

The Use of Colour in Dementia Specific Design



This article explores some basic issues about colour and its application, summarises what is known about colour perception and impact on behaviour and mood, and provide some guidelines for colour application in dementia care settings.

Impact of different colours

Studies involving colour and light have been conducted for decades, even centuries. While there are many disparate results, there are also some commonalities about colour that are worth mentioning:

- *Blue* is a restful colour with a calming effect. Research suggests use of blue (probably tested by painting a room in various shades of blue) in the physical environment can actually lower blood pressure. It has also been shown that blue (and green) rooms are perceived as several degrees cooler than rooms painted in warm shades (reds and oranges). Blue also increases the apparent size of a space.
- *Red* increases brain wave activity and can stimulate the production of adrenalin into the blood stream. It will also increase the apparent temperature of a room, and thus may be useful in rooms that are habitually on the cool side.
- *Green* is associated with growth and life, and is the most restful of colours. Green reduces central nervous system activity and helps people feel calm. Like other cool colours, it makes rooms appear larger.
- *Violet* does not appear to have consistent affects on either mood or the nervous system. This may be because it is a combination of red and blue, which are at opposite ends of the light colour spectrum.
- *Orange* is a relatively new colour (having appeared in European language only in the tenth or eleventh century). It is closely associated with red, being a warm colour, and shares some similar properties. It is also an 'earth base' colour and like green it produces associations with nature and natural environments.
- *Yellow* is a highly visible colour and thus is often used to carry important messages (road signage). It makes rooms appear larger, and thus is good for small rooms where you want a restful atmosphere.

Changes with dementia

As people age, a number of changes occur which affect both vision and colour perception. There has been little research specifically on colour perception in dementia, although there are a few articles that have been recently published. Rizzo and

colleagues (2000) compared 43 individuals with mild Alzheimer's disease and 22 people without dementia. Basic visual functioning (acuity and motion direction discrimination) was similar for both groups, but the people with dementia scored significantly worse on tests of contrast sensitivity, visual attention and colour.

Wijk and colleagues (1999, 2001) conducted several tests and found a marked decrease in colour naming ability in individuals with dementia when compared with cognitively-intact elderly. Unlike Rizzo's research, there was no difference between the groups on colour perception (being able to pick out which colour was different when presented three colour swatches). Both groups found it easier to distinguish between colours in the red/yellow range, and harder to distinguish colours in the blue/green range. The lightness of the colour (tint and shade) was an important factor in being able to discriminate between colours. Colour preference ratings were similar for people with dementia as for the comparison group: that is, blue, red and green were most preferred, in that order.

Basic colour principles

1. Emphasise what's important.

Within any setting, there are some elements that carry important information such as orientation cues or views to interesting vistas or activity areas. Pay close attention to those elements that have the potential to provide useful information to the cognitively impaired individual, and give these more emphasis with brighter colours (using hue, value and chroma) higher contrast with the background and more light.

- Signage that is meant to be read or interpreted by the person with dementia should be highlighted in this manner, while signage for staff or visitors should be given less emphasis
- Provide high hue and value contrast to the edges of stairs or level changes so they are easy for people to see; this can minimise falls
- When using colours as part of an orientation cue system, remember that older individuals have a harder time distinguishing between colours in the cooler range - blues and greens particularly. Also, some individuals are colour blind and find it difficult to distinguish between red and green. Therefore, colour is probably not appropriate as the sole differentiating feature between different elements - they should vary in other design features as well. Varying the value of colours (the lightness or darkness) by at least two levels will enable most people to differentiate between the colours.

2. De-emphasise what is not important

Although this seems like a restatement of principle 1, designers often use colour and pattern in ways that draw attention to elements that should be in the background of the visual field. People with dementia struggle to make sense of their environments and should not have their attention unnecessarily drawn to elements that do not convey meaningful information.

- Floors are an important functional element, not just a surface to be decorated. Avoid bold patterns with high contrast. Avoid high contrasting borders within rooms or in hallways. Subtle colour changes, in the pattern are appropriate. Colour change at doorways or transitions between rooms is appropriate, although if the colour change is distinctive (high colour or value contrast) it is best to make sure there are handrails for people to hold onto while making the transition. Changes in hue and value often appear to be a change in level which people try to step over.
- If you don't want residents 'hanging around' the staff work spaces, make the colours blend in with the background. Remember however, it is probably the presence of staff that draws residents to these areas more than the colour of the space.

3. Compensate for known visual defects

Older people require three times the amount of light to see as well as younger people, but are more sensitive to glare. People with dementia have impaired contrast perception which makes it harder to see the edges of objects, particularly when the foreground (object) and background are similar colour and value. This is particularly important when designing to support functional independence.

- Chair seats should contrast with the floor so that people can see where the edge of the chair is.
- Sink basins should contrast with the surrounding counter/vanity top.
- Toilets (or toilet seats) should contrast with both the floor and surrounding walls to make them more visible.
- Table settings should provide high contrast between the plates (usually white or pale coloured) and the table/tablecloth/placement (dark colour).
- Colours that are a mix of hues from the opposite side of the colour wheel (such as red and green, or yellow and blue) will appear particularly muddy, and thus be less attractive to older individuals whose lens is yellowed.

4. Apply colours according to known principles

People with dementia may have some unique needs but they are still people, and no research has yet suggested that they respond to colours in a different way, either emotionally or visually, from the general population.

- Rooms that are habitually too warm will be perceived as cooler if decorated in cool colours (blues and violets). Conversely, decorating a cool room with warm colours will make it appear to be warmer than it actually is.
- If space is at a premium and rooms are small and tight, using cooler colours will make them appear to be slightly larger.
- If you want the space to be an 'active' place, use warm colours - particularly red, which is physiologically stimulating.

Concluding thoughts

There is a need for more systematic research on the behavioural/emotional impact of colours on people with dementia, particularly studies that look at colour as it is applied in the environment, not just on small swatches of paper.

There are some enticing possibilities about being able to create spaces that encourage more activity and participation, or places that are calmer and more restful, but the lack of research hinders designers from being able to apply colours with confidence. There is better knowledge about perception and contrasts which can support the creation of environments that enhance independent functioning. Clearly, if you can't see a white toilet against white floor and walls, you will have a hard time maintaining continence. Judicious use of contrast should be given careful consideration when creating spaces for people with dementia.

From the Journal of Dementia care (July/August 2002, pp.20-23) -

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