Sensory Design & Healthcare
Colour Design and Lighting

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Kingston University London
Research in the healthcare sector

- NHS hospital audits
- Longterm healthcare sector
- Sites in France and Denmark
Aims:

• Maximise the potential benefits of colour design and lighting for all

• Quantify some beneficial uses of colour design and lighting for inclusive environments

• Identify a mechanism involved in the provision of colour design and lighting for a sense of well-being

• Use science based methodology in design research for best practice
Our Expertise:

- Colour & vision
- Environmental psychology & sensory design
- Engineering product design
- Contrast, colour & design
- Lighting
- Signage, wayfinding & orientation
- Visual impairment, BR Part M & DDA
- International research into good practice
Collaboration:

- Environmental psychologist
- Statistician
- Experimental psychologist
- Lighting designer
- Vision scientist
- Gerontologist
- Engineering product designer
- Healthcare specialists
- Architects and Interior designers
Agenda:

• Complex territory of human interface with interiors
• What tools can be used to understand users’ needs?
• Immobility or lack of freedom to move requires thoughtful design
• Lack of accessible knowledge collated on methods for tomorrows’ designers on users’ needs and sensory design interventions
• There is a considerable amount of misinformation
• Sensory design must explore possibilities beyond the pragmatic and engage the senses
Healthcare environments

Objectives:

• To improve the visual environment of hospitals
  ▪ Ambience
  ▪ Confidence & safety
  ▪ Accessible & inclusive
  ▪ Attractive environment & visual stimulation
  ▪ Stress reduction
  ▪ Enhance patient recovery, staff morale & productivity
  ▪ Ease of navigation and wayfinding
  ▪ Compliance with Disability Discrimination Act

• To produce clear guidance on colour and lighting design in hospitals for NHS specifiers

Funding: NHS Estates – Research & Development
Confidence and safety
Staff morale and productivity
Visual noise
Stress reduction by guarding uncluttered spaces
Colour coding strategies can cause more confusion.
Landmarks aid orientation
Lighting design
A view of ‘normal’ life outside is liked by older people
Windows and a view out are essential for a sense of well-being in hospitals
70% of the UK population die in hospital

Ref: Jane Priestman
Colour Schemes for Long-term Healthcare Environments

Objective:

• To identify critical issues related to design and colour of interiors within long-term healthcare environments – 6 weeks or more

• Determine particular areas where colour and design can alleviate problems of confined spaces for residents and patients

Funding: Arts and Humanities Research Council
Research Fellow: Dr Mark Matheson
Under/Over stimulation effects of colour

- Reduction of visual stimulation leads to visual hallucinations (Sommer, 1969).
- A University of Vienna study showed room colour influenced concentration span of office employees.
- White cells caused violent reactions in certain prisons (Fairweather and McConville 2000).
Eye and Brain: Portal and Processor
Contiguous spaces

• Residents often have access to only three contiguous spaces
• Less mobility requires more variety in surroundings.
• Light levels in contiguous spaces should be carefully managed
• The eye requires longer to adapt as the visual system ages
• Adaptation becomes slower between light and dark spaces.
• Colours can give rise to complementary after-image.
Older people with a yellowing lens will see the square on the left as grey as the grey on the right. (Dalke, Stott 2005)
Colour design and dementia

• Colour can be used to promote desired behaviour, discourage undesired behaviour and enhance the ambience of the environment (Cooper, Mohide and Gilbert, 1989).

• In one study dementia patients were more interested in food if served off different coloured plates - this stimulated their appetites.
Site Audits
The Building

- Located in suburban West London
- Set within picturesque walled and wooded grounds on the edge of a large park
- Front façade faces south east
- Each resident has a private room; a couple of doubles
- 6 common rooms: dining room, 4 day rooms, conservatory
- Social events and religious observances take place
Sheltered Housing
Entrance

- The main entrance is attractive with easy access
- Newly refurbished
Dining room
Colour vocabulary which produces a ‘sameness’
‘Blue Room’ and one blue bedroom most commented on
Blue v green cell interiors and association areas
• Appearance of personal interior was homely
• Good provision of plants, flowers and art
• Opportunities for assistance with personalisation
Evaluation of colour schemes
Number of participants: 112

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NCS
- 10 Hues
- 9 Shades

* These colours were selected from the next colour hue group as that particular position in the hue was not available as NCS colour space.
Corridor 1
Day room 1
Participant selecting preferred colour schemes for a ‘Journey’ from Bedroom, Corridor to a Dayroom.
Bedrooms: Top colours

1st (19) - 0520 R90B

2nd (18) - 0505 R30B

3rd (12) - 0505 Y60R

3rd (12) - 0505 R50B
Bedrooms: Top colours

1st (19):
- 0520 R90B

2nd (18):
- 0505 R30B

3rd (12):
- 0505 Y60R

3rd (12):
- 0505 R50B
Corridors: Top colours

1st (22)

0505 R30B

3rd (19)

0505 R50B

2nd (21)

0505 Y60R

G60Y Y20R

G R

B50G R30B*

B10G Y60R*

R90B R50B*
Dayrooms: Top colours

1st (14)  
0505 Y20R

2nd (13)  
0505 R90B

3rd (12)  
0505 Y60R

3rd (12)  
0505 R
‘Real-World’ evaluation
Mental Healthcare
North East Yorkshire
After: Refurbishment under way with ceiling removed
What do you like about the Hall?
The brightness of the hall with a calming feeling.
The colour scheme.
The reading area + courtyard areas.

Delightful

Much better colouring +
Much better lights

Nice

A lot more cheerful to what it used to be.
Nice outside areas

Good

Good what you do for
the people.

New doors and windows which look like have always been here.
Sites in France and Denmark
Home for Dementia Patients
Brittany
Herlev Hospital
Copenhagen
1970’s!

Poul Gernes
Lewisham Youth & Children’s Community Health Centre
Colour and lighting can be a powerful tool in sensory design if the building’s user is understood.
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