

A Test of the Underlying Processes of the Price-Induced Quality Perception

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〈Abstract〉

It is well known that consumer's quality perception is strongly affected by price. Higher priced products tend to be perceived to have better quality than lower priced products although the objective product quality is the same. However, it is less known the process through which quality perception is affected by price cues. The existing literature suggests three potential hypotheses (i.e., the selective processing hypothesis, the selective interpretation hypothesis, and the representativeness heuristic hypothesis) that explain the underlying processes of the price-induced quality perception. The current research tests among the three competing hypotheses and also examines the role of consumer knowledge as a moderating factor.

An experiment was conducted to test the moderating role of the knowledge in the price-quality relationship and to investigate the underlying process. The results indicate that the influence of price on perceived quality differs between novices and experts. Expert consumers' quality perception is not significantly influenced by price and this finding is consistent with the extant literature. On the other hand, novice consumers' quality perception is affected by price and the tests on the underlying process support for the representativeness heuristic hypothesis. Novice consumers assess that a high-priced brand should have good product quality due to the belief that high (low) price brands represent better (worse) brand quality and such a representativeness heuristic occurs without involving selective attention or selective interpretation price-consistent information.

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价格引导感知价值基本过程的实证研究

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<摘要>

一般地, 客户感知质量受到价格的很大影响。尽管产品的客观质量相同, 但高价格产品比低价格产品的感知价值高。但是感知价值受到价格影响的过程并没有被深入研究。现有的文献提出了三个假设(例如: 选择过程假设, 选择解释假设以及代表性的启发假设), 这些假设解释了价格引导感知价值的基本过程。本研究检验了三个竞争假设, 对客户知识作为调节变量的作用进行了检验。

设计一个实验来检验知识在价格-质量关系中的调解作用。实验结果表明价格对感知质量的影响在“新手”和“专家”中有所不同。价格对具有较高的产品相关知识水平的专家型顾客的感知质量影响不显著, 这一发现与文献一致。另一方面, 价格影响只有很少的产品相关知识的新手型顾客的感知质量, 并且对基本过程的检验支持代表性启发假设。新手客户认为高价格的牌应该具有高质量, 主要是因为他们具有这样一种信念, 即高(低)价格牌代表更好的(更糟糕的)牌质量, 并且这种代表性启发不需要选择性注意或者价格一致信息的选择性解释就可以发生。

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A Test of the Underlying Processes of the Price-Induced Quality Perception

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Introduction

Consumers' assessment of product quality is often vulnerable to the information that is not directly relevant to quality or performance such as brand name (Dawar and Parker 1994), advertising spending (Kirmani and Wright 1989), country of origin (Hong and Wyer 1989), store image (Wheatley and Chiu 1977), and warranty (Boulding and Kirmani 1993). In addition to these extrinsic cues, price also has strong influence on perceived quality (Monroe 1973; Zeithaml 1988). That is, consumers tend to perceive that a higher-priced product has superior product quality than a lower-priced product even when more objective information delivering product quality is provided.

The price-quality relationship has been extensively investigated by researchers. Substantial knowledge about the strength

of the price-perceived quality relationship (e.g., Kardes et al. 2004 Lichtenstein and Burton 1989; Ordonez 1998) and the moderating factors on influence of price on perceived quality (for reviews, Rao and Monroe 1988; Völckner and Hofmann 2007) has been accumulated. Although a large number of empirical studies present evidence showing the price-quality relationship, the lack of theoretical explanation about the relationship has been one of concerns (Rao and Monroe 1989). Specifically, there have been few attempts to explore the underlying mechanism of the price-induced quality perception. That is, given price and other product attributes, price may influence perceived quality either indirectly (by altering attention and perception of other non-price information) or directly (without affecting the processing of product information). The primary goal of the current study is

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exploring the process through which quality perception is influenced by price. We test among three competing hypotheses – the selective processing hypothesis, the selective interpretation hypothesis, and the representativeness heuristic hypothesis – on the underlying process of the price-perceived quality relationship. We also test the moderating role of product class knowledge in the price-quality relationship.

