

Bitter coffee today? Try changing the colour of your cup

November 26 2014, by George Van Doorn



We know different coloured plates can affect how food ‘tastes’ ... and now we know that the same applies to coffee. Credit: Esti Alvarez/Flickr, CC BY-NC-SA

In Australia, around [a billion](#) cups of coffee a year are consumed in cafés, restaurants and other outlets. Even Britain, a nation famous for its fondness for tea, has in recent years seen a dramatic rise in its coffee

consumption, with an estimated [70 million cups](#) drunk each day.

Given the economic incentive to keep consumers drinking coffee, café owners, restaurateurs, crockery designers and manufacturers will, presumably, be interested in anything that can help to enhance the multisensory coffee-drinking experience for their clientele.

And, in research [published last week](#) in the journal [Flavour](#) by my colleagues and I, it appears that cup colour plays a big part in the way [coffee drinkers](#) perceive the taste of their morning cuppa.

One day, at my local cafe ...

The idea behind this study came about serendipitously. A barista once told me that when coffee is consumed from a white, ceramic mug, it tastes more bitter than when drunk from a clear, glass mug. Note that these two mug types are among the most commonly used vessels to serve coffee in Australian cafés and restaurants.

My colleagues and I, then, sought to establish the validity of this claim which, to our knowledge, had not been tested before.

Although [many studies](#) have been published on colour-flavour interactions over the years, there is a lack of research on the *psychological* impact of the cups from which we drink. This paucity is surprising given, as we saw above, how many cups of coffee are drunk every day.

The notion that the colour of the receptacle could impact taste/flavour perception might relate to [work](#) by consumer studies researcher Betina Piqueras-Fiszman and colleagues, which showed that a red, strawberry-flavoured mousse presented on a white plate was rated as 10% sweeter and 15% more flavourful than when exactly the same food was

presented on a black plate.

Coffee and contrast

Taking the principal one stage further, and given the conversation with the barista, we proposed that brown may be associated with bitterness (or, perhaps, [negatively associated](#) with sweetness) and that coffee from a white mug should be rated as somewhat more bitter than exactly the same coffee when consumed from a transparent mug.

It is possible that another mechanism might affect the perception of taste. Here, if light, opaque, milky brown coffee were to be associated with bitterness, then a light blue mug should intensify the brown of the coffee as it is brown's complementary colour; as such the brown of the coffee will "pop out".

This, in turn, would be expected to elevate ratings of bitterness relative to the same coffee when served in a transparent mug.

Some famous examples of the use of this "simultaneous contrast" mechanism are Heinz's use of a greenish-blue can to set off the red-orange colour of its beans and sauce, and Cadbury's use of purple packaging to enhance the colour of its chocolate.

In one experiment, the white mug enhanced the rated "intensity" of the coffee flavour relative to the transparent mug – but given slight physical differences in the mugs used, a second experiment was conducted using identical glass mugs with coloured sleeves.

Once again, the colour of the mug was shown to influence participants' rating of the coffee. In particular, the coffee was rated as less sweet in the white mug as compared to the transparent and blue mugs.

The takeaway message

Our study clearly shows that the colour of a mug does influence the perceived taste/ flavour of coffee.

Interestingly, Dutch psychologist Ap Dijksterhuis [suggested](#) that because of the use of the word "strong" in advertising, consumers often confuse a coffee's strength or intensity with its "bitterness". In our research we found a trend in bitterness ratings that mirrored intensity ratings.

We also found that any reduction in the "sweetness" of the coffee when presented from a white mug might also be expected to increase perceived bitterness (or strength). This supports research (mentioned above) which shows brown, among other colours, is negatively associated with sweetness.

The crossmodal effect of the colour of the mug on the flavour of the [coffee](#) reported here suggests that café owners, baristas, as well as crockery manufacturers should carefully consider the colour of their mugs.

The potential effects may spell the difference between a one-time purchase and a return customer.

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