The Universal Color Grid: Color Research Unbiased by Verbal Labels and Prototypical Hues

Charles Areni
University of Sydney

Catherine Sutton-Brady
University of Sydney

Colour research in marketing, particularly as it relates to branding, is limited by reliance on verbal labels to identify and categorise colours. For example, discussing associations with the colour "green" for branding food products makes little or no sense because numerous relevant associations would depend on the specific shade of green used (i.e., mint, lime, organic, etc.). Cultural differences exacerbate these issues. Kelly green might evoke national pride, religious devotion, a major sporting event, or a political party, depending on which part of the world one is collecting data. The Universal Colour Grid (UCG) is a new method in the preliminary stages of development, which can be used for investigating the relevance of colour associations for branding decisions. The UCG overcomes many of these shortcomings of contemporary approaches to colour research.

INTRODUCTION

Colour research in marketing, particularly as it relates to branding, is limited by reliance on verbal labels to identify and categorise colours. This article introduces a new method for undertaking colour research, which is being developed to overcome the biases inherent in much colour research. It begins by outlining the limitations that exist in colour research in marketing. It then presents the Universal Colour Grid, a research tool the authors are developing to more effectively undertake colour research in marketing. It concludes by presenting the academic and practical contributions of the UCG to the area of colour research.

LIMITATIONS OF COLOUR RESEARCH IN MARKETING

One of the major methodological limitations of colour research has been the reliance on verbal categories (i.e., blue, green, red, yellow, orange, etc.) to describe, measure, and manipulate colour-related variables (Abramov & Gordon, 1994). For instance, it seems intuitive that sky blue and deep blue would evoke very different associations, both within and between cultures. Referring to things associated with the colour "blue" would make little or no sense in this regard. The former might evoke national pride in Argentina or India, whereas the latter might elicit national pride in a Scot. Even presenting the more specific verbal labels "sky" blue and "deep" blue would not elicit the same associations in another

culture. To an American, the former might be associated with sunny summer days and the latter with a branch of the military or a favourite sporting team.

Perhaps some of the problem lies in the difficulty of using academic journals to communicate the results of colour research. The inherent reliance on words to communicate colour concepts may, in part, facilitate this kind of negligence. But at another level, words are simply symbols that humans have developed as labels for stimuli and concepts (Izmailov & Sokolov, 1992). The ultimate interest in colour research is with the underlying concepts. Therefore, labels like "red" are likely to be far too broad for capturing differences in hues across studies. In short, subjective colour terms are conceptually imprecise, and this has prevented the accumulation of knowledge regarding pan-cultural and cross-cultural colour associations. What is needed to overcome these kinds of limitations is an alternative "language" for colour-related variables that is independent of subjective interpretations of verbal labels.

In addition, colour associations in previous branding and product research have been treated rather vaguely, with important distinctions among them going either unnoticed or unreported. At least seven types of associations appear in the literature: (a) basic physiological and perceptual responses (i.e., heart rate, visual acuity, etc.), (b) environmental correlates (i.e., blue sky or sea, green grass or forest, etc.), (c) affective responses (i.e., anger, love, etc.), (d) affective metaphors (i.e., green with envy, yellow as cowardice, etc.), (e) national symbols (i.e., Irish green, Scottish blue, etc.), (f) specific cultural associations (i.e., "blue" laws as religious influence, "green" as a political party, etc.), and (g) general evaluative responses (i.e., "blue is my favourite colour") (Ampuero & Vila, 2006; Funk & Ndubisi, 2006; Gilbert, Martin & Kemp, 1996; Hynes, 2009; Lee & Lee, 2005; Meerum Terwort & Hoeksma, 1995; Mehta & Zhu, 2009; Sherman & Clore, 2009).

It seems likely that as one goes from (a) to (g), the nature of the corresponding associations becomes increasingly idiosyncratic, and therefore prone to more local rather than global marketing approaches. For example, the colour green is associated with restfulness (Jacobs et al, 1991) natural environments (Kaikati & Kaikati, 2004), envy and Irish national pride. Likewise, blue often connotes coolness, water and sky (Jacobs et al, 1991) depression and Scottish heritage. It is not yet clear whether associations in each category are equally likely to vary by culture and whether each type is equally relevant to international branding decisions.

A second issue is whether any colour associations that do emerge are relevant to branding decisions. Along these lines, it is important to note that not all products are created equal, or more precisely, not all aspects of a product are likely to be relevant to cross-cultural differences in colour associations. Research on product colour decisions has sometimes focused on intrinsic attributes (i.e., the colour of a new fruit drink), and sometimes on extrinsic attributes (i.e., the colour of the fruit drink can). It is not yet clear that cross-cultural differences in colour associations would have the same influence on each kind of decision. However, a tentative hypothesis is that colour associations are more relevant to intrinsic product attributes compared to extrinsic attributes or branding elements (Richardson, Dick & Jain 1994; Madden, Hewett & Roth, 2000). In other words, a black aluminium can might be alright, but if the soft drink inside is the same colour, sales are likely to be adversely affected barring a specific cultural acceptance of black drinks.

