

# Website colour research

## Background

The design of the university website is being revised. An extended colour palette is being introduced to meet demand for increased flexibility in UoE online sites.

This research is to investigate if the extended colour palette is appropriate for online use and how it may affect perceptions of the website and the university brand values.

## Objectives

- To establish if some colours are more effective than others at conveying specific brand values
- To establish if some colours are more effective than others for specific audience types (e.g. undergraduate, postgraduate, domestic, overseas audiences)

## Methodology

Limited desk research using the internet was undertaken to find authoritative information sources relating to colour semiotics and relevant research on colour perception by different demographic groups.

Field research was carried out at the June 2014 UoE Open Day with prospective undergraduates who were asked about their preferred colour on 6 different demonstration pages of the UoE website.

## Summary

It is widely agreed that humans have different perceptions of different colours and there is even some evidence that colour can affect our physiology. Colour is therefore an important factor in creating and conveying brand values and the potential impact on a prospective 'consumer'. However perceptions vary with a great many factors, not least context, and current literature indicates that perceptions are inconsistent across age, gender or cultures.

## Conclusion

We can't definitively predict how a given set of colours will be perceived, or how effective they will be, without testing every segment of our target market. However there is a loose (unsubstantiated) consensus amongst internet sources as to the meaning of various colours (see Appendix) upon which choices could be based, with the caveat that perceptions may vary between countries/cultures.

Limited field research appears to support the fact that some colours may be more effective than others at conveying our specific brand values (although it may also simply show that our existing core colours are well recognised).

## Results

### Desk research

*Caveat:* There are a range of studies linking colour to responses in humans but their findings are limited by the sample size, the context of the study, the limited range of colours used and the difficulty of testing the complex subject of colour in isolation. There appears to be little systematic research into the use of colours in websites so most of the marketing studies reviewed related to products rather than websites.

### The importance of colour

“Color connects the product to consumers more quickly than any other identifying feature” (Akçay and Sun, 2013). People make up their minds within 90 seconds of their initial interactions with either people or products and 62-90% of the assessment is based on colour (Singh, 2006). Colour strongly influences brand image, the buyer’s decision-making process and the mood of consumers. It can also help differentiate a product and create positive or negative images about products (Grossman and Wisenblit, 1999; Singh, 2006; Akçay et al, 2012).

#### Medium

Interestingly the medium (e.g. digital display or hardcopy paper) has been shown to have little effect on the emotions or meanings that observers attribute to different colours (Suk and Irtel, 2010).

#### Context

Labrecque & Milne (2012) point out that colours have multiple associations, so context may be significant in which associations are activated in the memory and that the choice of colour in relation to competitors’ colours may allow a brand to be identified as belonging to a particular product class. Lucassen et al (2010) also found that the psychological responses to colour may be strongly affected by texture.

#### Web pages

In 2004 Gorn et al investigated the link between the colour of a web page’s background screen while the page was downloading and the perceived quickness of the download. Their findings suggest that colours that induce a more relaxed feeling lead to greater perceived quickness and that colour has consequences for users’ evaluations of a web site and their likelihood of recommending it to others. Cyr et al (2010) tested three website colour treatments for their impact on user trust, satisfaction, and e-loyalty. Results revealed that website colour appeal is a significant determinant for website trust and satisfaction (with differences noted across cultures).

### Research with specific colours

Cyr et al (2010) described how **cooler colours** such as blue and green were generally viewed more favourably than **warmer colours** such as yellow or red (Goldberg and Kotval, 1999; Latomia and Happ, 1987; Marcus and Gould, 2000). Blue is generally associated with “wealth, trust, and security” (Lichtle, 2007) and is universally liked (Carte and Russell, 2003; Meyers-Levy and Peracchio, 1995; Nielsen and Del Galdo, 1996). Alternatively, **orange** denotes “cheapness” (Lichtle, 2007). Colour also has an influence on behaviour, with blue producing stronger “buying intention’ than red (Becker,

2002; Latomia and Happ, 1987). In one study in which colour and trust were considered in the context of online banking, a preferred colour layout of the customer interface was found to significantly affect whether or not the website was considered trustworthy (Kim and Moon, 1998).

