Comparing communal environments using the Assessment Tool for Occupation and Social Engagement: using interactive occupation and social engagement as outcome measures

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Key words:

Dementia, nursing home, observation.

Introduction: Interactive occupation and social engagement are important components of quality of life for residents with dementia in nursing homes. Communal living spaces should be evaluated on these qualities. Two Irish nursing homes were compared pre and post conversion from a traditional to a household model unit using the Assessment Tool for Occupation and Social Engagement. This assessment uses interactive occupation and social engagement as positive outcome measures.

Method: Residents, staff, and relatives were observed pre and post renovation over a 6-week period using a snapshot observational method over 4 hours on 7 different weekdays.

Findings: Changing from a traditional to a household model nursing home increased the interactive occupation and social engagement of residents, staff, and visitors within the communal living areas. The role of a homemaker in the household unit was critical for maintaining residents' participation and engagement, including engaging in familiar everyday domestic tasks.

Conclusion: Interactive occupation and social engagement were significantly increased in the household model unit over the traditional model unit, particularly for residents. In the household model unit, more residents initiated and maintained their own interactions within the communal environment and did not require prompting from staff to do this.

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Introduction

Ecological effect of the environment

M Powell Lawton was the most important environmental theorist for dementia, disability and ageing from the last century (Calkins 2003). He used a transactional and ecological framework to understand the impact the whole environment had on people with dementia, disability, and debility. His Competence Press Hypothesis (Lawton and Nahemow 1973) states that negative consequences occur when the environment exerts too much or too little demand ('press'). Too little press leads to lack of stimulation, boredom, and deconditioning. Too much press leads to stress, anxiety, and excessively challenging barriers within the environment (Cutler 2007). Lawton and Nahemow (1973) stated that the effects of the environment have a disproportionately large effect on those with the lowest competence (Environmental Dexterity Theory). They promoted enabling environments which provide: (a) maintenance of function through constancy and predictability, (b) stimulation through novel stimuli and interactions, and (c) support and compensation for reduced or lost competencies (Wahl and Weisman 2003).

Occupational therapy theorists have promoted the ecological and transactional nature of the person in a complex whole environment (Turpin and

Iwama 2011). Learning from occupational science should be assertively used to promote social change, influence social policy, and thereby shape whole environments (Pollard et al 2010). However, there is little written evidence that occupational therapists are influencing whole residential home environments to 'promote empowerment and physical, mental and social activity' (Robertson and Fitzgerald 2010, p176). This is unfortunate, since occupational therapists have a unique and valuable awareness of how the environment can affect function and interaction (Green and Cooper 2000) and how whole environments promote daily life occupations (Robertson and Fitzgerald 2010). These rhythms, routines, and habits of daily life occupations allow one to build a sense of being in place, of who one is, and of how everyone is interdependent with others (Rowles 2000). In addition, by creating whole environments, scarce professional resources are used efficiently and the subsequent social and cultural change affects a maximum number of people (Whiteford 2000).

Assessment of the environment

If the final arbiter of the success of a nursing home is the life within it (Zeisel 2005), then it is important to be able to detect and evaluate the difference between a 'lifeless' environment and one that is animated. The success or failure of a nursing home ultimately depends on how the physical, social, and operational environment work together to facilitate or constrain positive human experiences and quality of life (QOL) (Lawton 2001, Moore 2004, Calkins 2009). The physical, social, and cultural environments influence human behaviour and are major determinants of an individual's QOL (Proshansky 1976). The extensive research of Proshansky et al (1970) showed that despite an average 3-week turnover of patients on ward environments, the pattern of utilization of the space remained constant over many years. They labelled this phenomenon 'continuity of behavior' (Proshansky et al 1970, p30). In other words, trends can be established for different types of environment, which remain fairly constant even when there has been a complete turnover of the resident population. However, if any aspect of the physical, social, or organizational environment is significantly altered, this will alter the behaviour of the people within the environment, as well as creating compensatory changes in other aspects of the environment (Proshansky et al 1970). Using a complexity theory perspective, Rowles (2000) described such environmental change as initial disturbance and chaos, which then leads to adaptation, so creating a new homeostasis (trend or baseline) in behaviour (p61).