In addition, recent research suggests that cross-cultural differences are less relevant for familiar brands. In other words, Coca Cola need not worry about either the red on its label (i.e., extrinsic) or the brown colour of the product (i.e., intrinsic), but both colour decisions could influence reactions to a relatively unfamiliar brand of soft drink (Koch & Koch, 2003). Finally, colour associations are likely to have greater impact when they are directly relevant to the product or service in question. Having employees wear white carnations for a hotel chain (a symbol of death in many South East Asian countries), would not necessarily create a negative reaction among Japanese consumers. But the same symbol worn by flight attendants might well provoke fear and uncertainty among potential airline passengers because the thought of dying is salient to people who are flying 10,000 metres above the earth.

THE UNIVERSAL COLOUR GRID

The universal colour grid (UCG) offers a potential solution to the basic problem of translating what are essentially non-verbal stimuli (i.e., colours) into subjective labels (i.e., red, orange-red, blue, light blue, etc.). The UCG effectively develops a numerical "language" for describing colours and reporting key associations that removes verbal measures and descriptors from colour research. It presents respondents with a full-screen grid running the colour spectrum from blue to violet horizontally and from extremely dark hues to extremely light hues vertically. Respondents are presented with various visual stimuli and asked to use the curser to select the point on the UCG that best captures that concept. So, for example, rather than being shown a specific shade of "blue" versus "green" versus "red" etc. and being asked to indicate which colour is most closely associated with "love" (as is typically done in colour research), respondents could be shown several photos (i.e., younger male and female kissing, older male and female kissing, older male holding hands with a young boy, older woman and younger woman laughing, etc. and asked to use the curser to select the point on the UCG that most corresponds to each stimulus. The computer records the specific coordinates, and across numerous respondents, uses clustering algorithms to represent each stimulus as an ellipse or multiple ellipses, based on the locations of the observations in each cluster.

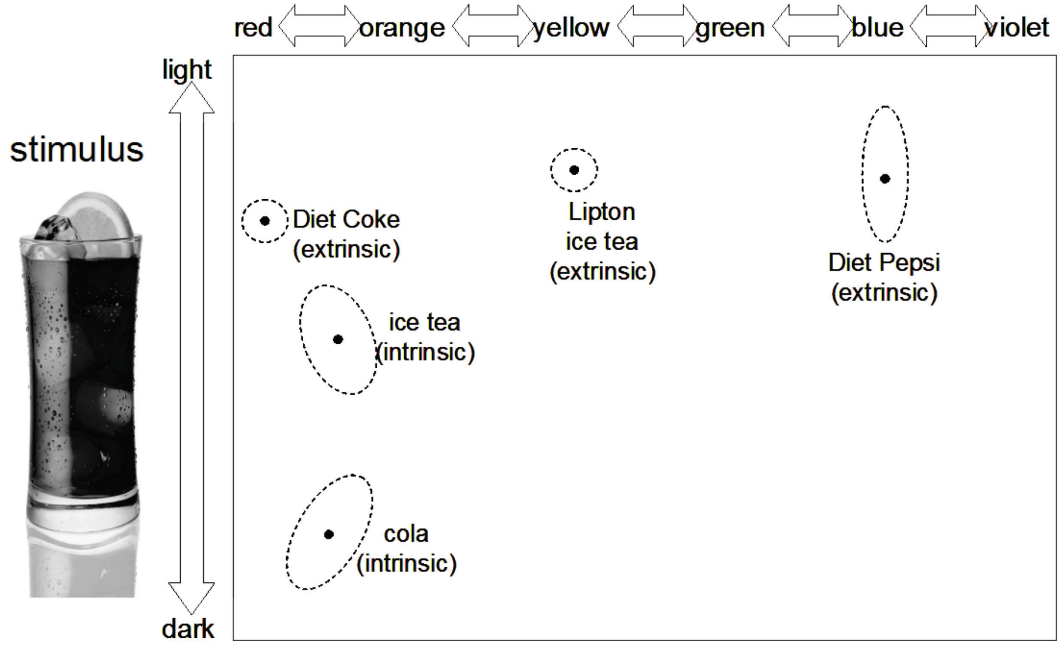
Of course, brands, generic products, and other marketing stimuli could be used in the same way. Figure 1 presents a hypothetical result. Respondents are shown a black and white photo of a glass with a soft drink, ice, and a lemon in it. They are then asked to click on the point in the UCG that most comes to mind when they think of the stimulus. It is likely that such a stimulus elicits different colour associations, but the points selected by respondents would be expected to cluster to the extent that the stimulus consistently evokes certain images. In this hypothetical example, five distinct clusters of coordinates emerge, two reflecting intrinsic attributes of the drink and three representing extrinsic branding elements. The most basic distinction is whether a respondent sees the stimulus as a diet cola or ice tea. It is likely that gender, age, region, and other demographic variables would be correlated with this distinction, and the demographic profile of each cluster can easily be captured to illustrate these kinds of patterns. After the identification of a product category, in this example a respondent either indicates the colour of the soft drink itself, or a colour associated with a dominant brand in the category.

