Developing ward social climate and sense of community within a high security forensic psychiatric service: Evaluating a sense of community and social climate intervention

Ignazio Puzzo[1], Luke Aldridge-Waddon [1], Emily Morley [2], Joseph Vacher [3], Joanna Mitchell[3], David Murphy[4] and Catherine Farr[4]

1. Centre for Cognitive Neuroscience, Department of Life Sciences, Brunel University London, UK
2. School of Psychology, Cardiff University, Cardiff, UK
3. Department of Psychology, University of Bath, Bath, UK
4. Forensic Research & Development Domain, Broadmoor High Secure Hospital, West London NHS Trust, Southall, UK

Corresponding author: Dr Ignazio Puzzo: Ignazio.Puzzo@brunel.ac.uk

Conflicts of interest: none

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Keywords: assaults, aggression, forensic psychiatry, sense of community, social climate

Abstract

Inpatient ward social climate and sense of community can influence the recovery and care experiences of forensic mental health patients. This research aimed to evaluate an intervention designed to improve social climate and sense of community within a high secure psychiatric hospital in the UK. The intervention was offered across six wards and was tiered in the following way: two wards received the full intervention, two received the partial intervention, and two received no intervention (control). Social climate and sense of community were measured prior to the start of the intervention (baseline), six months into the intervention, and eighteen months into the intervention, using the Essen Climate Evaluation Schema and the Sense of Community Index-2. Changes in frequency of incidents of disruptive behaviour were also monitored across timepoints. A main effect of intervention type on ward social climate was found, with full and partial intervention groups self-reporting greater feelings of social climate than the control group. This effect was also observed across timepoints, with higher social climate scores in the full and partial intervention groups than the control group at six and eighteen months. Furthermore, social climate scores predicted a significant reduction in frequency of incidents across time in the full intervention. These findings provide longitudinal evidence of the importance of developing ward social climate and sense of community within forensic inpatient settings.

Keywords: assaults, aggression, forensic psychiatry, sense of community, social climate

Social climate and sense of community have long been identified as important factors within the care experience of those with mental illness (Tonkin et al., 2012). Social climate encompasses the material, social, and emotional conditions of a social group (Moos, 1974) and, within clinical environments, describes the therapeutic milieu of an inpatient ward (Bressington et al., 2011). Similarly, sense of community is a psychological construct concerning the subjective experience of being a member of an interdependent and stable group (Sarason, 1974) and thus captures how an individual interacts within their care community.

Ward social climate and sense of community have a protective effect on symptomatology and level of risk (Darlaston-Jones, 2007; Ros et al., 2013) and both can have a positive impact on recovery from mental health difficulties (Talò et al., 2014) and treatment engagement (Chavis and Wanderman, 1990). Increased feelings of social climate and sense of community also support the development of quality of life, life satisfaction, and wellbeing (Albanesi et al., 2007; Farrell et al., 2004). Together, this evidence highlights that work should be done to improve ward social climate and sense of community across inpatient services (Townley and Kloos, 2009).

In 2015, NHS England identified a need to assess and improve feelings of social climate and sense of community within high-secure forensic hospitals. High-secure hospital environments are traditionally characterised by limitations (e.g., restricted access to items) and restrictive routines (e.g., locked-door policies) that can make it difficult to develop good levels of social climate and sense of community (Meehan et al., 2006). Previous research conducted within medium and low security inpatient forensic services has reported positive correlations between social climate, self-reported satisfaction with forensic services (Bressington et al., 2011), and patient motivation and therapeutic engagement (Long et al., 2011). However, whether these relationships translate to a high-security setting is currently less clear.

In addition to their associations with positive psychological wellbeing and care experience within psychiatric settings, social climate and sense of community are also thought to influence the nature and frequency of disruptive behaviour within psychiatric services. For example, issues related to ward atmosphere and restrictive structure, which could be interpreted as social climate, are positioned as antecedents of aggression within inpatient psychiatric settings (Papadopolous et al., 2012). Similarly, negative staff-patient interactions (e.g., denying patient requests) explain 25% of all inpatient incidents of disruptive behaviour. This highlights that components of sense of community, like staff-patient interaction, may influence the occurrence of disruptive behaviour. Staff absences or lower staffing levels also impact feelings of safety (Haines et al., 2017) and reduce access to activities typically associated with a positive ward environment, such as communal or occupational activities (Tomlin et al., 2020). Conversely, greater feelings of positive social climate and sense of community may reduce the frequency of inpatient disruptive behaviour (Long et al., 2011; Puzzo et al., 2018), with Ros et al. (2013) positing that forensic mental health settings with more supportive, therapeutic, and open ward climates report less instances of aggressive behaviour.

Therefore, improving ward sense of community and social climate may have a positive impact on inpatient treatment experience and decrease incidents of disruptive behaviour. Indeed, activities which bring staff and patients together might foster a greater sense of shared emotional connection and communication of need. This, in-turn, may make the ward environment feel more open, and thereby reduce the frustrations that lead to incidents of disruptive behaviour.