There is a general lack of research information which explores how an environment is actually used, and which investigates the day-to-day effects that this has on the residents (Torrington 2006). Post Occupancy Evaluation (POE) may be carried out after new environments have been occupied in order to determine if the new environment is fit for purpose, and if it is being used in the way it was intended (Calkins 2005). Proshansky et al (1970) recommended that newly created residential environments should be researched using POEs. Cooper et al (1991) recommended that occupational

therapists develop POE assessments in order to create a unique body of knowledge about how human behaviour can be affected by the environment.

Hasselkus (1998) defined communal sitting room environments as *occupational spaces*; that is, places for interaction and occupation. Using an ecological perspective, she identified that the actions of every person in the room contributed to this occupational space. She proposed that increasing the interaction and engagement of persons within this space created an environment that was more meaningful, and which she called an 'alive occupational place'. However, she did not propose a method to assess these environments and, until recently, there were no observational assessment tools whose purpose was to define and measure environments as occupational spaces. This study extends the work of Hasselkus (1998) by reporting on an observational process and assessment tool for occupational therapists (and others) that measures and compares occupational spaces. The Assessment Tool for Occupation and Social Engagement (ATOSE) (Morgan-Brown 2013) was developed to provide a quantifiable measure of a whole-room environment using interactive occupation and social engagement of all persons within the room (residents, staff, and visitors).

Household model units (HMUs) are intended to provide residents with an environment that is more homelike, that respects their privacy, and is more person-centred than the more traditional nursing home (Shields and Norton 2006). The aim of this study was to compare pre- and post-renovation communal sitting room environments of two nursing homes to determine if the conversion from a traditional model unit (TMU) nursing home environment to an HMU environment correlated with an increase in interactive occupation and social engagement in the communal sitting room occupational spaces.

In contrast to the TMU, the HMU kitchen, dining area, and sitting areas were open plan spaces, so that everyone in the environment was aware of what was happening in other parts of the communal areas. A newly created staff role, of *homemaker*, was created for the HMUs. Homemakers were based in the kitchen area and were able to visually monitor all residents in the open plan space. They served meals brought from central kitchens, cooked and provided individual breakfasts at a time that each resident chose to arrive in the morning, and undertook household tasks, such as cleaning in the dining/sitting areas, which would be familiar to residents. In addition, they engaged residents in tabletop games, gardening, and hobby interests, and encouraged residents to undertake simple domestic tasks. More detail is provided elsewhere (Morgan-Brown 2013, Morgan-Brown et al 2013). A summary of the differences between the TMU and the HMU communal sitting rooms is given in Table 1.

Method

Rationale

Measuring any aspect of QOL with people who have communication difficulties and cognitive impairments is complex.

Table 1. Typology: Physical, operational and social environment comparisons between TMU and HMU

TMU (Traditional model)	HMU (Household model)
Separate sitting room and dining room	Open plan sitting room and dining room
Food prepared by centralized kitchen off the unit	A functioning kitchen in a dominant central position within this communal living area
No homemaker role	Homemaker in open plan area
Institutionalized routines and time guillotines	Operational changes to give unforced routines, flexibility, and spontaneity
Care defined by task accomplishment	A person-centred model of care offering choice

Observational measures were chosen for this study, as they focus on behaviour that indicates better QOL. In contrast, self-report and proxy reports of QOL can be difficult to implement, and are unreliable with this client population (Albert 2004). Observational studies should be designed so that outcomes have clear applicability to other similar situations. As recommended by Van Haitsma et al (1997), this study confines its observations to: (a) specific times of day, (b) specific locations, and (c) specific behaviours.

The two Irish nursing homes were redesigned as HMUs in order to create a more homelike environment that would bring more purpose to the lives of residents and provide a more natural and spontaneous, rather than institutional, environment (Shields and Norton 2006). The aim of this research was to compare the post-renovation with the pre-renovation communal environments of the two nursing homes, using the concepts of interactive occupation and social engagement to evaluate the success or failure of the new environments. This study would thus provide a POE.

Assessment Tool for Occupation and Social Engagement (ATOSE)

The development, reliability, and validity of the ATOSE has been described elsewhere (Morgan-Brown 2013, Morgan-Brown et al 2013, Morgan-Brown et al 2011). The ATOSE was used to measure the behaviours of all persons (residents, staff, and visitors) present in the communal areas of the nursing homes. Visitors included any person present in the space who was not a resident or member of staff of the home. The ATOSE is shown in Appendix 1, with clarification of the various categories presented in Table 2.

