The Quality of Price as A Quality Cue

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"Reality is merely an illusion, albeit a very persistent one"

Albert Einstein

In the lead article in this issue of the *JMR*, Shiv, Carmon and Ariely (SCA; 2005) report on a series of studies that suggest the following:

- price may exert a non-conscious influence on expectancies about product quality,
- such expectancies may have an impact on actual product performance, and
- such expectancies can also be induced through non-price information such as advertising claims about product quality.

As I will discuss in this commentary, these findings are noteworthy for three reasons. First, they are *novel*, because extant perspectives regarding how price-quality relationships operate do not envision the process SCA posit. Second, they are *provocative*, because the findings suggest, consistent with the opening quote attributed to Einstein, that perceptions can occasionally influence reality. Finally, the findings are potentially *controversial*, for they raise the specter of "hidden persuaders" that operate in a stealthy and manipulative fashion to prey on consumers' psychological vulnerabilities (Packard 1967). But first, a little contextual background.

PRICE-QUALITY REDUX

In a 1949 article in the *Journal of Marketing*, Knauth documented a hosiery retailer's "enormous" positive sales response following a price increase from $1.00 to $1.14, apparently because the higher price "suggested higher value" (Knauth, 1949, p. 8). Such anecdotal evidence of violations of downward sloping demand curves had been

observed previously (e.g., Giffen goods, inferior goods, and "conspicuous consumption", also see Scitovszky 1945), but dismissed as anomalous (Marshall 1948). Yet, evidence continued to mount that price might have attractive as well as aversive properties. In the Economics-oriented literature (Leavitt 1954; Tull, Boring and Gonsoir 1964; Gabor and Granger 1966) as well as in the emerging empirical tradition in Marketing and Consumer Behavior (McConnell 1968; Enis and Stafford 1969; Gardner 1971; Monroe 1973), it was becoming increasingly apparent that consumers frequently employed price as a proxy for product quality. By the end of the 1980s, based on an integrative review of over 40 empirical studies, the evidence for a robust (though moderate) price-perceived quality effect appeared to be incontrovertible (Rao and Monroe 1989). The theoretical basis for this perception, that higher prices were associated with higher quality, was less clear however, since the correlation between price and "objective" or actual product quality seemed to be relatively low (r = .27, Tellis and Wernerfelt 1987) and mixed – occasionally higher priced options were found to be of *lower* objective quality than low-priced alternatives in the same category (e.g., hot-air corn poppers) (Gerstner 1985). The prevailing wisdom at that time regarding positive price-perceived quality correlations relied on a cognitive miser argument: evaluating more direct (intrinsic) information about quality across a bewildering array of products, each with its own unique set of quality connoting attributes was cognitively daunting, so most consumers adopted a price-quality heuristic because it had worked reasonably well in the past (Rao and Monroe 1988; Rao and Sieben 1992). That is, consumers *consciously* chose to rely on the price *cue* to make quality judgments, because such a process was cognitively efficient.

In a parallel research stream that examined the problem of "information asymmetry" (Akerlof 1970), the argument was developed that when product quality was unobservable, sellers of high quality products needed to develop market based mechanisms to credibly communicate their unobservable high quality to buyers desiring high quality. *Signals,* which are costly (or potentially costly) expenditures, can credibly communicate unobservable high quality because a) the cost associated with the signal will only be recovered in the future once the product's true high quality is revealed, and therefore, b) a seller of low-quality products would not signal because it would not recover the cost associated with the signal once its low quality was revealed. One such signal of unobservable quality is a high price. Charging an irrationally high price is costly because it restricts demand to only those consumers who are already informed about quality (i.e., experts); in the long-run these costs of signaling would be recouped through future sales once information about high quality spread in the marketplace (Tirole 1991; Bagwell and Riordan 1991; Kirmani and Rao 2000). That is, consumers are assumed to rationally infer that, under certain conditions, it is in the firm's economic self-interest to offer only high quality products at a high price. In this approach as well, there exists a premise of substantial *conscious* calculation on the part of the consumer[1].

It is in the context of this history that the novelty of the SCA finding becomes apparent.

THE PLACEBO FINDING

A placebo (or pharmacologically inert substance) often yields therapeutic benefits because patients *expect* the inert medication to work. Employing similar logic, SCA

[1] Similarly, the conspicuous consumption perspective (Veblen 1953) invokes a consumer who consumes high-priced options to convey exclusivity, a process that implies some cogitation on the part of the consumer of high-priced options.

demonstrate that a lower-priced option yields lower objective performance relative to a higher-priced but physically identical option, because consumers expect the lower-priced option to be of poorer quality. The effect is observed for favorable versus unfavorable advertising copy as well. Specifically, subjects who consumed a product designed to enhance mental acuity performed worse at a puzzle solving task than subjects who consumed the identical product purchased at a higher price, or were exposed to less favorable advertising copy.

