How price-effects accrue with product experience and expertise

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ARTICLE INFO

ABSTRACT

Attempting to understand how blind and sight-based judgements are variously mediated by degrees of experience and expertise, this study asks two questions. *First*: with increasing product familiarity, when do our associative processes begin to twin price with quality so that ultimately the price-cue is employed as a proxy for genuine quality? *Second*: how might the strength of this price-cue association vary across bands of relative expertise? To address these questions, we report on a blind-versus-sighted cheddar cheese tasting-room experiment to model reported utility in the presence of price information. Eight cheeses are tasted by 127 subjects and regression models estimate significant price-effects across bands of both (1) self-confessed expertise (novice, intermediate, expert) and (2) consumption experience (measured over years). In both instances of increasing expertise and experience, sight-based assessments become more correlated with price. This confirms a process of cue-conditioning. Thus, while cheaper cheddars are preferred by novices, when in the presence of price information, more experienced subjects express increasing preference for more expensive cheddars. With increasing years of experience (though not expertise) price information receptivity also appears to be built into how we taste blind; suggesting some alternate process of acquired price learning.

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1. Introduction

Classical or Pavlovian conditioning occurs when two stimuli are paired such that affect is transferred from one stimulus to another, and as such has been identified as an important mechanism in the development of hedonic preferences and behaviour modification (De Houwer, Thomas, & Baeyens, 2001). This study considers the extent to which we become progressively conditioned by the priming effects of extrinsic product cues like price and how levels of relative expertise may deepen or accelerate any such conditioning. The conditioning mechanism is part of both the conscious rational system based on verbal reasoning specific to humans and the non-conscious experience-driven system of associative learning common to both humans and animals (Epstein, 2010; Evans, 2008). Through the acquisition of experience, the intuitive fast acting thought system may be primed to solicit heuristic-type cues aimed to enable efficient and rapid decision making and maximum reward utility (Berridge & Aldridge, 2008; Simon, 1992). This associative-experiential system is hedonically motivated and affect driven, tasked to enable the brain to reach states of either pleasure or pain-avoidance more efficiently. Employing the *dopamine gating hypothesis* to describe how the brain apportions significance to certain hedonic stimuli; Montague (2006) conjectures that the apparent preference for such available cues is an evolutionary strategy adopted over millennia by most animal forms including humans for either procreation or swift extrication from life threatening situations (Montague, 2006). This theory would explain how the hereditary bias for the rapid appropriation of enabling cues was passed on by successfully reproducing hominoids. Plassmann, O'Doherty, Shiv, and Rangel (2008) have shown how this genetic predisposition for cue appropriation continues to manifest in the contemporary contexts where cues such as price convert as substitutes for quality itself (see also Erk, Spitzer, Wunderlich, Galley, & Walter, 2002).

With its stress on speedy (as opposed to meticulous) decision making, it has been shown how some heuristic-driven judgment errors become increasingly inevitable (see Meyers, 2002; Shermer, 1997). Instances of the systemic prevalence of such error-bias and the consequent failure to ascribe the true source of quality are both well documented within the literature on experimental psychology (Kahneman, 2012), the brain sciences (Plassmann et al., 2008), and even wine (Almenberg & Dreber, 2011).

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Proceeding from this body of literature, we ask whether cue-driven judgement errors are likely to increase or decrease in magnitude with increasing product familiarity and experience. With little known of how we become conditioned through the acquisition of relative experience and cue-fluency, this study poses two questions.

First: How many years of product consumption are required before our associative processes begin to twin price with quality so that ultimately we deploy the price-cue as a heuristic substitute for genuine quality? This question would address the issue of expertise acquired *passively* through the process of time as measured against a cross-section of successively increasing year-bands. Here years of consumption would represent a proxy for expertise.

Second: How does the fluency of the price-cue association differ between those who explicitly call themselves either novices, intermediates or experts?

In a recent paper by Priilaid, Sevenoaks, Aitken, and Chisholm (2013), self-confessed wine experts, when sampling wines sighted, appeared to be more affected by price information than non-experts. An earlier paper by Goldstein et al. (2008) found that, when running similar tests on blind-based scores, non-experts preferred cheaper wines, while experts were generally price-neutral. Following on from these findings, *ex ante*, this study anticipates a similar set of differential price-effects manifesting across blind and sight-based bands of relative experience. It is worth noting that the expertise construct is read here as a self-professed level of confidence regardless of time passed. Thus, whereas the first question deals with passively incurred levels of expertise acquired over time, this second question addresses a more assertively defined construct; that being a self-conferred assessment of expertise. It is these two consumptive constructs that this research seeks to consider.