Following this, the present study outlines an intervention designed to improve ward social climate and sense of community within a high-secure psychiatric hospital. The intervention took place over eighteen months. Self-reported social climate and sense of community were

measured at three timepoints across the intervention course. Relationships between self-reported social climate/sense of community and incidents of disruptive behaviour were also assessed. Furthermore, the intervention was tiered (full intervention, partial intervention, control intervention) to allow for comparisons across intervention type (intensity) and to help evaluate the efficacy of the intervention.

It was hypothesised that:

- Self-report ratings of social climate (total EssenCES score) and sense of community (total SCI-2 score) will increase over time in the full intervention and the partial intervention types. Social climate and sense of community scores will not change significantly across time in the no-intervention type (control).
- In the two intervention groups, there will be a significant reduction in total number of incidents of disruptive behaviour between timepoints, with the full intervention group demonstrating the greatest change across time. The no-intervention type will not demonstrate any significant changes in total number of incidents across time.
- Social climate and sense of community scores will significantly predict change in total number of incidents per timepoint, with scores positively predicting a reduction in total number of incidents between timepoints.

Methods

Ethics Statement: The research took place in accordance with all research ethics guidelines as set by the NHS and West London NHS Trust. This research was conducted in conjunction with the NHS Commissioning Quality and Innovation (CQUIN) sense of community initiative that aimed to improve ward social climate and sense of community within inpatient settings. The initiative encouraged high-secure forensic psychiatric services in the UK to

generate ideas and create activities to develop a greater social climate and sense of community between on-ward staff and patients.

Ward community intervention: For the intervention to be specific to ward social climate and sense of community, each participating ward was tasked with developing activities that were unique to them. These activities were discussed and developed within fortnightly or monthly discussion meetings (depending on intervention type, see below). The meetings took place independent of the sense of community activities, as all activities were delivered outside of these meetings. As such, the meetings were not the sense of community activities themselves, but rather were a structure through which the activities were formed. Examples of activities that were part of the intervention are presented in Figure 1. All on-ward staff and patients were encouraged to engage in the activities and make meaningful contributions to the sense of community discussion meetings. All discussion meetings were led by a trained sense of community facilitator who received NHS-led training on how to implement sense of community interventions and facilitate relevant discussion between staff and patients. Prescribing the sense of community activities, rather than taking this discussion-based approach, would not have been appropriate given that the present intervention wanted to foster a greater sense of agency and togetherness between staff and patients.

Figure 1. Example sense of community activities designed and implemented as part of the intervention

Participants: Six inpatient wards were identified for participation in this study and were randomly assigned to full intervention (n = 2), partial intervention (n = 2), and no-intervention (control group) (n = 2) types. The full intervention type had fortnightly sense of community discussion meetings, the partial intervention type had monthly sense of community discussion meetings, and the control group received no input from the sense of community intervention initiative i.e., continued with usual practice without any intervention-related community discussion meetings. It was felt that more meetings would lead to more sense of community activities and, therefore, this was a way of tiering the intervention whilst maintaining feelings of agency and responsibility. Each intervention type comprised one

high-dependency ward and one assertive rehabilitation ward. High-dependency wards provide a highly structured environment in which to manage a patients' risk and unstable mental state, with the aim of progressing them to an assertive rehabilitation ward. Assertive rehabilitation wards provide greater opportunities for individual responsibility and participation in on and off-ward therapeutic activities. All patient participants were male-identifying, and gender was mixed across staff groups. Self-reported demographic information was not collected, and thus it is not possible to comment on differences in age, race, ethnicity, or mental health symptomatology between intervention groups.

All questionnaire data were collected via opportunity sampling before the intervention started, at six-months of the intervention, and at eighteen months of the intervention. For the full intervention type, 53 participants (37 staff, 16 patients) completed the questionnaires before the intervention started, 33 (19 staff, 14 patients) at six-months of the intervention, and 33 (19 staff, 14 patients) at eighteen-months of the intervention. For the partial intervention type, 28 participants (14 staff, 14 patients) completed the questionnaires before the intervention started, 35 (22 staff, 13 patients) at six-months of the intervention, and 35 (21 staff, 14 patients) at eighteen-months of the intervention. For the control group type, 30 participants (13 staff, 17 patients) completed the questionnaires before the intervention started, 19 (10 staff, 9 patients) at six-months of the intervention, and 21 (9 staff, 12 patients) at eighteen-months of the intervention. Again, the control group received no formal input from the sense of community initiative but still completed the self-report questionnaires of social climate and sense of community as per the other intervention types.

Materials: The self-report Essen Climate Evaluation Schema (EssenCES) (Schalast et al., 2008) questionnaire has 17 items that assess social climate. It has three subscales: Therapeutic Hold, Experienced Safety, and Patient Cohesion. It also generates a total social climate score. Higher scores indicate a more positive social climate. The Sense of

Community Index (SCI-2) (Chavis et al., 2008) is a self-report questionnaire that measures the different aspects of sense of community: Membership, Influence, Meeting Needs, and Shared Emotional Connection. Total SCI-2 scores can also be used. Higher scores indicate greater feelings of sense of community.