Two aspects of SCA's results are striking. First, because price is not integral to product performance[2], prior price-quality studies have relied on subject self-reports of quality judgments, and occasionally on choice data (McConnell 1968) to assess whether price and *perceived* quality might be correlated, little expecting that these perceptions might influence the manner in which the product *actually* performs. In the Marketing literature, therefore, the finding that price can influence objective quality and performance is a novel insight. Second, and perhaps more noteworthy is the finding that the price-quality expectation that drives differential performance is *non-conscious*. In light of the existing behavioral and information economics perspectives that are premised on a conscious information processor (whether a cognitive miser or one who employs an economically rational calculus), the observation that subjects' tendency to perform poorly after consuming a "low-priced" option disappeared when they were subtly alerted to the possibility that a non-conscious price-quality bias may be operating (see Experiment 2) adds to the novelty of the principal SCA finding [3]. This finding, when juxtaposed with the

[2] Extrinsic cues such as price, brand name and store name have generally been distinguished from intrinsic attributes (such as BHP for automobiles or fabric in a jacket) that directly impact product performance.
[3] That price recall was relatively high in all the studies, does not do damage to the SCA claim, for subjects who non-consciously employed a price-quality heuristic could nevertheless have recalled price correctly

finding in Experiment 3 that simple advertising copy can also yield differences in product performance due to the placebo effect, raises several issues that I discuss next.

IMPLICATIONS AND APPLICATIONS

The issues that are of particular interest from the standpoint of theory development and practice are: a) why and how expectancies lead to enhanced performance, b) the origin of the price-quality heuristic, c) the existence and relevance of objective quality, and d) the policy implications of the observed placebo effects.

The Missing Link

This perception → expectancy → performance pattern is consistent with research in a related domain, which examines the mental representation of stimuli that are (mis)perceived. For instance, Brochet (2001) demonstrated that wine experts tasting a white wine infused with a red food dye used terminology appropriate to red wine to describe the white wine (e.g., laudatory terms such as "plum", "spicy", as well as pejorative terms such as "thin", "hollow"), and used elaborate and flattering terminology (such as "complex", "balanced") to describe a middle of the road wine labeled *grand-cru classe*, and pedestrian terms (such as "simple", "flat") to describe the same wine labeled *vin de table* (Trillin 2002). Using functional magnetic resonance imaging (fMRI) Brochet also examined cerebral activation while subjects who were blind to color and label tasted wine, to isolate areas of the brain associated with wine tasting.

In a similar vein, McClure et. al. (2004) used fMRI to examine blind as well as brand-cued delivery of Coke and Pepsi. When subjects were blind to the brand, they displayed heightened activity in the ventromedial prefrontal cortex when tasting the

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following the experimental task, if they exerted sufficient cognitive effort. Had their price recall been poor however, the SCA claim would have been further strengthened.

product, but when tasting after being exposed to a Coke image subjects displayed heightened activation in the hippocampus, midbrain, and dorsolateral prefrontal cortex. Clearly, different parts of the brain that are associated with different functions (emotion, cognition, memory) are activated when brand information is available relative to when it is not.

It is in this area that future research can build on the SCA finding. For, while they show the link between perceptions, expectancies and performance, and rule out several plausible rival explanations for their results, it remains unclear precisely how expectancies influence performance. Is it the case that changes in expectancies result in spontaneous enhanced (or depressed) activation of cognitive (or emotional) systems that then enhance or impair performance? The neuro-physiological investigative paradigm has the potential to address this issue through fMRI or positron emission tomography (PET) based investigations, which ought to yield greater insight into underlying processes relative to paper and pencil approaches[4].

The Origin of the Price-Quality heuristic

What is the source of the price-quality belief that drives expectancies that then yield the self-fulfilling prophecy that lower-priced products will perform poorly? In light of the poor correlations between objective quality (based on *Consumer Reports* data) and market prices, consumer beliefs about price-quality relationships ought not to be positive, based on direct or vicarious experience (Tellis and Wernerfelt 1987). Yet the price-quality belief persists and has real consequences.

[4] On a more prosaic, methodological note, to minimize the effect of extrinsic cues (including color) in taste testing, it may be appropriate to use black glasses for liquids and/or use other methods to assure that subjects are unable to use visual cues for evaluative purposes.