Theory and Hypotheses

The Relationship between Price and Perceived Quality

The existing literature indicates that the consumer tends to have a strong belief on the positive relationship between price and quality. Although it is natural to expect that higher priced products have better product quality, research findings indicate that consumers overestimate the price-quality relationship (Broniarczyk and Alba 1994; Kardes et al. 2004). Empirical studies show that the relationship between price and perceived quality tends to be stronger than the relationship between price and objective quality (e.g., Lichtenstein and Burton 1989). Even when

the correlation between the price and objective quality of products in a category is negative, consumers perceive that the correlation is positive (e.g., Ordóñez 1998). Kardes et al. (2004) explains the over-assessment of the relationship as selective attention to the information that is consistent with a prior belief on the positive price-quality relationship.

Such a belief on the price-quality relationship leads to the use of price as an indicator of product quality (Dodds, Monroe, and Grewal 1991). Although price-based quality perception is very prevalent, there are several variables that moderate the strength of the effect such as presence of other non-price product information (e.g., Gardner 1971), the types of the products (e.g., Lambert 1972), and consumer characteristics (e.g., Roedder-John, Scott, and Bettman 1986). In summary, a review of the existing literature indicates that the quality perception may be biased due to (1) overestimation of the price-quality relationship and (2) heavy reliance on price cue as a quality indicator.

The Moderating Role of Knowledge

Prior research presents that consumers'

product class knowledge plays a key role as a moderator of the price-quality relationship (Rao and Monroe 1988 Völckner and Hofmann 2007). That is, novice consumers who are less familiar with a product class tend to use price as an indicator of product quality since they lack the ability to process intrinsic cues. However, expert consumers who are knowledgeable about a product category are more likely to rely on intrinsic cues, resulting in a weak price-perceived quality relationship. Thus, we expect that consumer evaluation of product quality given both price and non-price attributes will be moderated by knowledge.

H1: The effect of price on perceived quality will be moderated by the level of product class knowledge. For novices, perceived quality will be more favorable for high priced brand than lower priced brand given the same product information. Expert consumers' perceived quality will not be affected by the price of the target brand.

Underlying Process of the Price-Quality Relationship

Although the exiting literature shows

that price-quality relationships moderated by knowledge, little attention has been directed to the difference between novices and experts in the underlying process through which price affects quality perception. That is, the previous studies do not clearly present why novices' quality perception is more strongly influenced by price. Thus, our hypothesis 2 is intended to test the underlying process through which quality perception is influenced by the price cue.

The extant literature presents several possible psychological processes with regard to the underlying mechanism of the price-induced quality perception: the selective processing hypothesis, the selective interpretation hypothesis, and the representativeness heuristic hypothesis. These three competing hypotheses have different assumptionson the process through which the price affects perceived quality.

Selective Processing. When a given price activates a certain expectation about the quality (i.e., high or low quality), the expectation can lead to selective attention and elaboration of non-price attributes. According to the studies on category-based judgment, people tend to pay more

attention to the information that is consistent with the expectation. Thus, the consistent information is more often incorporated into judgment and decision making (e.g., Bodenhausen 1988).

The utilization of the price information as a quality cue may also increase the use of expectation-concordant information. That is, a higher (lower) price activates a good (bad) quality expectation, facilitating processing of information which is consistent with good (bad) product quality. The selective processing hypothesis can be tested by examining participants' memory for the product attribute in an incidental recall task. If participants pay more attention to the product attribute that is consistent with the price, then the consistent attribute information will be more likely to be recalled. Specifically, when the price is high (low), positive information is more (less) easily recalled than negative information. On the contrary, some research findings suggest that consumers pay more attention to information which is not consistent with expectation. However, such an elaboration to resolve inconsistencies occurs only when the levels of knowledge (Sujan 1985) or motivation (Sengupta and Johar 2002) are high. Thus, it is expected that

selective attention to inconsistent information is more likely for expert consumers. This may lead to a contrast effect for experts. That is, the perceived quality of the higher (lower) priced product will be even negative (positive) when the product has the features that are inconsistent with the price level. However, the findings of previous research showing that expert consumers' quality perception is less likely to be influenced by price may indicate that such a high level of attention to inconsistent information is less likely to occur.

