Colour Preference in Teenage Boys' Bedrooms

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Colour in spaces plays an important role on inhabitants' mood. In interior design colour has been used to decorate spaces in order to lift and change mood in people. It has been already proved that certain colours relax people while other colours have an opposite effect. However, not all the colours have been researched, and especially their effects on teenagers' moods have not been researched. This paper begins research in this area by presenting the findings of a study seeking to understand how teenage boys relate to colour, and seeking to identify what their favourite colour is. The teenagers completed a questionnaire about colour and the results show white is a dominant choice for bedroom design followed by blue, black, green, violet, red, grey, yellow, and orange. Red and blue were on top as favourite colours, followed by white, purple and green being preferred once each.

Colour, Colour preference, Interaction design, Interior design, Teenagers, Bedroom

1. INTRODUCTION

Recent evidence suggests that there is a need to understand teenager user groups and their worlds for better design (Read et al, 2013; Horton et al, 2012; Fitton et al, 2012). Fitton (2012) writes that "to design engaging technologies for teenagers it is necessary to understand what, specifically, will engage the target users." Read et al. (2013) highlight the need for new research methods that can be used for teenage studies. So far, there is little work and research on designing for and with teenagers.

According to Reid (2012) the contemporary teenager bedroom is not simply a sleeping room anymore, it is also a space for socializing, "acting as an incubator for teen identity and development while also serving as one of the most important sites of teen consumption" (Reid, 2012).

It is well accepted that colour can positively influence individuals' physical and emotional well-being (Pinheiro, 2008). Lancaster (1996) writes that "we all experience colour: we use it and have to live with its effects, even if we do not understand what [sic] these effects are" (Lancaster, 1996). During the process of perceiving colours, a feeling, referred to as colour *emotion* is induced by the brain (Yildirim et al, 2011) and this emotion is believed to differ for different colours (Yldirim, 2011).

Clifton-Mogg (2001) proposed that the importance of colour in interiors was sufficiently important that individuals should draw up their own colour palettes choosing the colours they love the most, irrespective of fashion and trends. She argued that people do not think how to employ the colours they choose or "which colours would be right for us to live and work with" (Clifton-Mogg, 2001).

1.1 Colour preference

1.1 Colour preference for single colours

Other studies reveal that blue is the most preferred colour and yellow the least (Eysenck, 1941; Granger 1955; Guilford and Smith, 1959) and no gender difference was found with regard to colour preference and colour emotion responses (Ou et al, 2004). Similarly, the most preferred colours for Japanese, Korean and Taiwanese participants were vivid blue and white (Saito, 1996).

Another colour preference study run by Hogg (1969) showed blue and purple were the most pleasant colours from a set of 30, while yellow and green were the most unpleasant (Hogg, 1969b).

The findings from the studies above are similar with the findings from the present study. It is important to note there are similarities between teenagers' and adults' colour preference. However, the number of participants from this study is small and future studies need to be done with a larger number of teenage participants.

1.1 Colour preference for colour combinations

According to Hogg (1969), the preference for a colour pair could not be predicted by the component colours in that pair (Hogg, 1969a). Guilford (1931) tried to predict preference value for colour pairs but the results showed the method was unaccepted (Guilford, 1931). Moreover Ou (2004) affirms the following about the present findings (Ou et al, 2004):

> "All these findings suggest that the preference value for a colour combination cannot be predicted by a simple equation that is based on preference scores of individual colours."

Ou (2004) concludes that "it is difficult to determine colour-combination preference by colour emotion only." Observers' judgments on colour might differ because colour preference is subjective and it is related to personal taste and cultural background (Ou et al, 2004).

1.2 Colour Installations in HCI

The present research relates to the following colour installations because of a future vision: HCI as part of interior design. Both areas deal with colour and teenagers but there is no link between them. However, this paper begins research in this new area.

Chromosaturation (designboom, 2012) by Carlos Crus Diez is an "interactive manufactured habitat composed of three color chambers – red, green and blue". The chromatic interior spaces alter the perception of their audience by giving the impression of modifying colours of the skin, cloths or other objects. "As one moves from color chamber to color chamber, the reminder of the previous visual saturation shocks the retina" (MFAH, 2014).