One possible source of price-quality beliefs is advertising that fosters and reinforces these beliefs. SCA's third experiment confirms that favorable advertising copy can induce expectancies regarding quality, and can reinforce price-quality perceptions. Further, since prior usage is observed to strengthen placebo effects, favorable product experiences based on perceptions of quality are likely to reinforce and sustain expectancies in future product experiences.

This discussion suggests at least two implications. Beliefs regarding the nexus between an extrinsic cue and quality are formed and sustained through some marketing activity such as advertising, and it would be valuable to learn how and particularly *when* such beliefs are formed. For instance, are children particularly susceptible to such messages, and are they reinforced by peer pressure (see Bachman, John and Rao 1992)? Second, the formation of such stimulus → expectancy → performance linkages clearly occurs for stimuli other than the price stimulus. Brand names, store names and a host of other extrinsic cues ranging from product color, shape and sound probably yield expectancies that are then fulfilled during the person-product interaction. As noted above, neuro-physiological approaches could yield important insight on the effect of these "irrelevant" cues on product performance.

The Nature of Objective Quality

If perceptions can influence the performance of objectively identical products, is there such a thing as objective quality? Even if objective quality exists, does it matter?[5]

[5] An extreme form of relativistic philosophy (occasionally termed nihilistic by its detractors) holds that reality does not exist independent of human perception (e.g., Lincoln and Guba 1985). For instance, Collins (1981, p. 54) suggests that "…the natural world in no way constrains what is believed to be". Of course, this position is vigorously and often furiously fulminated against by adherents of more "realist" philosophies of science such as Polkinghorne (1984) who says it is "…astonishingly anthropocentric … to suppose that … quantum mechanics as we know it is a biologically induced phenomenon" (p. 66). While

Einstein's suggestion that reality is an illusion (or Lily Tomlin's more colorful observation, that "…reality is nothing but a collective hunch") suggests that objective quality may at best be elusive, and at worst irrelevant. This is provocative for it implies that, at least in product design, psychology may be more important than engineering. Within some range of performance, objectively inferior close substitutes might actually perform better because the consumer's perception of quality and associated expectation of performance will yield enhanced actual performance. This range within which perceptions trump reality is probably product specific, and an attempt to establish the range in which placebo effects can occur would be important. For example, in medical studies, the placebo effect is observed for therapies that have *zero* pharmacological efficacy, but for other product categories performance enhancement may not occur for products that are physically "inert". That is, a lawn mower with no mowing capability (much like an inert substance with no curative powers) is unlikely to mow lawns well however much consumers' expectancies might be enhanced non-consciously through the provision of extrinsic information. Nevertheless, even for lawn mowers, price and brand name may play a role in forming expectancies and thus improving performance, so long as the focal lawn mower is a reasonably close substitute for a high-quality alternative.

Just as it is important to determine the degree to which objective quality can be manipulated (i.e., the degree to which a product can be objectively inferior than a substitute and yet yield equivalent performance because of extrinsic cue driven expectancies), it would be important to determine the limits to which one can manipulate price to influence performance and demand. Beyond some point, price increases designed

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interesting and possibly germane to the general issue of the nexus between reality and perception, I am not going to pursue this line of thought any further here.

to suggest high quality might be perceived as incredible or the improvements in performance relative to price increases may diminish. Similarly, reductions in price may yield reductions in performance up to a point, beyond which the performance reductions may be arrested.

While the existing literature on placebo effects has largely focused on the differential efficacy of products that are ingested by consumers (therapeutic drugs, wine, performance enhancing substances), SCA suggest that expectations of performance may influence the performance of other kinds of products as well. For instance, they suggest that automobiles purchased at a discount may yield expectancies of lower performance and (because buyers will drive "differently") drivers of such cars will be more accident-prone. Such a speculation may be premature. Unlike the purchase of other consumer durables, automobile purchasing is notorious for the negotiation that accompanies the process. Consequently, getting a good deal (a low price) would tend to enhance utility. The degree to which expectancies of product performance would be non-consciously reduced would depend on whether the consumer attributed the low price transaction to a poor quality product or to her negotiation ability.

