Perceived Quality and Predicted Price: Use of the Minimum Information Environment in Evaluating Apparel

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Abstract

Consumers use many cues in forming perceptions of price and quality of apparel. The environment in which a cue is presented has been shown to be influential in its interpretation. The concept of the minimum information environment (MIE) is introduced and investigated. The MIE for apparel includes legally required labeling information, vendor name, and brand name. Subjects (40 female junior and senior Retail and Textiles and Clothing majors, enrolled in an apparel course at a midwestern university) evaluated quality and estimated the price for four identical sweaters on which the MIE had been manipulated. A direct, positive relationship between price and quality ($p < .0001$) *was found with store type/prestige* ($p < .0280$) *and fiber content* ($p < .0001$) *appearing to influence predicted price primarily through effects on the perception of quality. No effects due to country of origin and care requirements could be detected on either predicted price or perception of quality.*

Both intrinsic and extrinsic cues are used by consumers in forming perceptions of product quality (Olson & Jacoby, 1972). Intrinsic cues, such as the physical composition and design of a product, should and usually do influence the perception of quality. In addition to intrinsic cues, extrinsic cues, such as advertising, brand name, presentation, and vendor, have been shown to be important in the formation of perceptions of price and quality (e.g., Behling & Wilch, 1988; Davis, 1987; Jacoby, Olson, & Haddock, 1971; Laird, 1932; Sternquist & Davis, 1986).

The relative importance of a cue in consumer perception formation is influenced by many factors. These factors can be classified into three major groups:

A. the environment in which a cue is presented,
B. characteristics of the consumer/perceiver, and
C. characteristics of the category to which the product belongs[1].

The environment in which a cue is presented (A) includes the physical environment, the information environment (i.e., the total combination of cues, both intrinsic and extrinsic, available to the consumer), and the reference environment (i.e., the context of use or purchase in which the consumer makes a judgment and the meaning of the cues at a specific point in time). Although a variety of cues may be presented, use of each cue is dependent upon characteristics of the individual consumer/perceiver (B). Consumer/perceiver characteristics determine how receptive each consumer will be to a specific cue and, to some extent, even the meaning of the cue. The consumer's awareness of an individual cue, the consumer's ability to detect quality variation (Lambert, 1972), the consumer's product knowledge (Rao & Monroe, 1988; Valenzi & Eldridge, 1975), and the consumer's socioeconomic group (French, Williams, & Chance, 1972) are among the characteristics that appear to influence the use and meaning of a cue; other variables may also be influential. Characteristics of product categories (C) that may influence the relative importance of cues include the relationship between the cue and objective quality within the category and the level of variability of the cue and of quality within the category (Rao & Monroe, 1989). The majority of research on perception of quality has concentrated on detecting characteristics of consumers that influence the perception of quality and on observing the effects of manipulating the information environment, particularly the presence or absence of price.

This paper focuses on consumers' use of cues within the information environment in which perceptions of apparel price and quality are normally formed and on the relationship between predicted price and perceived quality. Research has repeatedly shown that altering the information environment changes the relative importance of a cue in the

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[1]These groups are a generalization and extension of the groups presented by Zeithaml (1988) for factors that affect the use of price as a quality indicator.

perception of quality. This point has most clearly been demonstrated in the relationship between perceived quality and price. When price is provided in the absence of other cues, a relatively strong, positive relationship is generally found between it and perceived quality; however, the importance of price is usually found to decrease when other cues are provided (see Olson, 1977; Zeithaml, 1988, for reviews of price/perceived quality research). Thus it appears to be important when studying the perception of price and quality to do so within the information environment that is normally available to the consumer. In the case of apparel, this information environment comprises, at the minimum, the garment itself, the brand name, the vendor's name, and legally required labeling information: fiber content, country of origin, care procedures, and manufacturer's name or identification number such as RN (registered number).

These cues have been studied alone or in combination with each other, but rarely has the entire "minimum information environment" (MIE) been studied, either by itself or with other cues; no research was found in which an actual garment was evaluated within the MIE environment. Martin (1971) and Davis (1987) studied consumers' selection of information in making apparel purchase decisions, using behavioral process techniques. The information environments offered by both Martin and Davis included the MIE for their respective time periods (except for the garment itself and, in Martin's case, brand name), as well as additional information such as prices, department where sold, and salesperson's evaluations. Martin gave his subjects a line drawing of a dress and then monitored their selection of additional information and the effect of that information on their purchase decisions. He found that the five most influential cues were price, color, fiber content, brand name, and vendor, in declining order of importance. Davis followed a similar procedure in two separate studies in which subjects were asked to evaluate quality and fashionability of the stimulus item in addition to making a purchase decision. The subjects were told they were to purchase a white blouse, but they were not given a drawing of the garment; *style* was one of the cues that they could choose. When the subjects were asked to evaluate quality, the cues most frequently selected, in declining order of frequency, were style, price, vendor, fabric swatch, and fit. When they were asked to rate fashionability, the most frequently selected cues were style, price, fit, fabric swatch, and care, again in declining order of frequency.