In the section that follows the experimental design is presented, along with a fuller description of the dataset. Thereafter the empirical findings of the experiment are presented, with a discussion on the implications concluding the paper.

2. Material and method

In this analysis 127 subjects (56 males; 71 females) were invited to a two-stage blind-to-sighted cheese tasting. No payment was offered. The experiment followed a causal two-stage pre-experimental design format, aimed to examine a potential cause-and-effect relationship between the price-cue and experienced sighted pleasantness. In the first stage nine cheeses were sampled blind. There the only information offered to participants was the nature of the product: i.e. cheddar cheese. To dissuade subjects from guessing the line-up of the second sighted round, one of the nine cheeses tasted blind was removed and the order of the remaining eight cheeses to be sampled sighted was shuffled into a different sampling order. For the purposes of analysis, this left eight cheeses each sampled blind and then sighted. Each cheese was served in small dice sized cubes with toothpicks at room temperature.

By order of price-per kilogram, the eight cheese products sampled sighted were R64.99, R72.90, R83.30, R121.99, R136.99, R151.99, R171.99 and R192.99, respectively. (At the time, the Rand to U.S conversion rate was R8.90 to the dollar.) Typically cheddars take anything between two and 24 months to mature, depending on taste. Only two of the eight cheeses specified the length of their maturation: the R121.99 and R136.99 cheeses matured for 12 and 18 months, respectively. The remaining cheeses carried no packaged indication of their age.

Before round one, data on each participant was obtained on (a) whether they considered themselves cheese eating novices, intermediates or experts, (b) how many years they had been eating cheese and (c) how often a week they consumed the product. Details regarding these and other descriptive statistics pertinent to the study are presented in Table 1. Despite a convenience sampling technique, it should be noted that relatively few self-confessed cheese eating experts (11) were sampled. The relative scarcity of experts is not uncommon.

Within levels of self-confessed expertise, taste samples vary between $n = 592$ for novices (8×74), $n = 336$ for intermediates (8×42) and $n = 88$ for experts (8×11). Within year-bands of product consumption, numbers again are variable: "years 1–15" $n = 304$ (8×38), "years 16–20" $n = 256$ (8×32), "years 21–45" $n = 344$ (8×43) and "years 46–70" $n = 112$ (8×14).

Each round was scored using a self-reporting eleven point Likert scale equivalent to the "five star" quality scorecard employed in publications such as the *John Platter's South African Wine Guide* (see van Zyl, 2012), which, with half-star calibrations, ranges between zero ("worst possible") and five ("best possible").

Splicing together taster information gathered from 127 self-administered questionnaires and the eight cheeses scored blind and sighted by each participant, a dataset of 1016 (8×127) cheese assessments was compiled.

With appropriate care taken to omit sighted cues relating to issues of brand, area-of-origin, fat content, months of maturation and designated retailer, and with first round blind tastes already accounted for and hence controllable in the second, no further second round procedural controls were deemed necessary. Controlling both for intrinsic merit as measured in the first blind round and for individual-subject-bias, tests were conducted to determine the potential impact of price-cues on blind and sighted scores across two sets of experience bands: relative expertise and years of cheese consumption.

3. Calculation

Analysing the Spearman correlation matrix of the entire dataset of participants (see Table 2), a strong positive correlation is observed (0.48, $p = 0.00$) between the blind and sighted ratings. Surprisingly perhaps, the all important overall price-to-sighted correlation is weak, negative and insignificant: -0.03 ($p = 0.40$). The remaining correlations against the sighted variable are also weak and, but for the sighted correlation against years of eating (-0.09, $p = 0.00$), also all insignificant. Additionally, it should be noted that the correlation between blind scores and price (-0.06, $p = 0.06$) is weak and negative (though statistically strong), suggesting (1) the possibility for these two variables to contribute explanatory power to sighted scores without multi-collinearity and (2) that in the main, respondents prefer cheaper cheddar when tasting blind.

Assuming the presence of price-to-quality heuristic errors, reading from the above, it is clear that while one might *expect* the sighted-to-price correlation to be strong and statistically significant, in the main it does not. The correlation as demonstrated is both weak and insignificant. This dynamic does change however when Spearman tests are run in the three segmentations of relative expertise: novice, intermediate and expert, and in the four segmentations on years of cheese consumption: 1-to-15 years, 16-to-20 years, 21-to-45 years and 46-to-70 years (see Table 3 for details). Within the expertise segmentations, the correlations range from -0.16 for novices, to 0.20 for intermediates, and 0.24 for experts. All correlations are significant at the 95% level of confidence. Observe here how the correlations strengthen as expertise improves. Within the segmentations on years of cheese consump-