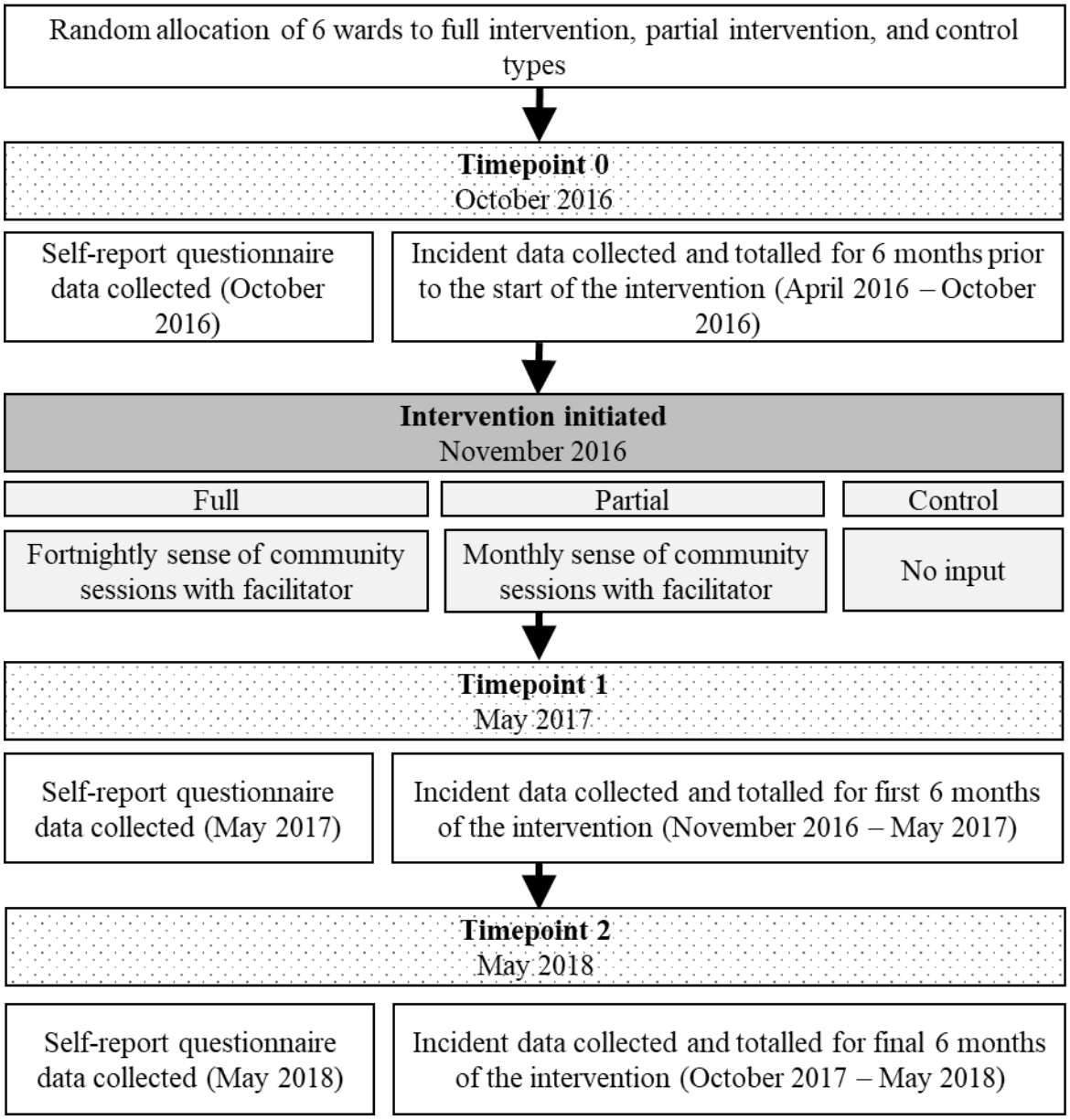
Design: This study employed a naturalistic before-and-after quasi-experimental design. To measure the effect of intervention type across time. Questionnaire data on social climate and sense of community were collected at the intervention durations of: a) before the intervention began (hereon referred to as T0), b) 6 months after the start of the intervention (hereon referred to as T1), and c) 18 months after the start of the intervention (hereon referred to as T2). Furthermore, as an additional index of intervention effectiveness, change in total number of incidents across timepoints was analysed per intervention type.

Recording and operationalising incidents of disruptive behaviour: Incident data were accessed for six months prior to the start of the intervention and then for eighteen months from the start of the intervention. The incidents were filtered so that only those relevant to ward social climate and sense of community were accessed. These included: physical assault to staff member by patient, physical assault to patient by patient, nonphysical assault toward staff member by patient, nonphysical assault toward patient by patient, and low staffing levels (which meant restricted patient activity and therefore staff were unable to facilitate an on-ward group activity). Incident data were collected for each participating ward and a total number of incidents per ward was calculated for each intervention timepoint. Total number of incidents of disruptive behaviour was calculated for the six months prior to the start of the intervention, the first six months of the intervention, and the final six months of the intervention. The change in total number of incidents between each intervention timepoint was also calculated for each participating ward, and the amount of change was multiplied by minus one so that positive scores would indicate a reduction in incidents, and negative scores

would indicate an increase in incidents between timepoints. By computing this for each ward separately, the analyses could be sensitive to differences in incident likelihood between high dependency and assertive rehabilitation wards. Moreover, calculating the change in total number of incidents between each timepoint allowed for the tracking of incidents over time, parallel to changes in social climate and sense of community scores. This method also enabled the prediction of future incidents in each intervention type based on social climate and sense of community scores.