Other researchers have studied the influence of individual MIE cues on the perception of apparel quality and on the formation of purchase decisions. The importance of country of origin has probably received the most attention recently, but findings are equivocal. In a phone survey, Dickerson (1982) found that consumers said they preferred domestic apparel because they perceived imports to be of lower quality. Davis (1987) found that country of origin was the sixth and the eighth most frequently chosen cue when subjects were asked to evaluate quality and to rate fashionablilty, respectively. Sternquist and Davis (1986), however, could not detect an effect of country of origin on the evaluation of sweater quality. Vendor image, or prestige, has consistently been found to be influential in the evaluation of apparel quality (e.g., Andrews & Valenzi, 1971; Sternquist & Davis, 1986). Brand name also has consistently been shown to be influential in the perception of quality (e.g., Behling & Wilch, 1988; Davis, 1985). However, Behling and Wilch found that brand is influential only if the subject is familiar with the particular brands being tested. The importance of fiber content and care information to consumers has been suggested by Sproles' (1977) work. He reported that 92.3% of the consumers he interviewed said that care information was always important in their decision to purchase an apparel item; in the same group 65.2% said that fiber content was always important in purchase decisions.

In contrast to quality perception, consumers' perception of prices and the factors that influence this process have received much less attention. Only Sternquist and Davis (1986) have directly studied this topic with apparel. They investigated the influence of country of origin (Korea vs. U.S.A.), vendor prestige, and perception of quality on consumers' predictions of prices. A nonadditive positive relationship of quality and vendor prestige to price was detected (there was a strong interaction between vendor and quality). No effect due to country of origin was detected.

Market surveys, however, indicate that differences in retail prices do exist based upon extrinsic MIE cues. At least two studies have shown that, for items of comparable quality, retail prices for Asian-produced apparel (with the exception of items produced in Japan) are lower than for domestically produced apparel (Cline, 1979; Dardis, Spivak, & Shih, 1983). Also, a tentative relationship between vendor type and the degree of correlation between objective quality and price has been shown by Geistfeld (1982); the correlation between objective quality and price appears to be higher for specialty stores than for other types of stores.

Objectives

The MIE has changed since Martin's (1971) study; care labeling is now required, and the requirement for country of origin labeling has been extended to domestically produced as well as imported garments. Another factor that may affect consumers' use of the cues is that the textile/apparel industry has mounted an aggressive campaign to influence consumers' perceptions of the quality of imported versus domestically produced textile products. Davis (1987) included all of the current MIE cues in her studies; however, fiber content and country of origin were confounded because they were provided under one information selection identified as "neck label."

Therefore, this study has been designed to examine the importance of the current MIE on consumers' perceptions of quality and price. The specific objectives of the research reported here were

1. to determine if consumers perceive quality differences as a result of the MIE cues: care requirements, country of origin, fiber content, and store type/prestige;

2. to determine if consumers predict price differences as a result of the MIE cues: care requirements, country of origin, fiber content, and store type/prestige; and
3. to determine the relationship between perceived quality and predicted price and any effect of store type/prestige on this relationship

when the cues are presented and evaluated within the total MIE. All MIE cues were used except brand name and identification number. Brand name was not included as one of the cues because, as previously noted, it has been shown to have an effect only if the consumer is familiar with the brand. By not specifying brand name the results have greater generality. RN was also omitted. Since most RN's are meaningless even to experts, it was assumed that the effect of RN would be neutral.

Method

Subjects were asked to evaluate the quality and to estimate the price paid for four identical sweaters. A different hypothetical profile of the MIE cues was attached to each sweater on a hangtag; all other labels were removed from the sweaters. Subjects viewed the sweaters sequentially and rated quality and estimated price for each sweater before proceeding to the next one.

Subjects

A convenience sample of 40 junior and senior female Retail and Textiles and Clothing majors, enrolled in an apparel industry course at a major midwestern university, participated in the study during Spring semester 1988. Participation was entirely voluntary and did not affect the students' grades; all students present on the day of the study participated. The subjects were told only that they were participating in a study of quality evaluation.