The fascinating results can be seen in the figures below:

Figure 1: *Chromosaturation [source: (designboom, 2012)]*

Figure 2: *Chromosaturation [source: (designboom, 2012)]*

Plug and Play Installation is a lighting system created by Philips. The installation is a luminous coloured textile panel which can be used as a mood wall. According to Philips (2013) the mood wall installation "*can display dynamic content*" by integrating the light in an interior in order to create "*decorative and ambient effects*" (Philips, 2013b). The aim is to create a dynamic space which should "*engage and attract, surprise and delight, uplift and inspire*" (Philips, 2013a). The lighting system integrates multi-coloured LEDs and white or coloured textile panels. This new luminous textile is a new sensory experience that can inspire interior designers and lighting designers.
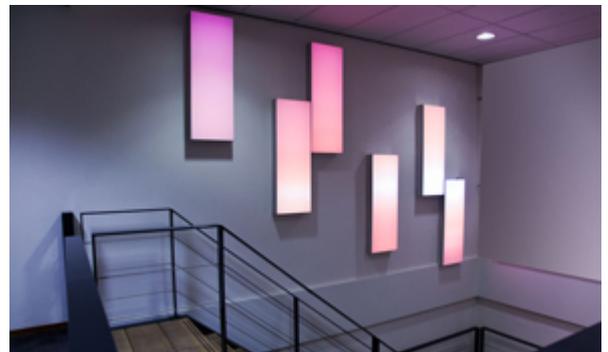
Figure 3: *Plug and Play installation [source: Philips (2013)]*

Philips designed an interactive colour changing light wall for Birmingham Children's Hospital. The interactive wall, which offers interactive scenes and games, "has been designed with a holistic approach in mind to lessen the tension, anxiety and stress young patients typically feel when entering a hospital environment" (Philips, 2014).

1.3 Teenagers and Bedrooms

Research demonstrates teenagers "see themselves as more emotionally separate from their parents than they did as children" (Larson, 1995). This emotional separation is associated with weak self-confidence (Simmons et al, 1973). Moreover Feldman (1990) demonstrate teenagers often have multiple contradictory conceptions of themselves (Feldman and Elliot, 1990).

Lincoln (2012) has a similar point of view with Reid (2012) noticing that bedrooms are private spaces that are not simple, functional, static spaces [(Lincoln, 2012), (Reid, 2012)]. Bedrooms are spaces where one can authenticate his/her identity, play, experiment; they "can offer refuges at difficult times, but also spaces within which those difficult times can be experienced" (Lincoln, 2012). Bedrooms can be spaces to escape to. Their significance to young people is not stable and the experience of a bedroom is unique to every young person (Lincoln, 2012).

According to Lincoln (2012) teenagers' bedrooms are full of activities (Lincoln, 2012). The bedroom is the space where more teenagers start and end their day in. It is a space where they sleep, self-maintain, eat, do homework, prepare for important exams, relax, spend time on their own, read magazines, listen to music, play computer games, watch TV, listen to the radio. In this space teenagers also use their laptops, smart phones, they text, talk on the phone, check social network sites such as Facebook or Twitter (Lincoln, 2012).

2. COLOUR QUESTIONNAIRE

The study described here took place within a MESS (Mad Evaluation Sessions with Schoolchildren) day event held at (ANON). A group of 20 teenage boys attended a full day event at (ANON) and participated in five different activities in a round robin process. The five different activities were run in a single large

room booked and used solely for the event. The pupils came to the event voluntarily in so much as they had been told that they did not have to participate but they also were attending as part of a school event and so it could be argued that their ability to consent-out was reduced. Prior to beginning the day they were told that the University was carrying out some research and that data would be gathered but they were also reassured that at no time would their names be asked for. They were told that papers might be published from the findings from the day. Two teachers, who did not get involved with the research activities, accompanied them. 'Colour my Bedroom' was one of the five activities that the pupils attended. The other four activities were not related to the present one and had no effect on the opinions stated in the questionnaire used in the present activity.

2.1 Participants

Fourteen male teenagers aged 12 to 13 participated in Colour my Bedroom.

2.2 Procedure and Apparatus

The teenagers were instructed to complete a questionnaire. The indications were to answer 15 questions about colour preference, mood, future colour devices, and colour assistance. For the purposes of this paper, 2 questions will be analysed:

- What colour […] would you prefer to have on your bedroom's walls/ceiling/floor?
- If you have a favourite colour write it below otherwise leave it blank

The aim of this study was to understand what colours teenagers might prefer to have in their own bedrooms, what is their favourite colour and if there is a connection between those two results.