A written protocol was used together with the ATOSE to enable consistency in both the observation procedure and the categorization of the observed behaviours (Zeisel 2006). The observational tool was developed to incorporate the following qualities (Robson 2002):

- *Focused* — only essential categories were used
- *Objective* — requiring little inference from the observer
- *Non context-dependent* — transferable to other communal environments
- *Explicitly defined and mutually exclusive categories* — categories were clearly defined and did not overlap with others
- *Exhaustive* — all observed behaviours could be easily placed within a category
- *Easy to record* — the assessment form was a series of tick boxes.

This observational assessment could identify when residents were engaged and interacting with their environment (Interactive Occupation, Social Engagement) and when they were not (Passive Behaviours, such as chair sleeping and staring into space). The ATOSE also enabled recording of whether the staff and visitors were interacting with the residents through occupation or social engagement. These behaviours were distinguished from work and other actions that did not increase the engagement and interaction of residents (examples of such behaviours: sweeping the floor, writing in charts, and making telephone calls).

Table 2. ATOSE categories and sub-categories of Interactive Occupation and Social Engagement for residents, staff, and visitors

1. Interactive Occupation (residents, staff, and visitors)	i. Independently interactive with environment ii. Interactive occupation with others: resident/staff/visitor/group iii. Receiving care interactions (residents) iv. Providing interactive care task to resident (staff/visitors)
2. Social Engagement (residents, staff, and visitors)	i. One-to-one verbal ii. Verbal within formal/informal group iii. Interactive non-verbal communication
3. Passive Behaviours (residents)	i. Not interacting with others ii. Not interacting with the environment iii. Repetitive behaviours including non-directed agitated behaviours
4. Work Tasks (staff)	i. Cleaning, preparation, and maintenance ii. Professional tasks (for example, note writing)
5. Non-interaction with residents (visitors)	i. Not interacting with others (for example, walking around room, waiting behaviours)

Sample

Two independent, privately run dementia-secure nursing homes in Ireland were selected for the study (referred to henceforth as NH1 and NH2). Both were known to be planning a conversion from a TMU to an HMU at approximately the same time. The philosophy of the HMU concerns not only the physical spaces, but also the operational roles and care philosophy of the staff within each nursing home; in both nursing homes, an additional homemaker post was introduced post renovation. The staffing hours were deployed in a slightly different way in each nursing home, as given in Table 3.

Table 3. Deployment of staff before and after renovation

Care worker numbers during time period (2-hour slots)	NH1 TMU	NH1 HMU	NH2 TMU	NH2 HMU
10:00–12:00	3	4	3	5
14:00–16:00	2	3	2	2
18:00–20:00	3	3	3	3

There were 18 residents in NH1 pre and post renovation. In NH2 there were 17 residents pre renovation and 18 residents post renovation. Nursing staff categorized all residents, both pre and post renovation, as to whether or not they required assistance with eating, dressing, washing, and toileting. Dividing these by the total number of residents on the unit gave dependency percentages (see Tables 4 and 5) in each category. The TMU levels of dependency in the two nursing homes differed somewhat, with residents in NH2 being more dependent. Most secure units for residents with dementia in Ireland accommodate residents requiring extensive assistance with activities of daily living (ADL). The significant dependency levels of the residents in these two nursing homes indicate that the nursing homes were generally representative of the Irish nursing home population.

The creation of the HMU was not expected to affect residents' ADL dependency levels. However, small fluctuations in the dependence levels of residents were expected due to discharge, death, and new admissions, as well as due to the normal deterioration in cognitive function for people with dementia. While there was some variation in functional ability between the TMUs and the HMUs, Tables 4 and 5 show that this variation went both ways (that is, residents were less able in the post-renovation HMU than in the pre-renovation TMU in NH1, while in NH2 they were more dependent in the TMU than in the HMU).

Ethical positioning

The research protocol received ethical consent from the University of Salford, in the United Kingdom (RGEC06/110), and from the Healthcare Research Advisory Committee of the Dublin North East Region Health Authority, in Ireland. This research used the guidelines of process consent (Cantley et al 2005) to obtain consent from the residents in their own right, rather than proxy consent from relatives.

In contemporary Western society, a person's emotional state is considered deeply personal and private and there are

social prohibitions about strangers observing and recording such information. In addition, residents, staff, and visitors could legitimately view these conjectural observations about their private emotional states as being both patronizing and inaccurate. This research took an ethical position in deciding only to record observed behaviours, and not to record emotional states, for residents, staff, and visitors.

