Evaluation of Features specific to an ASD Designed Living Accommodation

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Introduction

Evidence based practice should inform evidence based design and this was the premise upon which Sunfield went about building a living environment for children with profound autistic spectrum disorder (ASD).

Utilising the knowledge built up from years of experience in working with children with profound autism, Architects were charged with the task of incorporating specific features within the design of the building. These included:-

- Curvilinear design
- Specific colours
- Noise reduction fabrics
- Non-flourescent lighting
- Sensory Suite
- Courtyard & Outdoor canopies
- Specific Floor Coverings
- Specific Bedroom Design
- Under floor heating
- Circulation Space

The resulting accommodation comprised of two identical, adjoining houses, centred around a shared courtyard:-
Following the move into the new accommodation in April 2004, Sunfield Research Institute commissioned an evaluation of the impact of the design upon children and staff. This evaluation was based on:-

- Interviews with Team Leaders
- Focus Groups involving a range of care staff
- Feedback from the children via photographs

Using information from the triangulation of this data it is possible to consider each feature incorporated into the design and explore its benefits and impact upon the residents.
Curvilinear Design

Immediately upon entering the house, it is noted that curved walls facilitate movement into the building. This is particularly useful for children who have difficulties with visuo-spatial processing. It has been noted that children with ASD experience a range of proprioceptive problems – they often have difficulties being aware of their own bodies in relation to the context in which they find themselves. Staff noticed that children often placed their hands on the walls, following the contours round the corridor.

Colour

Colour schemes have been based upon research conducted by Dr Di Pauli at Sunfield (Pauli, Egerton & Carpenter 1999/2000). Dr Pauli’s research has found that some colours can disturb or alter the mood of children, whilst others have a calming effect. Shades of pink and purple have been found to be the most positive colours and these have consequently been used extensively on walls. Grey has also been widely used as this has been shown to be a neutral and non-reflective colour which provokes neither a positive nor negative reaction. Consequently, windows, doors, frames and skirtings have been stained grey (adopting a more environmentally friendly alternative to paint). This has contributed to the calmness which is noticeable upon entering the building.

Noise Reduction

Ceilings with sound-absorbent backings have been used to prevent reverberated sound. The ceilings are slatted timber with gaps of about 10mm between each board. The sound travels through the gaps and is absorbed by an acoustic ‘blanket’ behind. Within the circulation spaces ‘fair faced brickwork’ has been incorporated. This type of construction features exposed brickwork with deeply
raked joints. This has the effect of breaking up the sound waves when they hit the wall and not reflecting them back which is what would happen with plaster or shiny surface finishes. The combined effect of these noise reduction finishes has contributed to the calm which staff and students experience. Staff gave feedback on one particular student who achieved sensory stimulation by banging on surfaces “Stuart’s banging is not so disruptive in this accommodation – the reverberation in the old house was really bad - he still does it but it’s not so disruptive”. Interestingly, the only room without sound proofing is the dining room. Staff noticed that children like Stuart were banging more in the dining room and another child liked to shout in that room because the acoustics of the room gave feedback to him, “His verbal loudness has increased……when he is in the dining room….more acoustics”.

**Non-florescent lighting**

Soft non-flickering lighting has been placed on the walls of the central areas of the living accommodation. There is ample natural light through high windows (which also provide additional ventilation). Children with ASD often experience a range of sensory problems including an aversion to very bright fluorescent lighting can affect their visual field (Irlen, 1991).

**Sensory Suite**

Each of the adjoining houses has a specifically designed sensory *suite* – as opposed to a sensory *room*. The distinction lies in the flexibility of the room to be converted to suit the individual preference and needs of students. The room is completely white and accordingly can be converted, through the use of sensory equipment, into a stimulating environment or a calming environment. In addition, dependent upon the level of functioning of the student, the room can be controlled by the adult or by the child. Staff have observed that children have greater access to this facility and staff noted that one child in particular will
indicate that he wishes to use the sensory suite by placing his bean bag outside the door.

**Courtyard**

The adjoining houses are built around a central, shared courtyard. This provides a safe outdoor environment for the children and is located centrally so that children can play independently while still being observed by staff. The covered areas consist of hanging canopies which are in effect the continuation of the roof either side of the courtyard. This feature provides a dry open area for the storage of play equipment as well as shelter for outdoor play even during inclement weather.

Staff have reported enormous benefits of this shared outdoor space. “Three kids were playing out in the sandpit……they play alongside each other in a way which we wouldn’t have seen happen before”. Children from each house can mingle in the courtyard “Tony (Rowan) and Robert (Oak) are playing and running around together – they have always got on well”. The windows surrounding the courtyard offer excellent visibility, which enables staff to monitor student activity from a distance.