Our discussion on the selective processing hypothesis leads to the following hypothesis.

H2a: (Selective Processing) The effect of price on perceived quality will be related to the extent to the attributes that are consistent with price are recalled.

Selective Interpretation. Alternatively, price can influence the way the product information is perceived and interpreted (Hong and Wyer 1989). That is, the attached meanings of the same information may be altered depending on the level of expectation. According to the selective

interpretation hypothesis, the quality concept (or expectation) activated by the price guides how the intrinsic information is evaluated. When a high-priced brand activates favorable concepts such as superior quality, the expected quality level, in turn, affects interpretation of the attribute information toward the expectation. The interpretation hypothesis can be tested by examining the influence of price on the rating of individual attributes.

H2b: (Selective Interpretation) The effect of price on perceived quality will be related to ratings of attributes.

Representativeness Heuristic. A judgment relying on the likelihood that one represents a category is called the representativeness heuristic (Kahneman and Tversky 1973). According to the representativeness heuristic, consumers would assess that a high-priced brand should have good product quality due to the belief that high (low) price brands represent better (worse) brand quality. Contrary to the selective attention or selective interpretation hypotheses, the representativeness heuristic does not assume its influence on attention or

interpretation of the attribute information. Instead, a belief on the overall relationship between price and quality should influence quality perception.

H2c: (Representativeness Heuristic) The effect of price on perceived quality will be related to belief about the relationship between price and quality.

A laboratory experiment was carried out to test the moderating role of knowledge in the influence of price on perceived quality (hypothesis 1) and the underlying process of the price-induced quality perception (hypothesis 2).

Experiment

Method

Participants and Design. A total of 143 undergraduate students enrolled in an introductory marketing course participated in a 2 (price: high vs. low) x 2 (knowledge: novices vs. experts) between-subjects experiment. Price was manipulated by presenting either a high or a low price for the same product.

Participants were divided into novices (i.e., lower knowledge) and experts (i.e., higher knowledge) according to self-reported knowledge level.

Stimuli. The shelf stereo system was selected as the target experimental stimuli. The price and attributes of the target stereo system brand were selected from a pretest ($n = 15$). In the pretest, the participants were presented with a set of shelf stereo system attributes and evaluated how favorable each attribute was on a nine-point scale (1 = very bad, 9 = very good). A total of nine attributes (e.g., amp power, radio channels, etc.) were selected according to the favorableness ratings (Appendix). The selected attributes consisted of three positive ($M = 6.29$), three negative ($M = 3.91$), and three neutral ($M = 4.96$) product claims. These average ratings differed significantly (p 's < .01).

The price levels of the target brand were determined from the same pretest. Participants were given a brief description of the product and were asked to write down the estimated price of the stereo system. The estimation ranged between 300,000 to 1,200,000 won (approximately 300 to 1,200 US dollars). The price

information was selected within this range. For the higher price condition, the price of the stereo system was set to be 1,050,000 won (1,050 USD) for the lower price condition, 450,000 won (450 USD).

In addition to the target category, descriptions of three non-target brands were created (PC, cell phone handset, automobile). The price and attributes of the non-target brands were determined on the basis of the product descriptions obtained from advertisements.

Procedure and Measures. Participants were run in groups of approximately 30 in a classroom. The experiment coordinator informed the participants that the study was intended to explore how consumers evaluate product quality. The participants were told that they would evaluate the quality of four different brands that would be introduced by major manufacturers within the next six months. Then, participants were randomly given one of the two versions (high vs. low price) of the stimulus booklets. The first page of the booklet contained an instruction page. And the next four pages included descriptions of four brands including the target stereo system brand. The product descriptions were randomly

ordered. Each product description page included the hypothetical model name, price (MSRP), and nine product attributes, and the measure for perceived product quality. Perceived quality of the presented brands were measured on a 9-point scale (1 = very poor quality, 9 = very good quality).