In 2007 Elliot and Maier demonstrated that a brief glimpse of **red** evokes avoidance motivation and undermines intellectual performance. However a study in the journal *Emotion* (Elliot and Aarts, 2011) found that when humans see red, their reactions become both faster and more forceful although people are unaware of the effect. According to Andrew Elliot, Professor of Psychology at the University of Rochester, red helps enhance physical reactions because it is seen as a cue for danger.

Lichtenfeld et al (2012) demonstrated that a brief glimpse of **green** prior to a creative task enhances creative performance.

Koller (2008) undertook a study of the colour **pink** and found, from a survey of 169 participants, that 76% associated pink with femininity. Pink was also associated with romance (56%), sweetness (52%), softness (51%) and love. Apparently men were less likely to make synesthetic associations for pink than women. Koller also found emergent associations of pink with fun, independence and confidence.

Bottomley and Doyle (2006) found that **functional colors** (e.g. green, blue) are more appropriate for functional products, and **sensory-social colors** (e.g. red, pink) more appropriate for sensory-social products. Brands promoting a functional image were better received in blue, while brands promoting a sensory-social image were better received in red.

### **Hue, saturation, and brightness**

Earlier research on colour suggested that hue (as in primary colours red, blue, yellow), brightness (light colours such as white versus dark colours such as black or grey), and saturation (the amount of pigment in a color) all have an effect on individual perceptions (Latomia and Happ, 1987). In 2004 Camgöz et al investigated attention responses for foreground-background colour relationships. The results showed that brightness and saturation levels are more important than hue in attracting attention. Findings showed that on any background colour, colours of maximum saturation and brightness attract the most attention (67%). The yellow-green, green, and cyan range attracts the most attention (45%), followed by the red and magenta range (30%). Blue (9%), purple (3%), and yellow (3%) rated significantly lower in attracting attention on any background colour.

In more recent research Labrecque & Milne (2012) showed that hue, saturation and value (brightness) play a role in consumer brand perceptions and that making a colour richer/duller or brighter/darker influences these perceptions e.g. if a manager wants a very sophisticated look for a brand, they should use a purple hue with a high value and low saturation.

## **Differences between target groups**

### **Different cultures**

The meaning of different colours varies across cultures and countries and consumer's choice of favourite colour varies with the product type; certain colours are preferred in different cultures (Madden, et al, 2000; Sable and Akcay, 2010; Akcay et al, 2011, Akcay 2013, Sakamoto, 2013). See also: <http://www.informationisbeautiful.net/visualizations/colours-in-cultures/>

In 2007 Gao et al studied observers from seven countries in Europe and Asia who were asked to rate colours in terms of bi-polar word pairs (e.g. soft-hard). The differences between the nationality groups were small despite different cultural backgrounds. In another study (Ou et al., 2004a) British and Chinese observers assessed colours in terms of bi-polar word pairs. The differences between the two groups were mostly small but Chinese observers tended to prefer colours that were clean, fresh or modern but not the British observers. British observers tended to associate 'tense' with active colours, whereas Chinese observers associated 'tense' with the colours that were hard, heavy, masculine, or dirty. In another study (Ou et al., 2004b) found no significant differences between UK and Chinese responses but some gender differences were found: female but not male observers tended to like colours that were light, relaxed, feminine or soft.

### **Colour-blindness**

Kaufman-Scarborough (2002) pointed out that in the US alone, c.19 million Americans suffer some form of colour-blindness. Also, Harrington and Mackie (1993) described how the eyes naturally turn yellow with age, altering people's perception of colours and so an entire market might not experience logos, advertisements or packaging in the same manner.

### **Age/gender**

In one study (Radeloff 1990) females reported a favourite colour significantly more often than males. Males preferred bright colours significantly more than females and females preferred soft colours significantly more than males.

In 2012 Akcay et al looked at colour preferences for consumer goods in different ethnic groups. They concluded that product colour is very important among young adults, more important for young adults than older age groups and more important for girls than boys.