Prior to the move, one Team Leader noted that a student liked to play outside on his bike but disliked staff being with him. This problem was alleviated in the new house – the student taking photographs of what he liked about his new home actually chose to go outside and play on his bike, then took a photograph of a care worker watching him through the window. Indeed, for many of the children, having safe accessible outdoor play has increased their levels of autonomy and decreased their frustration – they can choose to go outside when they
want and no longer have to just look through windows to outdoor spaces which they cannot access.

Specific Floor Coverings

Easy wipe clean lino-type surfaces are the floor covering of preference in many houses for children with ASD. However, although these have a functional value, they detract from the creation of a warm, homely environment. A new type of floor covering was suggested for the ASD specific house based on a Flotex ® design. The floor covering was trialled in another house on site to ensure it could withstand the most punishing regime. Once satisfied that this product was robust and durable, it was accommodated within the new building. Consequently, this adds another dimension to the sound absorbency of the building and provides warmth and comfort to the house.
Specific Bedroom Design

Bedrooms for the children were designed specifically to ensure the children felt safe and that their privacy was respected and maintained. A bedroom should be a room in which any child can create their own space and this is no different for children with ASD. Children and their parents chose the colours which the rooms should be painted. Rooms were designed to be ‘womb-like’ as children with ASD often experience difficulties with spaces which are too big. Consequently, rooms have a small floor area but are built to incorporate high ceilings with additional windows at high level for natural light and extra ventilation. Low level windows have removable window furniture to enable staff to maximise security. High level windows operate by window mechanisms located within the child’s lockable wardrobe. The layout of the bedroom wings follows a zig-zag pattern (see plan above). This enables every child to have a view from their window without being overlooked. All rooms have TV, DVD, video and music equipment.

Children loved inviting peer’s to watch TV. Children participating in the evaluation of the new house all took photos of their bedrooms as evidence of what they liked about their new home. Joe liked having his toys in his room and posters on his walls, Adam liked having photo’s of his family and friends displayed and Liam liked being able to watch TV in his bedroom.
Circulation Space

An important feature of the design was to incorporate space into the building but to move away from an ‘institutionalised’ feeling. This was achieved by adding a ‘circulation space’. Off this space we find the sensory suite, bathrooms, bedrooms, access to the courtyard and an activity room. The space incorporates low level seating which doubles as storage space for children, together with high level storage space for access by staff. Again, high level windows provide natural light and ventilation. Low level windows are plentiful, again providing more light but equally allowing excellent visibility for monitoring outdoor play. Children prefer the circulation space to the lounge for social activities. One Team Leader reported that children loved bringing bean bags into the space and having a story before bed – “Kids will sit with us then drift off to their rooms….I think it’s comforting for the children….like having their parents just outside their door, close by”. The circulation space, and space per se, has also been seen to facilitate communication. A Team Leader commented that “Joseph has become so spontaneous with his speech – the long corridor has facilitated this – he comes up the corridor for a purpose”.
Under Floor Heating

Under floor heating has been used to create a warm environment without the need for radiators. This feature eradicates the need for low surface temperature radiators which are not only unsightly and reduce the available space within a room but also addresses the difficulties of children with ASD posting objects, climbing onto radiators, and indeed, pulling radiators off the walls. In addition, under floor heating enables areas to be zoned for temperature control. This feature allows the temperature in different areas to be operated independently. For example, each child’s bedroom may be controlled separately. This is particularly important as some children may be more sensitive to heat and require a lower temperature than other children in the same house.

Activity Room

An activity room is located at the end of the Circulation Space. This has views onto the courtyard. It can be adapted to a range of play activities according to the child’s preference – it can be a quiet space for working on the computer or looking at books, it can be a messy play area for painting and creating, or children can choose to use some of the fixed activities such as the wood gears or the ball run.

Communication

Children living in the new house operate on differing communication levels. Some work with symbols, some with photographs and some with objects of
reference. These levels of communication are facilitated through the TEACCH approach which is familiar to the young people. This provides a consistency for the children throughout their life experience at Sunfield.

To incorporate these communication approaches into the fabric of the building, carpet tiles were mounted in frames outside the bedrooms so that students could have their name, photo and any symbols required placed onto the carpet squares. Similarly, in the dining room, there is a symbol board and a ‘bank’ of symbols stored in drawers, to facilitate the children making choices at meal times.

**Staff Space**

In addition to features which were incorporated with the children in mind, staff
similarly needed space to work. An office was created for staff which, whilst being an enclosed working space offering privacy, enables staff to monitor children’s activities through high level windows.

Staff also have use of a kitchen to prepare food and drinks for the children in a safe environment.