After the participants finished the first booklet, a short filler task followed. Then, the participants were given a second booklet containing measures for attribute recall, attribute ratings, strength of the belief on price-quality relationship, perception of the target price, product class knowledge, and demographics. Recall was measured by asking the participants to write down all the information they remember of the stereo system brand's attributes. The numbers of recalled positive, neutral, and negative attributes were counted. The recall measure was followed by measures for ratings of the attributes. Participants were presented with nine statements about the stereo system product. These statements were reformed from the nine original attribute descriptions. For example "CD player's music selection time: 0.7 second" was changed to "The music selection time of the CD player is fast." Agreement with

each statement was measured on 9-point Likert scales (1 = strongly disagree, 9 = strongly agree). We also measured strength of the belief on the overall price-quality relationship using a 9-point scale (1 = not related at all, 9 = very closely related).

Perceived price of the stereo system brand was measured on a 9-point scale (1 = very low, 9 = very high price). Consumer knowledge about the stereo system was measured on two 9-point scales (Cronbach's alpha = .92). The participants rated their self-assessed familiarity and product experience. Responses to these questions were averaged to form the knowledge index. After completing all the required tasks, the participants were thanked and dismissed.

Results and Discussion

Participants were split into novices ($n = 64$) and experts ($n = 79$) according to their average knowledge score (median = 5.0). First, we tested the effects of knowledge and price on the perceived quality by using an ANOVA test (H1). Then, we tested among the three

competing hypotheses (H2) on the underlying process.

Manipulation Checks

A 2 (price) x 2 (product knowledge) ANOVA on the price perception indicated that the main effect of price was significant ($M_{Low} = 4.50$ vs. $M_{High} = 5.86$ $F(1, 139) = 50.41, p < .001$), showing that the price manipulation was successful. The main effect of knowledge was not significant ($F(1, 139) < 1.0$), but a two-way interaction was significant ($F(1, 139) = 7.61 p < .01$). Cell mean contrasts were conducted to further analyze the significant two-way interaction. Although the difference by the price manipulation was significant for both experts and novices, the pattern indicates that the

difference between the high and low price conditions was greater for the high knowledge condition ($M_{Low} = 4.25$ vs. $M_{High} = 6.14$ vs.; $F(1, 139) = 48.83, p < .001$) than the low knowledge condition ($M_{Low} = 4.75$ vs. $M_{High} = 5.58$; $F(1, 139) = 9.46, p < .01$).

Tests of Price-Induced Quality Perception (Hypothesis 1)

The perceived quality of the stereo system product was analyzed by a 2 (price) x 2 (product knowledge) ANOVA. The results showed that no main effect was significant (F 's < 1.0). Only the two-way interaction between price and knowledge was significant ($F(1, 139) = 6.83, p < .01$). Separate planned contrasts were conducted for novices and experts (Figure 1).

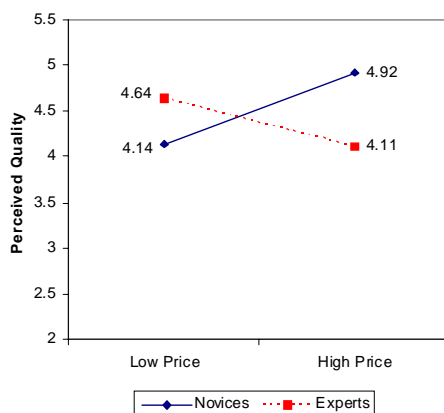


Figure 1. Perceived PRODUCT Quality as a Function of Price and Knowledge

Novice consumers' quality perception was significantly more favorable for the high priced brand ($M = 4.92$) than the low priced brand ($M = 4.14$; $F(1, 139) = 4.97, p < .05$). For experts, however, there was no significant difference between the high ($M = 4.11$) and low ($M = 4.64$) price conditions ($F(1, 139) = 2.23, p > .28$). The result indicated that novice participants perceived that the product with higher price has better quality than that of

the product with lower price although they received the same product information. However expert participants were not affected by the price information. This finding supports hypothesis 1 and is consistent with the previous studies showing that consumer product knowledge or product class familiarity determines the strength of the price-perceived quality relationship (e.g., Gardner 1970; Rao and Monroe 1988; Völckner and Hofmann 2007).