## **Field research**

113 prospective students were questioned at the undergraduate Open Day in June 2014: 34 male, 79 female, comprising 43 Scottish students, 66 RUK students and 4 others. The students were asked about their colour preference for the UoE website from a choice of 6 mock-ups displayed on a tablet. Preferences were as follows:

Red	43	Yellow	10
Dark blue	37	Pink	1
Green/teal	22	Brown	0

The most common reasons for their choices were that 'red stands out' and 'matches other UoE colours' (red chairs, tablecloths on information desks and logo) but blue was also picked as matching the logo, looking 'classy', 'smarter', 'more Scottish' but also 'more British'.

## Appendix: common perceptions of various colours

<b>Blue</b>	<p>Allegedly the colour most preferred by men; the most popular and most common corporate colour in the U.S.; often described as calm and orderly; associated with depth, expertise and stability; symbolizes loyalty, wisdom, importance, confidence and heaven; used extensively to represent responsibility. Also religious connotations in many cultures and traditions. Perceived as cold and evil in East Asia but stands for warmth in the Netherlands; interestingly coldness in Sweden; death in Iran and purity in India. Blue denotes femininity in Belgium and the Netherlands, but masculinity in Sweden and the USA. In Iran, blue is the colour of mourning.</p> <p><b>Navy blue:</b> importance, confidence, power, and authority</p> <p><b>Darker blue:</b> intelligence, stability, unity, conservatism, trust, dignity, authority, strong and reliable, knowledge, power, integrity, and seriousness;</p> <p><b>Bright blue:</b> cleanliness, strength, dependability, coolness, energizing and refreshing.</p> <p><b>Cool blue:</b> trustworthy, dependable, fiscally responsible and secure.</p> <p><b>Light (sky) blue:</b> peace, serenity, ethereal, spiritual, infinity, health, healing, tranquillity, understanding, and softness; can be relaxed and calming, refreshing and friendly.</p>
<b>Brown</b>	<p>Evokes a sense of strength and reliability, feelings of warmth, comfort, and security; often described as natural, down-to-earth, and conventional, wholesome, but can also be sophisticated; associated with the earth, wood, and stone; conveys simplicity, durability and stability. It can also elicit a negative response from consumers who relate to it as dirty.</p>
<b>Cream</b>	<p>Ivory and cream are sophisticated colours, ivory is a calm colour, with some of the pureness associated with white, can lend a sense of elegance and calm. When combined with earthy colours like peach or brown, it can take on an earthy quality.</p>
<b>Gold</b>	<p>Associated with wealth and prosperity, illumination, love, compassion, courage, passion, magic, and wisdom; success, achievement, triumph, abundance, luxury and quality, prestige and sophistication, value and elegance; implies affluence; generous and giving.</p>
<b>Green</b>	<p>Symbolizes nature, the natural world and fertility; ecology and the environment, represents tranquillity, good luck, health, and jealousy; has a calming effect; symbolizes harmony, freshness; suggests stability and endurance, safety; can represent new beginnings, revitalisation and growth, renewal and abundance. Alternatively, green can also represent envy or jealousy, and a lack of experience. Represents danger or disease in Malaysia, envy in Belgium, love and happiness in Japan and sincerity, trustworthiness and dependability in China. In Israel, green may symbolize bad news.</p> <p><b>Deeper greens</b> are associated with wealth or prestige, while light greens are calming.</p> <p><b>Brighter greens</b> are more energizing and vibrant, while olive greens are more representative of the natural world. (Olive green is the traditional colour of peace)</p> <p><b>Dull, darker green</b> is commonly associated with money, affluence, financial world, banking, ambition, greed, and jealousy.</p> <p><b>Yellow-green</b> can indicate sickness, cowardice, discord, and jealousy.</p> <p><b>Aqua</b> is associated with emotional healing and protection.</p>
<b>Grey</b>	<p>Can sometimes be considered moody or depressing or a colour of mourning; generally conservative and formal, but can also be modern</p>
<b>Orange</b>	<p>an energetic colour; calls to mind feelings of excitement, enthusiasm, energy, vitality and warmth; often used to draw attention; associated with joy, sunshine, and tropics; represents enthusiasm, fascination, happiness, creativity, determination, attraction, success, encouragement, and stimulation; gives the sensation of heat; associated with healthy food and stimulates appetite, the earth and with autumn; viewed as gregarious and often childlike; symbolizes cheer, excitement, adventure, and good health. However, pure orange can be brass; may suggest a lack of serious intellectual values and bad taste.</p> <p>Orange (saffron) is a sacred and auspicious colour in Hinduism.</p> <p>In the U.K., orange stands for the Northern Irish Protestants and has very strong religious and political significance.</p> <p><b>Darker oranges</b> offer a sense of comfort; some are spicy, some are earthy. Dark orange can mean deceit and distrust.</p> <p><b>Lighter oranges</b> are soothing and healthy.</p> <p><b>Red-orange</b> corresponds to desire, sexual passion, pleasure, domination, aggression, and thirst for action</p> <p><b>Cheerful orange</b> evokes exuberance, fun and vitality.</p>