Procedure: A flowchart of the research procedure is given in Figure 2.

Figure 2. Flowchart of the research procedure



Statistical analyses of changes in social climate and sense of community scores per intervention group and intervention duration: This research employed a multivariate analysis of variance (MANOVA) approach to assess the effect of intervention type (full, partial and control) and intervention timepoint (T0, T1, T2) on social climate (EssenCES) and sense of community (SCI-2) total scores. MANOVA was selected as patients/staff will have moved between wards, including intervention types and other uninvolved wards, across the course of the study and so it was not possible to employ a repeated measures design where

questionnaire data would need to have been collected from the same patients/staff at each timepoint.

Statistical analyses of relationships between social climate, sense of community, and changes in frequency of incidents of disruptive behaviour: A series of linear regressions were computed to assess the relationship between self-reported social climate, sense of community, and change in number of total number of incidents between intervention timepoints. The regression models were computed separately for each intervention type.

Results

Effect of intervention

The mean total scores on measures of social climate (EssenCES) and sense of community (SCI-2) are given in Tables 1 and 2. Scores are given per intervention type (full intervention, partial intervention, and control) and per intervention timepoint (T0, T1, T2).

Table 1. EssenCES scores across timepoints

	Total EssenCES score								
Timepoint	Full			Partial			Control		
	N	M	SD	N	M	SD	N	M	SD
T0	53	34.06	7.91	28	35.52	10.05	30	30.80	5.92
T1	33	41.10	9.34	35	38.44	9.59	19	27.06	10.80
T2	33	41.30	9.37	35	35.21	7.12	21	33.43	11.96

Table 2. SCI-2 scores across timepoints

Total SCI-2 score									
Timepoint	Full			Partial			Control		
	N	M	SD	N	M	SD	N	M	SD
T0	53	40.24	13.30	28	35.63	12.57	30	33.68	10.84
T1	33	42.72	16.06	35	42.44	14.39	19	30.82	14.70
T2	33	37.07	16.75	35	38.91	14.41	21	35.19	16.06

Overall effects: A two-way MANOVA was conducted with intervention type (full, partial and control) and intervention timepoint (T0, T1, T2) as independent variables and EssenCES total score and SCI-2 total score as dependent variables. The results indicated a significant main effect of intervention on the combined dependent variables ($F(8, 512)$ 8.211, $p < .001$, Wilks' $\Lambda = .912$). There was no significant main effect of timepoint on the combined dependent variables. There was a significant interaction between intervention type and timepoint on the combined dependent variables ($F(8, 512) = 2.999$, $p = .003$, Wilks' $\Lambda = .912$). Univariate effects were reported only when the multivariate F was significant, and to determine which dependent variables were significant. Statistical significance was accepted at the .05 level of confidence.

Effects of intervention type: The subsequent univariate ANOVA demonstrated a significant effect of intervention on total EssenCES scores ($F = 16.819$, $p <.001$). Bonferroni corrected post-hoc tests further revealed that total EssenCES scores were significantly higher in the full intervention ($M = 37.93$, $SD = 9.35$) and partial intervention ($M = 36.42$, $SD = 8.98$) types than the control intervention type ($M = 30.67$, $SD = 9.800$), $p <.001$ and $p = <.001$, respectively. There was no significant difference in mean total EssenCES scores between full and partial intervention types. A further univariate ANOVA demonstrated a significant effect