Also, in contemporary Western society, strangers do not visit in the bedrooms and private spaces of domestic homes. Shields and Norton (2006) argue strongly that bedroom and the associated hallway spaces in nursing homes should be private spaces from which strangers are excluded. This research also conformed to this ethical positioning; thus, observations were kept to the communal areas.

An advantage of the whole room snapshot observational method is that it is more anonymous and much less intrusive than observations using continuous time sampling, where a person is physically followed and recorded for a set length of time before moving onto the next person. Furthermore, it was anticipated that staff, and especially visitors, would both dislike and object to being followed and recorded by a stranger. We reasoned that if we anticipated understandable objections from the staff and visitors, we should, similarly, not use this procedure for residents with dementia.

Observational procedure

The ATOSE observational technique records the behaviour of all persons present in the room during one unit of time (5 minutes). The observer systematically scans the room visually and records the behaviour of each person in the room the first time they enter this visual scan. This is done every 5 minutes, giving 12 observations per hour.

The observer adopted a marginal participant role (Zeisel 2006) by choosing the same seat each time, in an unobtrusive position (but with clear views of all persons within the room). The two main strategies to minimize observer effects, that of minimal interaction and habituation (Robson 2002), were both successfully used. Opportunities for interaction with others in the room were declined in order to focus on observing the activities within the room and in order not to disturb the dynamics of the room. Interest in the researcher quickly subsided, and those present within the room did not seek interaction with him.

Names of residents, staff, and relatives were not recorded, in order to preserve confidentiality. Each observation session lasted for 2 hours (24 observations per 2-hour session). Four

Table 4. NH1 residents: ADL levels of dependency

ADL dependency	TMU %	HMU %
Eating	56	44*
Dressing	67	78
Hygiene	94	100
Toileting	61	78

*Note: there were exceptional numbers of residents who became independent in the Eating category. In NH1, this was counter to the general deterioration noted in the residents, and in NH2 the improvements superseded the greater independence in the other ADL categories. These unexpected results need specific investigation to determine if environmental changes alone affected eating independence and, if so, which environmental components were most important.

Table 5. NH2 residents: ADL levels of dependency

ADL dependency	TMU %	HMU %
Eating	71	33*
Dressing	100	89
Hygiene	100	89
Toileting	100	89

hours of observations were conducted on each day, either between 10:00–12:00 and 14:00–16:00, or between 14:00–16:00 and 18:00–20:00. The same schedule was used for each nursing home, both pre and post renovation. The 2-hour gap between observations allowed a rest period for the researcher to avoid observer fatigue. Meal times were not observed, since they would be served better by other assessment tools and procedures.

NH1 TMU was observed on four different weekdays over a 2-week period (16 hours in total), after which the observations were terminated due to the early start of the renovations. NH2 TMU and both NH1 and NH2 HMUs were observed for 4 hours each of the 7 days of the week spread over a 6-week period (28 hours each). The post-occupancy observations were conducted 1 year (NH1) and 6 months (NH2) after the renovations had been completed.

The researcher wrote brief narrative descriptions recording activities and interactions within the room during the 5-minute snapshot as appropriate. These observations gave qualitative data that assisted in defining the differences in the day-to-day functioning between the TMU and the HMU environments.

Approach to data analysis

In a multiple longitudinal comparison case study such as this, all cases are classified as multiple instances of the same intervention and the data are aggregated (Gerring 2007). More than one case in a study makes it less likely that any unknown factor has affected the data (Yin 2003). Using an aggregated statistical means for the analysis of each category creates a common baseline against which future studies can be compared, even if the environments are observed over a different number of days.

This research had the benefit of using naturally occurring participants in their real-world settings and within a normal order of events, which gives immediate applicability to other similar real-world settings (external validity). The results of such natural experiments can be compelling because 'they are not artificial interventions in social life and because their ecological validity is thus very strong' (Bryman 2008, p42). In addition, this research targeted behavioural outcomes which are directly linked (proximal) to the environmental change, rather than using global (distal) outcome measures, such as improved well-being and changes in emotional states (Schulz 2001, Zarit and Leitsch 2001).