The shape and orientation of the circles or ellipses convey additional information about each cluster. For example, respondents are quite consistent in identifying the brand cues associated with Diet Coke and Lipton ice tea. The spread along the two dimensions is small indicating consistent responses. Respondents are less consistent about the blue associated with Diet Pepsi, particularly as to how light or dark it is. It is also the case that identifying the exact colour of a diet cola and ice tea is more difficult given the larger spread of responses associated with both clusters.

Other than brief instructions to respondents, words were not necessary to generate results. The UCG not only allows for the demographic details of each respondent to be collected, but also facilitates cross-cultural comparisons of colour associations. Hence, data could be analysed according to culture or any other potentially relevant market segmentation variable, to examine whether the colour of a given brand or product concept varies according to that variable. In other words, rather than capturing only ad hoc, data-driven distinctions among respondents, the UCG could be used to test a priori, theory-driven differences.

The UCG essentially creates a new "language" for colour research that involves pictures and numerical coordinates rather than words. The coordinates of the UCG grid translate across cultures, researchers, and of course, individual studies, hence overcoming the basic limitations of contemporary methods. Although this new method could be used for a variety of colour research questions, the most obvious application in marketing is answering the question of whether a global versus local branding strategy is more appropriate, and the possible roles that colour might play in each case. If a global brand like McDonald's can be induced to drop its familiar red in certain international markets because of local colour associations, then this research topic has obvious commercial as well as academic relevance.

FIGURE 1
HYPOTHETICAL RESULTS GENERATED BY THE UNIVERSAL COLOR GRID



REFERENCES

Abramov, I. and Gordon, J. (1994) Color Appearance: On Seeing Red-or Yellow, or Green, or Blue. *Annual Review Psychology*, Vol. 45, 451-485.

Ampuero, O. & Vila, N. (2006) Consumer perceptions of product packaging. *Journal of Consumer Marketing*, Vol. 23(2), 102-114.

Funk, D. & Ndubisi, N.O. (2006) Colour and product choice: A study of gender roles. *Management Research News*, Vol. 29(1/2), 41-52.

Gilbert, A.N., Martin, R. & Kemp, S.E. (1996) Cross-modal correspondence between vision and olfaction: The color of smells. *American Journal of Psychology*, Vol. 109(3), 335-351.

Hynes, N. (2009). Colour and meaning in corporate logos: An empirical study. *Journal of Brand Management*, Vol. 16(8), 545-555.

Izmailov, C. A. & Sokolov, E.N. (1992), "A Semantic Space of Color Names", *Psychological Science,* Vol. 3(2), 105-110.

Jacobs, L., Keown, C. & Worthley, R. (1991) Cross-cultural colour comparisons: global marketers beware. *International Marketing Review* Vol. 8(3), 21-30.

Kaikati, J.G. & Kaikati, A. M. (2004) Identity crisis. *Marketing Management*, Vol. 13(1), 45-49.

Koch, C. & Koch, E. (2003) Preconceptions based on color. *The Journal of Psychology,* Vol. 137(3), 233-242.

Lee, Y.-J. & Lee, J. (2005) The development of an emotion model based on colour combinations. *International Journal of Consumer Studies*, Vol. 30(2), 122-136.

Madden, T.J., Hewett, K. and Roth, M.S. (2000) Managing images in different cultures: a cross-national study of color meanings and preferences. *Journal of International Marketing,* Vol. 8(4), 90-107.

Meerum Terwogt, M. and Hoeksma, J. B. (1995) Colors and emotions: preferences and combinations. *The Journal of General Psychology,* Vol. 122(1), 5-17.

Mehta, R. & Zhu R.J. (2009) Blue or red? Exploring the effect of color on cognitive task performances. *Science*, Vol. 323 (27 February), 1226-1229.

Richardson, P.S., Dick, A.S. and Jain, A.K. (1994) Extrinsic and intrinsic cue effects on perceptions of store brand quality. *Journal of Marketing*, Vol. 58(4), 28-36.

Sherman, G.D. & Clore, G.L. (2009) The color of sin: White and black are perceptual symbols of moral purity and pollution. *Psychological Science*, Vol. 20(8), 1019-1028.