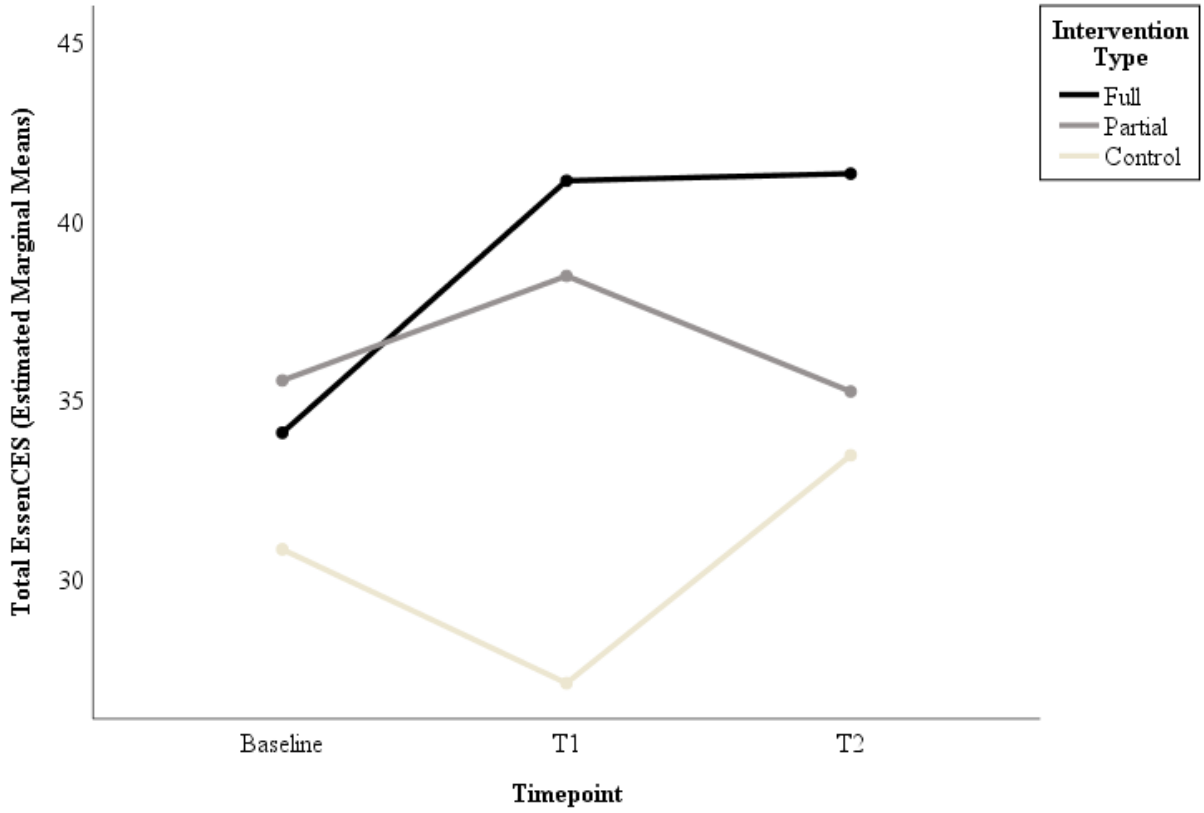
of intervention on total SCI-2 scores ($F = 4.611$, $p = .011$). Bonferroni corrected post-hoc tests revealed that SCI-2 total scores were significantly higher in the full intervention ($M = 40.03$, $SD = 15.06$) and partial intervention ($M = 39.24$, $SD = 14.02$) types than the control intervention ($M = 33.41$, $SD = 13.690$), $p = .040$ and $p = .012$, respectively. There was no significant difference in mean total SCI-2 scores between full and partial intervention types.

Intervention type and intervention duration interactions: There was a significant interaction between intervention type and intervention timepoint (F (8, 512) = 2.999, $p = .003$, Wilks' $\Lambda = .912$). Subsequent univariate ANOVAs revealed that there was a significant interaction effect with total EssenCES scores (F =3.730, $p = .006$), but not total SCI-2 scores. A plot of this interaction is given in Figure 3. The interaction was investigated via ANOVA's testing the difference in EssenCES scores per intervention type and per intervention timepoint.

At T0, an ANOVA revealed a significant difference between intervention types for total EssenCES scores (F (2, 108) = 3.516, $p = .033$). Scores were higher in the partial intervention type ($M = 35.46$, $SD = 9.86$) in comparison to the control intervention ($M = 30.23$, $SD = 6.415$) A Bonferroni corrected post-hoc test found this to be significant, $p = .043$. There were no significant differences in total EssenCES scores between full and partial intervention types at T0. At T1, significant differences in total EssenCES scores (F(2, 83) = 9.981, $p < .001$) per intervention type were revealed. Scores were higher in the partial intervention ($M = 38.17$, $SD = 9.58$) and full intervention ($M = 40.27$, $SD = 9.47$) types in comparison to the control intervention ($M = 27.78$, $SD = 10.92$). Bonferroni corrected post-hoc tests found these to be significant, $p <.001$. No significant difference in total EssenCES score was found between partial and full intervention types at T1. At T2, significant differences in total EssenCES score between intervention types were found (F(2, 86) = 4.801, $p = .011$). Scores were lower in the control intervention type ($M = 33.43$, $SD = 11.961$) than the full intervention type ($M =$

41.21, *SD* = 9.219). A Bonferroni corrected post-hoc test found this to be significant, p = .013. No other significant differences were found between other intervention types in total EssenCES scores at T2.

Figure 3. Interaction between intervention type and timepoint for total EssenCES scores



Relationship between intervention and incidents of disruptive behaviour

To corroborate the effectiveness of the intervention, a series of regression models were computed, predicting change in total number of incidents across time using EssenCES and SCI-2 scores.

Changes in total number of incidents of disruptive behaviour between timepoints and their relationship with self-reported social climate and sense of community: The incident data are presented in Table 3. Total EssenCES scores, total SCI-2 scores, and all subscale

scores were loaded in a series of multiple linear regression models predicting a change in incidents between timepoints for each intervention type.