Stimulus Items

Eight identical 100% cotton, ladies, size medium, brown "fatigue" style sweaters were used in the study. They were purchased for $9.97 each from a Lands' End (a catalog company that specializes in outdoor wear) outlet store; the original catalog price was $27.50. The sweaters were domestically produced and carried the second care label displayed in Table 1. Although purchased at an outlet, the sweaters were first quality.

Sweaters were chosen for the study because they are items that students, both male and female, are likely to have purchased. The fatigue style, in particular, was chosen because it is a classic style that is sold by a wide range of retailers at a relatively wide range of prices, can be made of a variety of fibers, and can carry a variety of care procedures. At the time the sweaters were purchased, similar styles were available both in the store and through the catalog of several mass merchandisers and outdoor specialty stores; prices ranged from $19.00 to $39.00. Sweaters were inspected for obvious flaws and differences at the time of purchase to ensure that they were virtually identical.

Identical sweaters were used so that no expert evaluation of comparable objective quality needed to be made. Some authors have questioned whether the concept of objective quality even has any meaning (e.g., Maynes, 1976; Sproles, 1977). Although some individual attributes can be objectively tested, the quality of a product depends not upon an additive combination of the level of each attribute but upon a weighted combination based on the importance of each attribute in the use of the product. This weighting varies from individual to individual, and, at least for some products, it has been shown to vary substantially between groups of experts and consumers (e.g., Bonner & Nelson, 1985; Zeithaml, 1988). Use of identical sweaters, on the other hand, presents the risk that subjects will become suspicious that the label is the experimental variable. However, to use different sweaters, a subjective judgment based upon "expert" weighting of the various attributes would need to be made. Any difference between expert weighting and consumer weighting might result in a more serious bias than that introduced by using identical sweaters.

MIE Cue Levels

Two levels were used for each MIE cue; these are displayed on Table 1. The levels for each variable were chosen to represent the extremes of that variable's range for fatigue type sweaters on the market at the time of the study. Fatigue sweaters were found primarily in mass merchandise and outdoor specialty stores and catalogs; none were found in discount stores. The names of the stores that offered the lowest- and the highest-priced sweaters were used as the two levels for vendor. The care procedures used represented the most restrictive and the least restrictive labels found on fatigue type sweaters. The fiber content levels used were the two most commonly found on "cotton" type sweaters. One level for country of origin was domestic, and the other was a high volume Asian exporter to the U.S.

Table 1. Quality cues, type, and specific levels.

Cue (factor)	Type	Factor level
Care	Intrinsic	1) Machine wash, warm. Tumble dry, low. No bleach 2) Hand wash, cool. No wring or twist. Block to dry flat. No bleach.
County of origin	Extinsic	1) U.S.A. 2) Hong Kong
Fiber content	Intrinsic	1) 100% cotton 2) 55% acrylic/45% cotton
Place purchased	Extrinsic	1) L.L. Bean 2) Sears & Roebuck

Design

The experimental design used was an incomplete block design in which the subjects were the blocking units. An incomplete block design was used because it was decided that each subject should not evaluate all 16 (2^4) combinations, or treatments, which resulted from the four

MIE cues or factors: care, country of origin, fiber content, and place purchased, with two levels for each. Having subjects evaluate too many products may lead to overload and thus to unreliable results (Wheatley & Chiu, 1977), and subjects are more likely to realize that all the products are identical if they view 16. Therefore each subject evaluated a total of four experimental units.

Labels, or treatments, were allocated to each block according to a fractional factorial plan; Figure 1 displays a sample label. The specific plan was chosen to maximize the precision of the main effect estimates and the precision of the interaction estimates that included care procedures; other interactions were nil by assumption. Perreault and Darden (1975) suggested that this type of research should be most concerned with main factors effects, although this view is apparently not universal (e.g., Jacoby et al., 1971).

Place purchased: L.L. Bean

Made in the U.S.A.

100% cotton

Machine wash warm
tumble dry, low
No bleach

Figure 1. Sample label.

Procedure

The sweaters were evaluated in private viewing booths. Two groups of four booths were used; a total of eight subjects participated simultaneously. Subjects were randomly assigned to a group and to an initial sweater. The group number and the initial sweater number were noted on the subject's questionnaire (a copy of the questionnaire used in this research is shown in Figure 2). Before beginning the exercise, the paragraph at the top of the questionnaire was read to the subjects. Subjects were given one minute to view each sweater and then rotated to the next sweater in the group until all four sweaters in the group were evaluated. In the process of evaluating four sweaters, each subject evaluated both levels of all four MIE cues. Labels on all sweaters were changed between each group of subjects; subjects within a group of four evaluated the same set of labels.