In the questionnaire, vivid, mid-bright, pale colours and achromatic colours were all printed for an extensive choice. The choice of colours was inspired by Itten's Colour Wheel [(Fletcher, 2014) (see Fig.5)] even though previous studies did not use it. In addition to those colours, shades of achromatic colours were used: white, grey, and black. Shades of white and grey are the most common used in interior design. Black is usually used as a strong accent, but not that often in bedrooms. Brown was not taken in consideration because it is considered to be one of the most disliked colours (Gong and Lee, 2011).

For the first question teenagers had to choose between 45 different shades of 15 different colours and achromatic colours in order to imagine colouring the walls, ceiling, and floor of a bedroom (boys could select different colour for each wall, ceiling, and floor thus increasing the number of potential surface

colours combination by 6); these printed colours and achromatic colours were different hues of: yellow, yellow-orange, orange, red-orange, red, red-violet, violet, blue-violet, blue, blue-green, green, yellow-green, white, grey, and black.

Figure 5: *Itten's Colour Wheel (source: (Fletcher, 2014)*

Figure 6: *The colour palette used with 45 colours and achromatic colours (source: the author)*

For this study the colours and achromatic colours above were grouped in yellow (Y), orange (O), red (R), violet (V), blue (B), green (Gn), white (W), grey (G), and black (Bk). (O) includes orange, yellow-orange and red-orange, (V) includes violet and red-violet, (B) includes blue, blue-violet, blue-green, and (Gn) includes green and yellow green.

For each colour and achromatic colour there are three different brightness levels which were vivid, mid-bright, and pale.

The tools used for the study were the Colour Preference questionnaire and pens to complete it.

2.3 Results

All of the teenagers understood the task and all were able to complete the two presented questions. The two questions were analysed and the results will be discussed in the following sections. The first analysis focused on the variety of colours used in a bedroom and on the brightness of colours and achromatic colours; the second analysis focused on personal favourite colour.

2.4 Colours and brightness chosen

2.4.1 Colours used on the walls and colour brightness preference

The colours used on the walls were 17B, 12W, 7Bk, 6Gn, 5R, 5V, 3Y, and 1O (the numbers are noted as counts and the letters represent each colour group described earlier). This indicates a preference for blue walls. White and black, both achromatic colours, were popular choices with orange being the least popular of those selected.

In terms of brightness, the choices were predominantly vivid colours (38), with some mid-bright colours (17), and almost no pale colours (1).

2.4.2 Colours used on the ceiling and colour brightness preference

On the ceiling, the results showed white as the top choice (9), followed by grey (2) with violet, blue, and black each being chosen once.

With regard to the brightness of the colours and achromatic colours, there is a preference once again for the vivid colours (11) followed by mid-bright colours (3).

2.4.3 Colours used on the floor and colour brightness preference

From the colours and achromatic colours chosen for the floor, white was the first choice (5). A preference for blue floor follows (4), while black (3) and grey (2) are on the penultimate and last choice.

Vivid colours again lead (11) while pale colours (2) and mid-bright colours were less popular (1).

2.4.4 Colours used in bedrooms and colour brightness preference

Considering the bedrooms as a whole (see Fig. 7) there were fourteen bedrooms, which represented 84 faces. (26) of these faces are white, which is an achromatic colour, followed by blue (22), black (11), green (6), violet (6), red (5), grey (4), yellow (3), and orange (1).
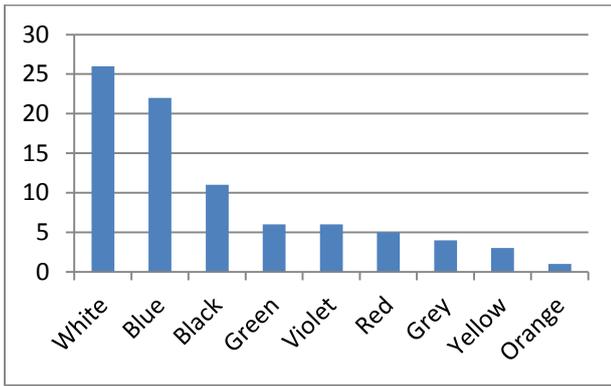
Figure 7: *Number of occurrences of each colour*