Findings

The cohort groups were unmatched with normal data distributions and the independent t-test was chosen for data analysis, using the Pearson's correlation coefficient function of SPSS 17 statistical software package. Data were counted by aggregating the number of ticks recorded separately for residents, staff, and visitors on the ATOSE observational tool during each observation. These data were used to generate descriptive statistics. This study brings together the most important data of a more detailed study with further

Fig. 1. Residents: Comparison of percentages of time spent in communal rooms: Passive Behaviours, Engaged and Interactive Behaviours, and Independently Active Behaviours.

statistical analysis being published elsewhere (Morgan-Brown 2013, Morgan-Brown et al 2013).

Resident observational data

The data in Fig. 1 are expressed as a percentage of the total number of ticks in both nursing homes. The proportion of time residents spent in Passive Behaviours (for example, sleeping or staring into space) fell from 76% (TMU) to 59% (HMU). In contrast, residents spent a greater proportion of their time (TMU, 24%; HMU, 41%) in the combined Engaged and Interactive Behaviours category (for example, talking to others or interacting with something in the environment). The Independently Interactive data were extracted from the composite Engaged and Interactive category data. This category demonstrates that not all environmental interactions were due to staff interventions. This category shows that residents spent a greater proportion of their time in Independently Interactive Behaviours (self-initiated and self-sustained interactions with the environment, without the assistance or encouragement of staff or others) in the HMU (TMU, 14%; HMU, 26%). This category demonstrates that not all environmental interventions were due to staff interventions.

In Fig. 2, the total number of ticks for each HMU category is divided by the total ticks of the equivalent TMU category, to give a percentage increase or decrease. Residents were recorded as being present 28% more often in the HMU communal rooms than in the TMU communal rooms. The number of ticks representing Interactive Occupation and Social Engagement behaviours increased dramatically in the HMUs (129% and 124%). Independent Interaction (activities that the residents initiated and sustained for themselves) rose by 134%. Fig. 2 illustrates that the increased ticks for the Interactive Occupation, Social Engagement and Independent Interaction categories cannot be explained solely by the additional time residents spent in the HMU communal rooms. The HMU environment stimulated the residents to increase both their engagement with others and their interactions with their environment much above the increased attendance in the room.

Fig. 2. Residents: Percentage increases of the HMU environment over the TMU environment for time in communal rooms: Interactive Occupation, Social Engagement, and Independently Interactive categories.

Fig. 3. Staff: Comparison of percentages of time spent in communal rooms: Work Tasks, Social Engagement, Interactive Occupation, and Care Tasks in the TMU and HMU.

Staff observational data

Staff spent most of their day undertaking duties outside the communal rooms in both pre-renovation TMUs. In each HMU there was a homemaker permanently allocated to work in the open plan areas, which gave HMU residents significantly more interaction and engagement than they received in the TMUs.

Fig. 3 demonstrates that when staff members were in the room, they spent more time in Work Task behaviours in the TMU than they did in the HMU (44% and 38%, respectively). The Work Task category was defined as undertaking tasks without any resident contact. Conversely in the HMU, Social Engagement of staff with the residents increased from 24% to 36%, indicating that staff and residents were socially engaged more often in the HMU. For both TMUs and HMUs the greatest proportion of staff time was spent in Work Tasks and in Social Engagement. They spent much less time doing activities with residents (Interactive Occupation category) or undertaking specific care tasks with them (for instance, assisting them to the toilet or adjusting clothing). There was a small increase (1%) in Interactive Occupation in the HMU and a small decrease (3%) in the Care Task category.

Fig. 4. Visitors: Percentage of time visitors spent in Interactive Occupation and Social Engagement when in the communal rooms.

Visitor observational data

Visitors were seen more frequently in the communal rooms of the HMU than the TMU (an increase of 85% in visits). Fig. 4 shows that visitors in the HMU spent almost all their time in Social Engagement behaviours (that is, talking to their family member). There was a slight increase in the proportion of time spent in Social Engagement (TMU 87%, HMU 91%).

Discussion

In a case study, the inferences made about causal factors must be explained through narrative description. Such a narrative has to make assumptions about the world and how it works. In a laboratory experiment, these a priori assumptions are dispensed with. In the naturalistic setting of a case study this rigour is not required; thus, a case study can be used to investigate a causal link in a real-life situation that is too complex for experiments or surveys (Yin 2003).

This study sought to determine if the HMU post-renovation environment increased resident, staff, and visitor Interactive Occupation and Social Engagement over the pre-renovation TMU environment. The whole environment changes included the physical layout of the communal rooms, the operational policies, routines and organizational approach, and the social environment — which included the activities and conversations within the communal rooms.

