gang members	.76
(5.0% of variance)	

Factor 6: Assault frequency

Likelihood that staff member would be physically assaulted	.97
Inmates used physical force on staff members	.60
Frequency staff used physical force on inmates past 6 months	.54
How likely that inmate would be assaulted in his living unit	.51
(4.1.0% of variance)	

Safety and Security model comparisons between randomly split samples of the US normative data.

6-Factor Model	χ^2	df	$\Delta\chi^2$	Δdf	p
Factor 6-constrained model	750.3	437			
All factors-constrained model	796.1	453	45.8	16	.001
Factors 3 & 6-constrained model	754.6	439	4.3	2	.12
Factors 3, 4 & 6-constrained model	755.8	441	1.2	2	.55
Factors 2, 3, 4 & 6-constrained model	763.4	443	7.6	2	.02
Factors 3, 4, 5 & 6-constrained model	788.3	446	32.5	5	.001
Factors 1, 3, 4 & 6-constrained model	783.5	447	27.7	6	.001

Final fit statistics:

Comparative Fit Index	0.986
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RMSEA 0.036

Safety and Security model comparisons between US Normative and UK samples

Six-factor Model	χ^2	df	$\Delta\chi^2$	Δ df	p
Unconstrained model	903.8	436			
Loadings-constrained model	922.5	453	18.6	17	ns
Covariance-constrained model	930.9	461	8.4	8	ns
Loadings and covariance constrained	935.4	465	4.5	4	ns
Variance-constrained	940.3	471	4.9	6	ns

Final fit statistics:

Comparitive Fit Index 0.99

RMSEA 0.033

Table 6: Comparisons of factor scores on US and UK samples (Mean±SD)*

Factor	US	UK	t (df)	Sig
<u>Environmental climate</u>				
Factor 1: Safety and cleanliness	16.00±7.47	12.32±7.45	5.32 (952)	.001
Factor 2: Noise and crowding	21.77±4.47	12.80±4.50	23.81 (998)	.001
Factor 3: Visiting conditions	9.55±3.69	13.68±2.26	9.82 (1042)	.001
Factor 4: Food	6.12±1.81	7.32±2.26	7.70 (1042)	.001
Factor 5 [†] : Barriers to visits	4.97±1.25	6.65±0.65	9.00 (532)	.001
<u>Personal well-being climate</u>				
Factor 1: Psychological complaints	35.59±20.50	38.76±22.35	1.75 (939)	.08
Factor 2: Somatic complaints	24.60±13.19	25.27±13.64	0.59 (955)	.55
<u>Safety and security climate</u>				
Factor 1: Staff/Inmate safety	20.92±7.48	18.51±8.87	2.75 (758)	.005
Factor 2: Influence of staff	9.15±3.02	10.63±2.03	6.02 (915)	.001
Factor 3: Influence of inmates	6.08±2.83	5.77±2.73	1.29 (920)	.20
Factor 4: Frequency of assaults	12.21±2.83	11.40±4.24	1.89 (893)	.06
Factor 5: Movement in prison	7.11±2.92	7.61±4.20	1.77 (889)	.08
Factor 6: Searches/Shakedowns	10.74±3.95	10.25±3.07	1.36 (873)	.17

*Based on factor scores computed from US factor items

[†]Excluding item “Miles traveled to visit” because of major country differences (US mean 713.3±1274.5, median 320; UK mean 133.2±177.7, median 90).

Discussion

These data are subject to several limitations. First, the UK sample was relatively small and suffered from a relatively low (about one third) response rate. While this response rate is consistent with completion rates for anonymous questionnaires with no incentive for return, the absence of any data on the differences (if any) between responders and non-responders makes it difficult to determine the extent and direction of any response bias. It is possible that two (or more) biases are operating: first, Ramsbotham (2003) notes that 65% of prisoners in the UK have a less than eight year old reading level, and it would be anticipated that a relatively long questionnaire such as the PSC would tax the comprehension of such inmates. Indeed, if we assume that those with an eight year reading level or above filled in the questionnaire, we would have about the same response rate as the present study. Second, it might be anticipated that those with more concerns about the quality of prison life might be more likely to complete the questionnaire, thus biasing toward the more dissatisfied. Contrariwise, a case could also be made that the more dissatisfied might be *less* likely to respond due to disillusionment that anything could be achieved. It must also be cautioned, however, that these scales are based on inmate *perceptions* of prison climate, themselves based on expectations, and that different norms in the two systems sampled may affect these expectations and perceptions.