<b>Pink</b>	Usually associated with love, friendship and romance; thought to have a calming effect; denotes 'feminine qualities and passiveness' (sic) <b>Hot pinks</b> convey energy, youthfulness, fun and excitement. <b>Dusty pinks</b> appear sentimental. <b>Lighter pinks</b> are more romantic.
<b>Purple</b>	The symbol of royalty and wealth; represents wisdom and spirituality; can appear exotic or artificial; symbolizes magic, mystery, sophistication, spirituality, power, nobility, ambition and extravagance; associated with dignity, independence, associated with creativity and imagination. The negative meanings of purple are decadence, conceit, and pomposity. In some cultures (e.g. Thailand) it is the colour of mourning or death. Purple is the colour of love in China and South Korea. Anger and envy in Mexico, sin and fear in Japan. Purple is considered expensive in China also. In Brazil purple is perceived as symbolic of sorrow and despair. <b>Light purples</b> are light-hearted, floral, and romantic; evoke spring, romantic, sentimentality and nostalgic feelings. <b>Dark purple</b> evokes gloom and sad feelings; more intellectual and dignified; can cause frustration or give a sense wealth and luxury
<b>Red</b>	Associated with warmth/heat and comfort; creates feelings of excitement or intensity; associated with fire, energy, violence, war, strength; it enhances human metabolism, increases respiration rate and blood pressure; has very high visibility; widely used to indicate danger; can be associated with anger, but also importance and power. In some cultures red denotes purity, joy and celebration, passionate love, seduction, violence, danger, anger, rebellion and adventure Means unlucky in Nigeria and Germany, but lucky in China, Denmark and Argentina. Red is the colour of happiness and prosperity in China and may be used to attract good luck. It reflects ambition and desire in India and love in China, Korea and Japan It is often the colour worn by brides in the East while it is the colour of mourning in South Africa. In Russia red is associated with communism. <b>Dark red</b> is associated with vigour, willpower, rage, anger, leadership, courage, longing, malice, and wrath. <b>Reddish-brown</b> is associated with harvest and autumn <b>Light red</b> represents joy, passion, sensitivity, and love
<b>Silver</b>	Silver often symbolizes riches, likes gold; can be glamorous and distinguished
<b>Yellow</b>	Often described as cheery and warm; can also create feelings of frustration and anger; it communicates optimism, light and warmth; associated with joy, happiness, intellect, energy, hope and danger (but not as much as red), enlightenment and creativity, sunshine and spring; stimulates mental activity; often associated with food; sometimes connected with deceit, cowardice; effective for attracting attention; an unstable and spontaneous colour, so avoid if you want to suggest stability and safety. Certain shades seem to motivate and stimulate creative thought and energy. Represents warmth in the USA, but infidelity in France. It is associated with jealousy in Russia, but pleasant, happy, good taste, royalty in China. In Brazil yellow is perceived as symbolic of sorrow and despair. In Egypt yellow stands for mourning yet in Japan it means courage. <b>Dull (dingy) yellow</b> represents caution, decay, sickness, and jealousy. <b>Light yellow</b> is associated with intellect, freshness, and joy; also gives a more calm feeling of happiness than bright yellows.

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