Evaluating change in total incidents between T0 and T1, the overall model for EssenCES scores in the full intervention group was $F(3, 49) = 11.57$, $p = <.001$, $R^2 = .451$, with total EssenCES scores significantly predicting a positive change (i.e. reduction in incidents) between T0 and T1, $B = .915$, $p = .040$. None of the EssenCES subscale scores included were found to be significant predictors, and the Patient Cohesion subscale was not modelled due to issues with collinearity. In the partial intervention group, the overall model predicting change in total number of incidents from T0 to T1 was significant $F(3, 24) = 9.94$, $p = <.001$, $R^2 = .554$. EssenCES Patient Cohesion and Therapeutic Hold subscales significantly predicted a reduction in incidents between T0 and T1, with $B = 1.465$, $p = .036$ and $B = 1.586$, $p = .012$, respectively. No other predictors reached statistical significance. In the control group, neither total EssenCES or subscale scores significantly predicted change in total number of incidents between T0 and T1. The same models were run with SCI-2 total and subscale scores, but total and subscale scores did not significantly predict change in total number of incidents between T0 and T1 for any of the intervention types.

Regarding change in total number of incidents between T0 and T2, the overall model predicting change in incidents related to EssenCES scores in the full intervention type was significant, $F(3, 29) = 5.12$, $p = .005$, $R^2 = .349$, with the Experienced Safety subscale positively predicting a change in total number of incidents between T0 and T2, $B = 3.355$, $p = .043$. No other covariates in this model, including total EssenCES score, significantly predicted change in number of incidents. The model was repeated for partial and control intervention types, but no significant predictive relationships were found between EssenCES scores and change in number of incidents for these intervention types. For SCI-2 total and

subscale scores, the model predicting change in total number of incidents did not reveal any significant predictive relationships for any of the intervention types in T0 to T2.

For change in total number of incidents between T1 and T2, total EssenCES scores significantly predicted a reduction in incidents, $B = 1.618$, $p = .001$ in the full intervention type. Curiously, Patient Cohesion and Therapeutic Hold subscales significantly predicted increases in incidents in this intervention type, $B = -1.810$, $p = .001$ and $B = -2.087$, $p = .001$, respectively. The overall model for these relationships was also significant, $F(3, 29) = 10.56$, $p = <.001$, $R^2 = .522$. In the partial intervention type, total EssenCES scores positively predicted a change in total number of incidents, $B = 2.056$, $p = .001$ but, as in the full intervention type, the Patient Cohesion subscale significantly predicted an increase in incidents between T1 and T2, $B = -4.074$, $p = .001$. None of the results from the EssenCES model plotting incident change in the control group for T1 and T2 were statistically significant. When repeating these models with SCI-2 total and subscale scores, no significant relationships between self-reported sense of community and change in total number of incidents between T1 and T2 were found for any of the intervention types.

Table 3. Number of incidents and change in number of incidents between timepoints

	Total number of incidents for each timepoint of the intervention			Change in total number of incidents between each timepoint of the intervention		
	T0	T1	T2	T0-T1	T0-T2	T1-T2
Full						
High Dependency A	35	62	82	-27	-47	-20
Assertive Rehabilitation A	6	5	4	+1	+2	+1
Partial						
High Dependency B	61	53	93	+8	-32	-40
Assertive Rehabilitation B	5	18	23	-13	-18	-5
Control						
High Dependency C	50	72	130	-22	-80	-58
Assertive Rehabilitation C	22	20	20	+2	+2	0

Discussion

The present study investigated the effect of an intervention aiming to increase ward social climate and sense of community within a forensic psychiatric hospital. The intervention was user-led and was implemented over the course of 18 months. Changes in ward social climate and sense of community were monitored across time via two self-report measures (EssenCES and SCI-2). Links between changes in social climate and sense of community and incidents of disruptive behaviour were also examined.

The findings of the present study mostly supported the first hypothesis. The intervention had a positive effect on ward social climate and sense of community, with respondents in the full and partial intervention types self-reporting significantly greater feelings of social climate and sense of community than the control intervention type. Moreover, this showed an effect across time, with the full and partial intervention types demonstrating significantly higher total EssenCES scores than the control intervention type at T1 and T2. However, in contrast to the first hypothesis, no significant differences in self-reported sense of community were found between groups across time. This suggests that the intervention may have had its intended effect on ward social climate only, as only ward social climate seemed to improve across the course of the intervention in the full and partial intervention types compared to the control type.

In line with the third hypothesis, EssenCES total and subscale scores significantly predicted change in incident frequency across time, with total EssenCES scores significantly predicting a reduction in incidents across time in the full and partial intervention types, but not in the control type. Within this, the analysis suggests that Patient Cohesion, Experienced Safety and Therapeutic Hold EssenCES subscales may be particularly important. No significant relationships between change in total number of incidents of disruptive behaviour and SCI-2

scores were found, although this is in keeping with the finding that SCI-2 scores did not change significantly across the course of the intervention.