Without the animation of staff, communal living spaces become ‘lifeless’ (Zeisel 2005). Resident engagement depends on staff to manage activities and initiate conversations (Wood et al 2005). This requires physical layout, operational policies, and organizational commitment that promote these interactions (Innes et al 2011). That being said, the collective effect of the open plan kitchen and the homemaker role in the HMUs stimulated a greater level of resident interaction without requiring the direction of the staff, making residents more independent. These independent activities ranged from having another cup of tea to wiping down a table or reading a newspaper. This is a key finding with implications for the QOL for people with dementia living in a nursing home.

The kitchen in an open plan area

Research focusing exclusively on physical features has produced tentative and mixed results, as such research typically

focuses on a select few features to try to explain outcomes. However, creating a physical feature such as a household kitchen in an open plan communal sitting area is only effective if it promotes meaningful activities and social engagement. No research will identify positive outcomes if the feature lies idle and has no effect on residents (Calkins 2005). In this study the kitchens were integrated into the fabric of daily life, as food and drinks were prepared and served from here. The homemaker in the kitchen area enabled residents to choose when they got up and breakfasted each morning, according to their previous lifetime preferences. This person-centred approach meant that different residents arrived for breakfast at different times, creating a more natural and spontaneous, less institutional, environment.

In addition, the strategically placed kitchens provided supervision of HMU residents in the open plan area. The kitchen and dining areas provided a homelike interaction hub, which had an engaging and stimulating effect on residents, visitors and staff.

The HMU open plan areas removed the separation of the dining rooms and the sitting rooms. As a consequence, HMU residents were no longer shepherded by staff to the dining rooms. Instead, residents were able to go to the tables without prompting or assistance when they saw and could smell food about to be served. HMU residents stayed as long as they liked at the tables. The open plan design facilitated greater resident choice about moving from place to place within the room, joining in activities, engaging with others, and interacting with a more open and therefore more stimulus-rich environment. This was recorded by the ATOSE as greater resident Interactive Occupation and Social Engagement.

In the TMUs, the residents sat around the walls of the room staring into the empty central section of the room. In the HMU, it was easier for the people to converse. They could sit around a dining table with a cup of tea, or sit on a sofa, or on chairs that were more naturally grouped to face each other. The domestic style placement of furniture encouraged more spontaneous casual interactions between people. More visitor time was spent in the communal living rooms instead of visiting in the residents' bedrooms. In addition, visitors could see what was going on in the open plan room and could also interact with the homemaker, other visitors, and residents.

The homemaker

The operational appointment of a homemaker was critical to the success of the HMU. The bustle created by the homemaker role had a stimulatory effect on the self-initiation and interest of the residents. They could be seen assisting the homemaker with simple tasks, such as folding the tablecloths. Because the homemaker was constantly in the open plan area, she was able to monitor and interact spontaneously with residents as she went about her duties and, by her actions, encourage residents to remain active and engaged. And while some residents wanted to engage directly in the familiar household occupations, others were content to 'be in the atmosphere of the doing', which has been proposed to be as important to residents with dementia as is the actual doing of the task (Van't Leven and Jonsson 2002).

Limitations

In this real-world case study, the independent variables were the nursing home environments and the dependent variables were the behaviours of the individuals within it (residents, staff, and visitors). This study is valid if the environments, residents, staff, and visitors were generally representative of TMU nursing homes and the post-renovation environments were similar to other HMU environments. An experiment demands that the resident and staff populations are matched. However, in a quasi-experiment or natural experiment such as this case study, this level of matching is not required (Bryman 2008, Robson 2002). It is unlikely that consistent positive trends would have been obtained from residents, staff, and visitors from two different nursing homes unless there was a real-world difference between TMU and HMU environments. Being observed may have had an effect on those within the room. That being said, it appeared that after a very short period of time, people stopped paying attention to the observer. The ATOSE does not attempt to determine which occupational interactions or social engagements are better or worse for residents, staff, and visitors. If value judgements are required, other assessment tools are indicated. Further longitudinal assessment points, such as at 6 months pre and 6 months post renovation, would add to validity. Other research will be required to assess the relevance of these outcomes to other types of venues, resident populations, and countries.