With regard to the factor analyses, the UK sample was at the lower end of the item to sample ratio generally accepted for factorial studies. Child (1970) suggests that a 1:2.5 ratio is the minimum acceptable, although Floyd and Widaman (1995) suggest a 1:5 ratio, and the ratio for no analysis performed here fell below 1:7.6. They further indicate that Monte Carlo simulations suggest that the critical variable is not the *i:n* ratio, but the size of the loadings: with high factor loadings, smaller samples are acceptable. In the present

data, each component containing several loadings above 0.60, met with this criterion. However, a relatively small sample produces a relatively high standard error value, which makes it more difficult to achieve significant differences between samples. On the other hand, the size of the US normative sample was high, and this has a detrimental impact on the significance of goodness of fit measures, which require a *non-significant* χ^2 test result.

However, the approach chosen (principal axis factor analysis) has the advantage that it does not require the assumption of multivariate normality of distribution. Floyd and Widaman (1995, p289) indicate that, in practice, both exploratory and confirmatory factor analysis are relatively robust against violations of normality, provided that other violations such as insufficient sample size do not occur. A limitation of the small English sample size using Amos is that it is difficult to achieve acceptable indices of fit given the high variance, and thus while some of the indices approach acceptable levels in comparison with the US sample, the relatively small sample size in the English sample makes this difficult. The comparisons between the US and UK samples on the factor-score dimensions should be interpreted cautiously given the small and non-random UK sample. The actual differences on the computed scale scores may represent selection bias in the UK sample and the specific characteristics of the inmates and the regimes in those institutions rather than wider system differences. The US data were collected in 2000 and the UK data in 2004, and it is possible that the time discrepancy emphasizes prison climate differences between the two countries. However, 2000 was during the relatively liberal Clinton presidency, and it is also possible that a hardening of attitudes toward inmates in the US might have occurred by 2004. Finally, comparisons suffer from different lenses of perception. For example, what “crowding” may mean in a UK prison will be objectively different from what the same term will mean in a US prison. However,

as with most psychometric measures, it is the perception rather than the objective fact that determines response.

Despite these limitations, these data indicate that even given differences in sampling and *ns*, very similar factor structures emerge for the two countries on the three PSC domains selected. First, the randomly split-half factor structures for the three domains (Environmental quality of life, Personal well-being, and Safety and security) were highly comparable for, respectively, a loading and covariance-constrained model, a loading-constrained model, and a 3 out of 6 factor-constrained model. Thus, given these constraints, the replicability of the factor structures between the split halves of the US data is such that they are not significantly different. Comparing the US and UK data, the three domains also achieved non-significant differences although with somewhat less stringent constraints for the first two domains. These constraints were, for Environmental quality of life, with “noise” and “crowding” factors only constrained; for Personal well-being, with the Somatic factor constrained; and for Safety and Security, with loadings and variance constrained. That non-significance in factor comparisons can be achieved between the two samples, despite the different cultural, policy, administrative, legal and even architectural differences (for example, the higher use of dormitories in the US Federal system compared with the preponderance of single-cell accommodation in the English system), suggests that the dimensions are both perceptually and psychometrically sufficiently similar that the same questionnaire can be used for comparative purposes between these two systems. Although there are no data to support the assumption at this stage, it may be reasonable to assume that similar Western systems might also be comparable. On the other hand, it is unclear the extent to which the PSC dimensions were derived from actual observation and qualitative interviews with inmates and staff as was the case with the English measure (Liebling & Arnold, 2004). This makes the degree of

concordance between the samples more striking and suggests that the PSC may be relatively resilient as well as stable. However, one must be careful not to assume that the dimensions of the PSC are the only dimensions that exist or that are relevant for measuring prison climate (although it clearly includes dominant dimensions). The importance of inmate-staff interactions and decency issues in the English MQPL as dominant dimensions, and their lower representation in the PSC (where they appear as specific fairness issues) underlines the importance of this point. Indeed, the different emphases of the PSC and the MQPL may represent not only system and cultural differences, but also different degrees of emphasis on staff and inmate perceptions of the dimensions of prison climate.