However, when purchasing a used car from the original owner, the problem of asymmetric information and the apprehension that one is purchasing a "lemon" might arise (Akerlof 1970). In such a case, a low price might indeed translate into lower expectancies of product quality. Whether this lower expectancy of quality will lead to expectancies of poorer road performance or higher maintenance costs (or reduced performance on some other dimension of quality) is an open question. Additionally, to the extent the buyer develops the expectancy that the car will perform poorly on the road,

s/he might also exert additional, compensatory effort in a non-conscious manner, because the consequences of poor performance on the road may be fatal[6]. Consequently, s/he might drive slower or more carefully, while a buyer with an expectancy of higher quality and performance may drive more recklessly. That improved quality on the safety dimension might lead to reckless driving is consistent with Peltzman's (1975) hypothesis and Peterson and Hoffer's (1994) empirical observation that drivers of cars with air bags report higher personal injury related insurance claims relative to drivers of belt-only-equipped cars. This result could be due to either consumer "moral hazard" (i.e., consumers drive more carelessly when they believe they are well-protected by superior technology) or "adverse selection" (i.e., high risk consumers who drive longer distances, or know they are bad drivers, might select cars that offer additional safety features). Essentially, this analysis suggests that, whether and how consumers expectancies of product performance will influence how those products actually perform will depend in important ways on *which type* of consumer selects the product that is likely to yield low expectancy of performance, *which dimension of quality* is expected to be adversely affected, and *whether and how much* that consumer compensates for the expected low performance.

Consumer Exploitation

There are many ways in which consumers can be exploited by the actions of firms. For instance, price discrimination often results in the poor, the uninformed, the elderly, children, or the uneducated, paying more for equivalent products and services

[6] In other words, motivation to succeed may lead people with lower expectations to generate better outcomes. Perhaps subjects in SCA's low price condition would have out-performed the others if there had been a monetary reward for number of puzzles solved.

ranging from sneakers to bank loans[7]. However, SCA's finding that the persuasive process is non-conscious raises the specter of the puppeteer manipulating the marionette consumer, resulting in consumer choices that are not necessarily in their best interest[8].

In addition to the standard concerns regarding consumer free will and the scope for manipulation by unscrupulous marketers, one macro-level implications of the SCA result is that product innovation (engineering improvements, technical R&D) can be less pertinent to product performance than elevating consumer expectancies of performance through the provision of appropriate extrinsic information. If this turns out to be true for certain product classes such as pharmaceuticals, the impetus to develop more efficacious therapies may decline[9]. This is a knotty problem, for while product innovation and development is clearly an important and worthwhile economic activity, if placebo effects do enhance performance in important areas such as disease prevention and cure, the role of psychologically sound but "inert" information in assuring positive product performance can be a positive one. A contingency framework that specifies when product innovation is more important for performance enhancement relative to placebo induced and expectancy driven performance enhancements would be a fruitful first step in addressing this aspect of the consumer welfare issue.

CONCLUSION

SCA offer a new, provocative, and potentially controversial perspective on the role of price and similar extrinsic information on actual product performance. They are to

[7] For instance, Packard (1957, p. 17) relates the experience of a department store that changed the price of a slow moving item from 14 ¢ ea. to 2 for 29 ¢ and enjoyed a 30% increase in sales; seemingly numerically challenged consumers were being gouged.
[8] Their finding should not be confused with the notion of subliminal persuasion. Their stimuli were clearly above the threshold level of conscious perception as confirmed by the price recall data.
[9] Perversely, the pressure to raise prices and advertising expenditures may increase.

be commended for conducting an imaginative and rigorous set of studies to establish the phenomenon and eliminate plausible rival explanations. Their conclusion, that non-conscious expectancies regarding price-quality relationships drive actual product performance is both compelling and rife with implications for research and practice. In this commentary, I have attempted to highlight issues and opportunities for further examination, including developing a:

- deeper understanding of the process that links expectancy with performance,
- broader perspective on the cues that can be used to change expectancies, and the limits (perhaps depending on product classes and consumer types) beyond which expectancies can not change objective performance, and
- framework for the firm level and public policy implications of these findings.

Renewed research interest on the broader issue of the formation of consumer beliefs and how they affect consumer behavior as it relates to product performance is fundamental to consumer behavior and marketing strategy. SCA provide an important first step in addressing one particular facet of a substantially larger research agenda that ought to provide answers to a series of compelling questions regarding human behavior.

REFERENCES

Akerlof, George (1970), "The Market for 'Lemons': Quality and the Market Mechanism," *Quarterly Journal of Economics*, 84 (August), 488-500.

Bachman, Gwen R., Deborah Roedder John and Akshay R. Rao (1992), "Children's Susceptibility to Peer Group Purchase Influence: An Exploratory Investigation," in *Advances in Consumer Research*, 19, Michael L. Rothschild and Leigh McAlister, (eds.), 463-468.

Bagwell, Kyle and Michael Riordan (1991), "High and Declining Prices Signal Product Quality," *American Economic Review*, 81 (March), 224-239.