Conclusion

The premise of this study has been that the environment needs to be understood as a whole, as all components of the environment are interdependent (Proshansky et al 1970). A whole environment occupational space is composed of physical, operational, and social elements, and all the people within it. This 'whole approach' is critical to the pragmatic outcome of this observational method.

The ATOSE was able to differentiate between the TMU and HMU environments. This observational method gave a snapshot assessment of the daily amounts of Interactive Occupation and Social Engagement in the communal rooms. Comparing pre- and post-renovation baselines gave a POE using interactive occupation and social engagement as outcome measures. This method could also be used to determine the impact of specific interventions, such as staff training, on these outcomes. This method could be used to periodically monitor daily levels of interaction and engagement in any residential care communal environment.

This study argues that the ultimate purpose of an exemplary nursing home environment is to create opportunities for engagement and interaction, and that communal living spaces (occupational spaces) should be judged on these outcome measures. All persons in the room contribute to the creation of an occupational space, and this is particularly relevant considering the competence levels of residents with dementia. The findings of this study demonstrate that the

HMU environment together with the homemaker role influences residents, staff, and visitors to increase their levels of interactive occupation and social engagement behaviours. This is a key finding and demonstrates the utility of observational assessments such as the ATOSE to evaluate nursing home environments.

Pereira and Whiteford (2013) encouraged the occupational therapy profession to actively promote changes in policy and practices in order to enable vulnerable groups to participate in meaningful occupations. The findings of this study support that assertion, and it is recommended that those commissioning nursing homes, nursing home owners and managers, architects, and designers be informed as to how communal living spaces can be thought of as alive occupational spaces. Occupational therapists need to work with other professionals to develop an awareness of how the design of space and operational policies can foster increased engagement and interaction for residents with dementia, staff, and visitors.

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Key findings

- In dementia units, a strategically placed kitchen in an open plan area with a dedicated staff member has an engaging and stimulating effect on the occupational behaviour of residents.
- The HMU requires a whole environment approach including physical design, operational policy, staff approach, and social environment.
- The ATOSE is a tool that supports the evaluation of occupational space in nursing home environments using quantitative statistical data.

What the study has added

Occupational therapists are able to raise awareness of how changing the physical, organizational, and social environment can foster increased engagement and interaction for residents with dementia, staff, and visitors.

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Research ethics: The research protocol received ethical consent from the University of Salford, in the United Kingdom (RGE06/110), and from the Healthcare Research Advisory Committee of the Dublin North East Region Health Authority, in Ireland.

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Appendix 1. Assessment Tool for Occupation and Social Engagement (ATOSE)

Segment sequence number:	<input type="text"/>	Segment start time:	<input type="text"/>	Date of observation:	<input type="text"/>
Coding RESIDENTS		Coding VISITORS		Coding STAFF	
TOTAL ENGAGED Social Engagement One-to-one verbal ☐ Verbal within structured group ☐ Non-verbal communication ☐ Interactive Occupation Independently interactive with environment ☐ Interactive occupation with staff ☐ Interactive occupation with relative ☐ Interactive occupation with resident ☐ Interactive occupation within group ☐ Care Task Receiving care ☐		TOTAL ENGAGED Social Engagement One-to-one verbal ☐ Verbal within structured group ☐ Non-verbal communication ☐ Interactive Occupation Independently interactive with environment ☐ Interactive occupation with staff ☐ Interactive occupation with relative ☐ Interactive occupation with resident ☐ Interactive occupation within group ☐ Care Task Providing care interaction with resident ☐		TOTAL ENGAGED Social Engagement One-to-one verbal ☐ Verbal within structured group ☐ Non-verbal communication ☐ Interactive Occupation Independently interactive with environment ☐ Interactive occupation with staff ☐ Interactive occupation with relative ☐ Interactive occupation with resident ☐ Interactive occupation within group ☐ Care Task Providing care interaction with resident ☐	
TOTAL NON-ENGAGED Passive Engagement with Surroundings Not interacting or engaging ☐ Passive/Agitated Behaviours Eyes closed ☐ Agitated ☐ Self-stimulation ☐		TOTAL NON-ENGAGED Passive Engagement with Surroundings Not interacting or engaging ☐ Preparation and Organizing Tasks Organizing tea/meal/snack ☐ Moving around room ☐ Preparation for other activities ☐		TOTAL NON-ENGAGED Passive Engagement with Surroundings Not interacting or engaging ☐ Work Tasks Catering tasks ☐ Domestic tasks ☐ Professional tasks ☐	