As described earlier, previous cross-sectional research has shown that ward social climate and sense of community have a significant impact on care outcomes, aggressive behaviour, and patient experience within forensic psychiatric services. In response to that, Robinson, Craig, and Tonkin (2018) called on professionals and patients to consider how the social environment can be used to prevent, rather than trigger, aggressive behaviour. Thus, the present study makes an important contribution to the existing knowledge, in that it shows that an intervention aiming to encourage social climate and sense of community can have longitudinal positive effects on inpatient aggression. By putting patient and staff collaboration at the forefront of the intervention, the present study has suggested that ward activities which are planned, implemented, and managed by patients can improve ward atmosphere and thereby reduce incidents of disruptive behaviour. This is an important finding and has implications for inpatient forensic services wishing to prevent incidents of aggression collaboratively.

However, there are some considerations within this. Although the intervention was designed to improve the dynamic aspects of sense of community (such as shared emotional connection and feelings of membership), self-reported feelings of sense of community (as assessed by SCI-2) did not change significantly in response to the intervention, nor did sense of community scores significantly predict changes in frequency of disruptive behaviour. The intervention seemed to have had much more of a meaningful effect on self-reported social climate (as assessed by EssenCES), which was conceptualised here as a more general feeling of ward atmosphere. Retrospective reflection on the types of activities that were chosen by patients and staff as part of this intervention, suggest that they may have been geared more towards ward atmosphere - and so it is perhaps natural that the intervention improved self-

reported social climate more than sense of community. For example, creating an art exhibition is likely to have improved the aesthetic of the ward environment, boosting social climate. This could also have increased feelings of patient cohesion (a specific aspect of social climate) by encouraging patients and staff to support each other and encourage creativity. In contrast, activities focused on sense of community rather than social climate might have more of an intercollegiate focus, such as patients and staff together designing a badge or emblem representing the identity of ward members. Testing the impact of such activities was, however, outside the scope of the present study because all activities were user-led and thus selected by staff and patients, rather than the research team.

The present study prioritised patient and staff agency and responsibility and, therefore, implemented the intervention through a trained facilitator rather than a structured sense of community programme. As stated earlier, the facilitator held discussion meetings only and the actual activities were implemented outside of those discussion meetings. This will have increased patient and staff feelings of therapeutic hold, membership, and influence, and thereby increased social climate and sense of community scores – as reflected in the results. However, the inclusion of the facilitator could have had a direct (but not measured) effect on social climate and sense of community, and the stability of self-reported ward climate and sense of community was not measured once the facilitators' input had finished. Therefore, it is possible that the facilitator acted as a strong external influence on ward social climate and sense of community, and so may have restricted the extent to which these feelings of social climate and sense of community were internalised and maintained long-term. Perhaps future research could monitor effects post-intervention, and this should include accounting for how the ward atmosphere is maintained after the facilitators' input.

Future research should also consider whether intervention effectiveness is influenced by individual participant characteristics. For example, de Vries et al. (2016) identified that

perceptions of ward social climate are related to participant characteristics (age, risk, psychopathic traits), and thus interventions aiming to improve ward social climate and sense of community should account for such variables. A shortcoming of the present study is that no demographic information was collected and thus associations between participant characteristics and intervention effects could not be estimated.

Recommendations for clinical practice

The finding that it is possible to improve ward social climate, and thereby reduce the frequency of disruptive behaviour, has three important implications for clinical practice.

First, the Enabling Environments initiative describes the importance of involving patients and staff in the creation and continuation of ward values and shared goals. The present study highlights that this initiative can be demonstrated through community activities designed to improve ward social climate and sense of community. Example activities are presented in Figure 1. The present study thus recommends these activities to those clinical services wishing to follow the Enabling Environments initiative and foster a greater sense ward social climate and sense of community.

Second, the present study revealed relationships between social climate, sense of community, and incidents of disruptive behaviour. Its results therefore could be of interest to, and have implications for, those involved with National Minimum Standards for Psychiatric Intensive Care in General Adult Services (NAPICU). NAPICU states that involvement and patient feedback should be at the core of inpatient acute services. Our finding that improving ward atmosphere decreases the frequency of disruptive behaviour aligns well with the rationale given in NAPICU for including patients in the organisation and implementation of care.

Finally, ward social climate and sense of community are likely to influence other aspects of ward environment, such as inpatient treatment alliance (Long et al., 2011), shared feelings of hopelessness (Eraslan-Capan, 2016), or staff feelings of burnout (Morse et al., 2012). It was beyond the scope of the study to measure these important variables. The authors therefore recommend that future research collects data on these, with the aim of examining their influence on ward social climate and sense of community across time – particularly in the context of a ward community intervention.

This research has outlined a ward community intervention that successfully improved self-reported feelings of ward social climate within an inpatient forensic psychiatric service. The effectiveness of the intervention was evaluated over 18 months. Wards that received the full intervention (fortnightly sense of community discussions leading to community activities) showed the greatest improvement in ward social climate in comparison to the partial and control intervention types. Incident analyses revealed that social climate scores positively predicted a reduction in incidents of disruptive behaviour across time, which the authors interpret as further evidence of the effectiveness of the intervention. These findings develop previous research in this area and demonstrate the value of longitudinal (rather than cross-sectional) assessments of social climate and sense of community. This research also highlights practical suggestions and activities that could be used to improve inpatient social climate and sense of community. In combination with previous studies, the results of this research suggest that developing ward social climate and sense of community has the potential to improve the care experiences of forensic psychiatric patients and, by reducing disruptive behaviour, may lead to more successful and meaningful treatment outcomes.