Brochet, Frederic (2001), "Chemical Object Representation In The Field of Consciousness," working paper, General Oenology Laboratory, 351 Cours de la Liberation, 33405 Talence Cadex, France.

Collins, H. M. (1975), "Son of Seven Sexes: The Social Destruction of a Physical Phenomenon," *Social Studies of Science*, 11, Beverly Hills, CA: Sage, 22-62.

Enis, Ben M. and James E. Stafford (1969), " Consumer Perceptions of Product Quality as a Function of Various Informational Inputs," in *Proceedings*, ed. Philip P. McDonald, Chicago: AMA, 340-344.

Gabor, Andre and Clive W. J. Granger (1966), "Price as an Indicator of Quality: Report on an Inquiry," *Economica*, 46 (February), 43-70.

Gardner, David M. (1971), "Is There A Generalized Price-Quality Relationship?" *Journal of Marketing Research*, 8 (May), 241-243.

Gerstner, Eitan (1985), "Do Higher Prices Signal Higher Quality?" *Journal of Marketing Research*, 22 (May), 209-215.

Kirmani, Amna and Akshay R. Rao (2000), "No Pain, No Gain: A Critical Review of the Literature on Signaling Unobservable Product Quality," *Journal of Marketing* (April), 66-79.

Knauth, Oswald (1949), "Considerations in the Setting of Retail Prices," *Journal of Marketing*, 14 (July), 1-12.

Leavitt, Harold J. (1954), "A Note on Some Experimental Findings About the Meaning of Price," *Journal of Business*, 27 (July), 205-210.

Linclon, Yvonna S. and Egon G. Guba (1985), *Naturalistic Inquiry*, Beverly Hills, CA: Sage Publications, Inc.

Marshall, Alfred (1948), *Principles of Economics*, London: MacMillan.

McClure, Samuel M., Jiam Li, Damon Tomlin, Kim S. Cypert, Latané M. Montague and P. Read Montague (2004), "Neural Correlates of Behavioral Preference for Culturally Familiar Drinks," *Neuron*, 44 (October), 379-387.

McConnell, J. Douglas (1968), "Effects of Pricing on Perceptions of Product Quality," *Journal of Marketing Research*, 5 (August), 300-303.

Monroe, Kent B. (1973), "Buyers' Subjective Perceptions of Price," *Journal of Marketing Research*, 10 (February), 70-80.

Packard, Vance (1957), *Hidden Persuaders*, New York: McKay.

Peterson, Steven P. and George E. Hoffer (1994), "The Impact of Airbag Adoption on Relative Personal Injury and Absolute Collision Insurance Claims," *Journal of Consumer Research,* 20 (1), November, 657-662.

Peltzman, Sam (1975), "The Effects of Automobile Safety Regulation," *Journal of Political Economy*, 83 (August), 677-725.

Polkinghorne, J. C. (1984), *The Quantum World*, New York: Longman, Inc.

Rao, Akshay R. and Kent B. Monroe (1988), "The Moderating Effect of Prior Knowledge on Cue Utilization in Product Evaluations," *Journal of Consumer Research*, 15 (September), 253-264.

_____ and _____ (1989), "The Effect of Price, Brand Name, and Store Name on Buyers Perceptions of Product Quality: An Integrative Review," *Journal of Marketing Research*, 26 (August), 351-357.

_____ and Wanda A. Sieben (1992), "The Effect of Prior Knowledge on Price Acceptability and the Type of Information Examined," *Journal of Consumer Research*, 19 (September), 256-270.

Scitovszky, Tibor (1945), "Some Consequences of the Habit of Judging Quality by Price," *The Review of Economic Studies,* 12 (32), 100-105.

Shiv, Baba, Ziv Carmon and Dan Ariely (2005), "Placebo Effects of Marketing Actions: Consumers May Get What They Pay For," *Journal of Marketing Research,* 42 (November),

Tellis, Gerard J. and Birger Wernerfelt (1987), "Competitive Price and Quality under Asymmetric Information," *Marketing Science*, 6 (Summer), 240-253.

Tirole, Jean (1989), *The Theory of Industrial Organization*, Cambridge: MIT Press.

Trillin, Calvin (2002), "The Red and the White," *The New Yorker*, Aug. 19 & 26, 145-148.

Tull, Donald S., R. A. Boring, M. H. Gonsoir (1964), "A Note on the Relationship of Price and Imputed Quality," *Journal of Business*, 37 (February), 186-191.

Veblen, Thorstein (1953), *The Theory of the Leisure Class,* New York: The New American Library