Tests of Underlying Processes (hypothesis 2)

We tested the underlying process of the price-induced by examining recalled

attributes (i.e., selective processing), rating of attributes (i.e., selective interpretation), and the belief on price-quality relationship (i.e., representativeness heuristic). The tests were conducted in two different ways. First, we tested whether the pattern of the result was consistent with that of perceived quality. Second, we also tested whether the relationship between perceived quality and a specific measure indicating each hypothesis was stronger for novices than experts. The results are presented in Table 1.

Selective Processing (H2a). The selective processing as a key underlying process was tested by the number of

TABLE 1. RESULTS OF EXPERIMENT

	Novices		Experts	
	Low Price	High Price	Low Price	High Price
Perceived Quality	4.14 (.28)	4.92 (.24)	4.64 (.22)	4.11 (.25)
Attribute Recall				
Positive attributes (1)	0.43 (.14)	0.36 (.12)	0.68 (.12)	0.74 (.13)
Negative attributes (2)	1.18 (.17)	1.68 (.15)	1.39 (.14)	1.66 (.15)
Neutral attributes	0.61 (.13)	0.67 (.12)	1.00 (.10)	0.83 (.12)
Selective attention: (1) - (2)	-0.75 (.19)	-0.81 (.16)	-0.71 (.15)	-0.91 (.17)
Attribute Evaluation Rating	5.03 (.12)	4.92 (.10)	4.82 (.10)	4.75 (.11)
Perceived P-Q Relationship	5.46 (.35)	5.89 (.31)	5.87 (.27)	5.51 (.31)

NOTE. – Standard errors are in parentheses.

recalled attributes. It is expected that if the quality perception is made through selective processing, the information that is consistent with the given price will draw more attention, resulting in a greater number of recall.

A series of 2 x 2 ANOVAs on the recall of positive, negative, and neutral brand attributes were conducted. In all analyses, only the main effect of product class knowledge was significant for the number of positive ($F(1, 139) = 6.31, p < .05$), negative ($F(1, 139) = 5.21, p < .05$), and neutral ($F(1, 139) = 5.68, p < .05$) attributes. These findings are consistent with the previous studies showing that the level of comprehension and recall of newly learned information is higher for experts than novices (e.g., Alba 1983). However, neither the main effect of price nor the interaction was significant in all analyses (all F 's < 1.0). These findings do not support the selective processing hypothesis since the pattern was not consistent with that of perceived quality.

We also tested the effects on the selective attention index which was operationalized as a difference between the number of positive attribute recall and the number of negative attribute recall.

The result showed that no main or interaction effect was significant (F 's < 1.0). This finding also disqualified the selective processing hypothesis which predicts that the index will be more positive for the high (vs. low) price condition, especially for novices.

As an additional test on the selective processing hypothesis, a regression analysis was conducted to examine whether the strength of the relationship between selective processing index and perceived quality is moderated by product class knowledge. The predictor variables were knowledge dummy (0 = low vs. 1 = high), the selective attention index, and an interaction. The dependent variable was perceived quality of the target brand. The main effect of selective attention was significant ($\beta = .44, SE = .18; t = 2.46, p < .05$). However, neither the main effect of knowledge ($\beta = -.32, SE = .31; t = -1.04, p > .30$) nor the two-way interaction ($\beta = -.20, SE = .24, t = -.81, p > .42$) was significant. These findings imply that perceived quality is positively related to memory for positive (vs. negative) product attributes. However, the insignificant two-way interaction indicates that the selective processing does not explain the influence of price on

perceived quality which is moderated by product class knowledge.

Selective Interpretation (H2b). According to the selective interpretation hypothesis, it is expected that the evaluative ratings of product attributes are more (less) favorable for high (low) priced brand. A two-way ANOVA was conducted on the average evaluation ratings of the nine attributes (i.e., selective interpretation index). Only the main effect of knowledge was marginally significant ($F(1,139) = 3.23, p < .08$), indicating that the overall attribute evaluation tended to be more favorable for novices than experts ($M = 4.97$ vs. 4.78). No other effect was significant (F 's < 1.0). Thus the result was not consistent with selective interpretation hypothesis.