2.5 Favourite colour

The second question considered teenagers' favourite colours (with the same participants) and in this case, red and blue were each preferred 3 times, followed by white (2). Purple and green were preferred once. There were 4 teenagers who did not have a favourite colour.
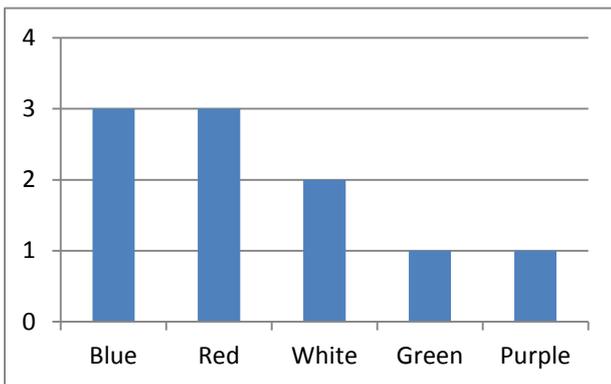

Figure 8: *Number of occurrences of teenagers' favourite colours*

2.6 Discussion

2.6.1 White walls, ceilings, floors and favourite colour

Teenagers' favourite colour for the walls was blue, while white was the preferred colour for both ceiling and floor. Considering the bedroom as a whole (colours used on the walls, ceiling, and floor), it is interesting to note that the white achromatic colour featured quite significantly. It can be noticed this was a conscious choice as long as different shades of white were part of the colour choices. Boys might be influenced by societies' colour norms in terms of colour preference: white was the modern trend in interior design and people still copy it; white is easy to choose when one does not know what colour to choose; white is easy to match; not to mention white is often used as house paint because it is cheap. As white is still used as a wall and ceiling paint, boys might be used seeing it and that will influence their

choice (for example in this study white was the most favourite achromatic colour for ceilings because colourful ceiling are very rare). With regard to blue colour, teenagers might prefer it because their sight was to the blue sky since they were in prams. Peoples' sight-view always includes the sky. The teenagers, in colouring their rooms, might want to experiment with many different bright colours.

During the study the teenagers could choose from a variety of colours, vivid, mid-bright and pale. They appeared to prefer vivid colours to pale and mid-bright ones.

Another interesting finding is that blue and white are the only two preferred colours in both bedroom design and favourite colour. When teenagers choose colours for the bedroom design, white was the top choice followed by blue, red being the 6th choice. When they wrote down their favourite colour, blue and red were popular choices followed by white. Therefore white leads when chosen as a colour used for bedroom design while blue and red both lead as favourite colours. It is interesting to note that red is a dominant colour in teenagers favourite colours but not a preferred choice as a bedroom colour. An explanation might be the gender of the participants, all males.

These results agreed well with those found in early studies in which blue and white were always found preferred the most [*(Saito, 1996,Eysenck, 1941,Granger, 1955,Guilford and Smith, 1959)*]. Moreover, it is obvious colour preference have not evolved since a study from 1941 (Eysenck) has similar results with a study from 1996 (Saito). The present study shows the same results, even though the participants are boys.

Potential applications for the present research could be in teenagers' interior design, in HCI (human computer interaction) and in virtual games which include decorating a room for instance.

The results might not be representative (20 teenage boys) but this paper begins research in this area. Further research needs to be done with a larger number of teenagers both female and male. It would be interesting to find out if teenagers' choice of white is innate or acquired. Another interesting research would be why people generally and globally prefer blue colour.

Critique of the Method

The method chosen is a good start to examine teenagers' colour choices. Teenagers (only boys) chose colours and brightness levels for the walls, ceiling and floor without having to live in the consequences.

3. CONCLUSION

Teenage boys' favourite achromatic colour for bedroom design is white (fallowed by blue) while their general favourite colour is blue (fallowed by white). There is a connection between favourite colours and preferred colours in a bedroom, as the two top choices in both areas were blue and white.

As it was mentioned before, teenagers change their mood often and suddenly. Research shows colour has an effect on people's mood, therefore possible use of interactive colour devices could be the future in the HCI community. The colour interactivity has been researched neither in HCI, nor in interior design. Therefore, new areas are to be included in HCI for further research.

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