One aim of demonstrating that the PSC dimensions studied here are comparable across different prison systems and climates is to measure differences between systems such as the US Federal and the English/Welsh system. Table 6 uses the US Factor-score scales to compare means between the two data sets. Despite the limitations previously noted plus slight differences in UK and US factor patterns, there are some interesting similarities and differences between the two samples. All the factor scales in the Environmental domain (cleanliness and safety, noise and crowding, visiting conditions, food, barriers to visits) were significantly different. While we must be cautious about the fact that the English purposive sample was from only three, possibly unrepresentative, prison complexes, these data suggest that there are significant differences between the environmental quality of life as perceived by inmates between the two countries (and not all in the same direction). Interestingly, there were no significant differences in personal well-being between the inmates in the two samples, suggesting that the pains of imprisonment have equivalent impacts on psychosomatic health in the US and England. This might be anticipated and is a conjectural validation for the scales. For Safety and

security, which Liebling and Arnold (2004) note is one of the most comprehensive domains in the PSC, there were both similarities and differences. There appears to be somewhat more perceived safety and security in the English system, with more influence of staff on inmates (possibly related to living arrangements and staff:inmate ratios), but no significant differences in the influence of inmates on inmate behavior, frequency of assaults, movement within prisons, and frequency of searches and shakedowns. Even given the limitations noted previously, the pattern of significant and non-significant differences across the factor scales in the three domains suggests that they have some discriminant ability.

The establishment of very similar factor patterns tells us that prisoners in the institutions sampled in the US and England see the world of their prison environment in very similar terms. Factor analysis looks at the correlations between questionnaire items, and groups them into clusters of highly correlating items, thus establishing what dimensions (or factors) emerge as best explaining the underlying patterns in the items. These factors can be seen as similar to subscales within the data. The emergence of similar factor patterns within the packages of items presented to prisoner samples in each country tells us that prisoners are seeing their prison environments as similarly patterned. That is, their lenses are similar in how they categorize and organize the salient categories provided in the PSC in the prison environment. However, the fact that the particular questionnaire studied – the PSC – gives them limited choices, means that these lenses are blinkered by the options provided. We might expect even more similarity if the dimensions were derived more directly from prisoner interviews, as in the case of the MQPL. On the other hand, the PSC dimensions are derived from previous qualitative studies (Toch, 1977; Wright, 1985) and the literature reviewed does show similarities in the dimensions of prison climate that emerge from studies at different times and in

different systems. While we cannot be sure that the scales are measuring the same concepts in each context, the individual items are very specific and both questionnaires were in English. Similar factor patterns imply a similar clustering of items into latent dimensions (concepts).

When we compare the similarity of the patterns that emerge from randomly splitting the US sample in two, this pattern is stable. That is, we get almost the same pattern from each half. When we compare the US and English sample, we find that the pattern is still very similar, but that in a few cases there are idiosyncracies that make them slightly less similar. In general, however, they are remarkably similar.

These data have several implications for carrying out research across prison systems like those in the US and the UK. It tells us that the same instruments can be used in each country and jurisdiction and that the dimensions that emerge are likely to be perceived similarly (although with differences in degree, or scale score, resulting from differences between cultures and jurisdictions). Prison environment, Personal well-being, and Safety and security are likely to be conceptualized across much the same dimensions in similar Western prison systems. The fact that randomly split halves of the US sample produce almost identical patterns tells us that the structure of the PSC is quite stable. The fact that closely similar dimensions emerge from different countries and prison systems tells us that there is a high degree of convergent validity in the scales measured. These data mean that, at least for the PSC, cross-cultural comparisons between similar prison systems are possible.

When we make this comparison of factor scores (based on the US factor items) interesting differences and similarities between the US sample and the UK sample emerge, with Prison environmental indices all showing significant differences as might be expected between systems with some rather disparate environments. On the other hand,

there were no significant differences between the two samples on Personal well-being, suggesting that psychological and somatic health as measured in these samples was similar between the two systems. There was a more mixed result with Safety and security, with safety and the influence of staff being assessed as different between the two samples, but no significant differences on the influence of inmates, frequency of assaults, movement in prison, and searches/shakedowns being reported. While such findings are preliminary due to the lack of representativeness of the UK sample compared with the US sample, these data suggest that these factors, as well as being perceived similarly by the two country samples, are also able to pick up differences and similarities in the perceptions of inmates in the two systems. That there are common dimensions between the two systems suggests that it is possible to reliably compare inmate perceptions of prison climate across disparate penal systems.

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