The results of a regression analysis did not support the selective interpretation hypothesis either. Only the main effect of the selective interpretation index was significant ($beta = 1.05, SE = .28; t = 3.69, p < .01$), indicating that evaluation of attributes is more favorable when the perceived quality level is high. However, neither the main effect of knowledge ($beta = 1.02, SE = 1.87; t = .55, p > .58$) nor its interaction ($beta = -.22, SE = .38; t = -.57, p > .56$) was significant, rejecting

the selective interpretation hypothesis.

Representativeness Heuristic (H2c). The use of the representativeness heuristic was tested by examining the effects on the strength of the belief on the overall relationship between price and quality (i.e., price-quality index). Note that the perceived price-quality relationship is knowledge developed through a person's experiences. Thus, it is expected that the perceived price-quality relationship is not affected by the manipulation of the price or knowledge of a specific product class. As expected, a two-way ANOVA revealed that no main or interaction effects were significant (F 's $< 1.64, p$'s $> .20$).

The results of a regression analysis supported the representativeness heuristic hypothesis. The main effect of the price-quality index was significant ($beta = .32, SE = .10; t = 3.36, p < .01$), but the main effect of knowledge was insignificant ($beta = 1.24, SE = .79; t = 1.57, p > .12$). More importantly, the two-way interaction between was marginally significant ($beta = -.25, SE = .13; t = -1.88, p < .06$). This finding indicates that the influence of the belief about the price-quality relationship on quality perception is stronger for novices than experts.

General Discussion

The results provide substantial evidence showing that product class knowledge moderate the effects of price information on brand evaluation. Expert consumers' evaluation of the target product was not affected by the price information, whereas novice consumers' quality evaluation was more favorable when the price was higher than lower. This finding is consistent with Rao and Monroe (1988). These results support that novices and experts differ in the utilization of information in product evaluation (e.g., Sujan 1985). Expert consumers, who have substantial ability to process product-related information, evaluate the product using product-related information. On the other hand, novice consumers, who lack ability to process information, rely on non-intrinsic information such as price.

Tests on the underlying processes explain why novice consumers are more strongly influenced by price information. Novice consumers, compared to experts, rely mostly on their belief about the price-quality relationship in assessing the quality of a product. The results, however, did not support indirect effects of price because price level did not influence attention to (in)consistent information or the

interpretation of the attribute information.

Our finding is not consistent with some of the previous studies testing the underlying process of the influence of extrinsic cues. For example, Bodenhausen (1988) tested the influence of stereotypes on person judgment and the results supported selective processing hypothesis. The study by Hong and Wyer (1989) on the influence of the country of origin information supported the selective interpretation hypothesis. The difference from the previous studies may be due to the moderating effect of the knowledge. We found a significant price-quality relationship only for novices who lack ability to process attribute information, weakening the potential influence of selective processing or interpretation of the attribute information.

A stronger test on the underlying process (H2) may be conducted by a series of mediation tests. However, the experimental setting did not permit the mediation test using the method proposed by Baron and Kenny (1986) or a structural equation modeling because the strength of the price-quality relationship (i.e., the representativeness heuristic index) is not expected to be affected by the manipulated independent variables. Thus,

this does not satisfy the condition to conduct a mediation test (Baron and Kenny 1986). A future study that enables such mediation tests should present stronger evidence in understanding the influence of price on quality perception.

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APPENDIX

Target Brand Attributes

Valence	Attributes	Mean Rating
Positive	Speakers: Tractix Horn Technology designed for your AV system	6.60
Positive	Frequency Response: 20Hz - 20,000Hz which is ideal for music	5.87
Positive	CD player's music selection time: 0.7 seconds	6.40
Negative	Cassette Deck: drive error rate is .18cm per minute	3.73
Negative	Sound Distortion: 0.07%	4.33
Negative	Signal-to-Noise ratio: -72dB	3.67
Neutral	Amplifier: 80w maximum power	5.27
Neutral	Turn table with straight tone arm	4.87
Neutral	A, B, and A+B speaker selection switches	4.73