Conflict of Interest Statement: All authors have declared no conflicts of interest or competing financial interests.

References

Albanesi C, Cicognani, E and Zani B (2007) Sense of community, civic engagement and social well-being in Italian adolescents. *Journal of Community & Applied Social Psychology* 17(5): 387-406.

Bressington D, Stewart B, Beer D and MacInnes, D (2011) Levels of service user satisfaction in secure settings–A survey of the association between perceived social climate, perceived therapeutic relationship and satisfaction with forensic services. *International Journal of Nursing Studies* 48(11): 1349-1356.

Chavis DM, Lee KS and Acosta J (2008) The sense of community (SCI) revised: The reliability and validity of the SCI-2. Paper presented at the 2nd International Community Psychology Conference, Lisboa, Portugal.

Chavis MD and Wanderman A, (1990) Sense of comunity in the urban environment. *American Journal of Community* (18).

Darlaston-Jones D (2007) Psychological sense of community and its relevance to well-being and everyday life in Australia. *Australian Community Psychologist* 19(2): 1-25.

de Vries, M. G., Brazil, I. A., Tonkin, M., & Bulten, B. H. (2016). Ward climate within a high secure forensic psychiatric hospital: Perceptions of patients and nursing staff and the role of patient characteristics. *Archives of psychiatric nursing*, *30*(3), 342-349.

Eraslan-Capan B (2016) Social Connectedness and Flourishing: The Mediating Role of Hopelessness. *Universal Journal of Educational Research* 4(5): 933-940.

Farrell S, Aubry T and Coulombe D (2004) The influence of neighborhood characteristics on sense of community, neighboring behaviour and well-being. *Journal of Community Psychology* 32: 9-26.

Haines, A., Brown, A., McCabe, R., Rogerson, M., & Whittington, R. (2017). Factors impacting perceived safety among staff working on mental health wards. *BJPsych open*, *3*(5), 204-211.

Long CG, Anagnostakis K, Fox E, Silaule P, Somers J, West R and Webster A (2011) Social climate along the pathway of care in women's secure mental health service: Variation with level of security, patient motivation, therapeutic alliance and level of disturbance. *Criminal Behaviour and Mental Health* 21(3): 202-214.

Meehan T, McIntosh W and Bergen H (2006) Aggressive behaviour in the high-secure forensic setting: the perceptions of patients. *Journal of Psychiatric and Mental Health Nursing* 13(1): 19-25.

Moos RH (1974) *Ward Atmosphere Manual.* Palo Alto, CA: Consulting Psychologist Press.

Morse G, Salyers MP, Rollins AL, Monroe-DeVita M and Pfahler C (2012) Burnout in mental health services: A review of the problem and its remediation. *Administration and Policy in Mental Health and Mental Health Services Research* 39(5): 341-352.

Papadopoulos C, Ross J, Stewart D, Dack C, James K and Bowers L (2012) The antecedents of violence and aggression within psychiatric in-patient settings. *Acta Psychiatrica Scandinavica*, 125(6): 425-439.

Puzzo I, Aldridge-Waddon L, Bush E and Farr C (2019) The Relationship Between Ward Social Climate, Ward Sense of Community, and Incidents of Disruptive Behavior: A Study of a High Secure Psychiatric Sample. *International Journal of Forensic Mental Health* 18(2): 153-163.

Robinson J, Craig LA and Tonkin M (2018) Perceptions of social climate and aggressive behavior in forensic services: A systematic review. *Trauma, Violence, & Abuse* 19(4): 391-405.

Ros N, Van der Helm P, Wissink I, Stams GJ and Schaftenaar P (2013) Institutional climate and aggression in a secure psychiatric setting. *The Journal of Forensic Psychiatry & Psychology* 24(6): 713-727.

Sarason SB (1974). *The psychological sense of community: Prospects for a community psychology*. CA: Jossey-Bass.

Schalast N, Redies M, Collins M., Stacey J and Howells K (2008) EssenCES, a short questionnaire for assessing the social climate of forensic psychiatric wards. *Criminal Behaviour and Mental Health* 18(1): 49-58.

Talò C, Mannarini T and Rochira A (2014) Sense of community and community participation: A meta-analytic review. *Social Indicators Research* 117(1): 1-28.

Tomlin, J., Egan, V., Bartlett, P., & Völlm, B. (2020). What do patients find restrictive about forensic mental health services? A qualitative study. *International Journal of Forensic Mental Health*, *19*(1), 44-56.

Tonkin M, Howells K, Ferguson E, Clark A, Newberry M and Schalast N (2012) Lost in translation? Psychometric properties and construct validity of the English Essen Climate Evaluation Schema (EssenCES) social climate questionnaire. *Psychological Assessment* 24(3): 573.

Townley G and Kloos B (2009) Development of a measure of sense of community for individuals with serious mental illness residing in community settings. *Journal of Community Psychology* 37(3): 362-380.