Group #_________ Begin with sweater #_________

In this study, you will evaluate the quality of 4 sweaters and estimate the price of each one. All labels have been removed from the sweaters and replaced with a single hangtag in order to expedite your inspection. You will have 1 minute to examine each sweater; the entire exercise will take approximately 5 minutes. After you have inspected each sweater, rate its quality and estimate its purchase price. To designate the quality, circle one of the numbers from 1 to 5 below, 1 being the *lowest* quality and 5 being the *highest* quality. Write your estimate of the price on the line provided.

	Quality Rating	
	lowest highest	
Sweater #1	1 2 3 4 5	Estimated price ______
	lowest highest	
Sweater #2	1 2 3 4 5	Estimated price ______
	lowest highest	
Sweater #3	1 2 3 4 5	Estimated price ______
	lowest highest	
Sweater #4	1 2 3 4 5	Estimated price ______

Figure 2. Questionnaire.

Results

Differences in perceived quality and predicted price were analyzed using analysis of variance with subject as the blocking factor. Tables 2 and 3 show the ANOVA results for perceived quality and predicted price, respectively. Significant differences ($\alpha = 0.05$) in perceived quality were detected for fiber content ($p = 0.0001$) and for vendor prestige/type ($p = 0.0280$); significant differences in predicted price were detected for vendor prestige/type ($p = 0.0001$) and for fiber content ($p = 0.0190$). The means of perceived quality and predicted price are shown in Table 4 for these two cues. Quality ratings for sweaters that were labeled 100% cotton averaged 14.1% higher than for sweaters labeled cotton/acrylic; however, predicted prices for the all-cotton sweater averaged only 5.8% higher than for those bearing the blend label. Predicted prices for sweaters that were labeled as having been purchased from the specialty store averaged 23.4% higher than those from the mass merchandiser; however, the quality ratings for the same sweater averaged only 6.0% higher than those from the mass merchandiser.

Table 2. ANOVA table for perceived quality with subject as a blocking factor.

Source of variation	*df*	Sum of squares	*F* value	Probability
Model	43	76.65	5.64	0.0001
Subject	36	64.10	5.87	0.0001
Vendor	1	1.50	4.96	0.0280
Country of origin	1	0.31	1.01	0.3173
Fiber content	1	7.70	25.38	0.0001
Care procedure	1	0.01	0.02	0.8862
Vendor × care	1	0.07	0.22	0.6402
Country × care	1	0.06	0.19	0.6677
Fiber × care	1	0.42	1.37	0.2438
Error	116	34.30		
Corrected total	159	110.94		

Table 3. ANOVA table for predicted price with subject as a blocking factor.

Source of variation	*df*	Sum of squares	*F* value	Probability
Model	43	6700.35	10.29	0.0001
Subject	36	5110.36	9.77	0.0001
Vendor	1	1107.34	76.23	0.0001
Country of origin	1	35.14	2.42	0.1227
Fiber content	1	82.27	5.66	0.0190
Care procedure	1	10.00	0.69	0.4085
Vendor × care	1	9.60	0.66	0.4180
Country × care	1	23.26	1.60	0.2084
Fiber × care	1	7.35	0.51	0.4784
Error	116	1641.54		
Corrected total	159	8341.90		

Table 4. Means of perceived quality and predicted price by store type and fiber content.

	Perceived quality mean	Predicted price mean
Vendor prestige/type		
Specialty store	3.52	28.37
Mass merchandiser	3.32	22.99
Fiber content		
100% cotton	3.64	26.40
Cotton/acrylic blend	3.19	24.94

No interactions of care with other MIE cues were significant. Interactions that do not include care can be examined, albeit less powerfully than interactions for care in the more strictly appropriate blocked design analysis, by omitting subject as the blocking factor. Table 5 shows the ANOVA results for predicted price without blocking. The country of origin × fiber content interaction shows some suggestion of being influential. The comparable analysis for perceived quality reveals no particularly strong interactions, thus is not included here.

Table 5. ANOVA table for predicted price.

Source of variation	*df*	Sum of squares	*F* value	Probability
Model	10	1589.99	3.51	0.0004
Vendor	1	1107.34	24.44	0.0001
Country of origin	1	35.14	0.78	0.3800
Fiber content	1	82.27	1.82	0.1799
Care procedure	1	10.00	0.22	0.6392
Vendor × country	1	0.54	0.01	0.9134
Vendor × fiber	1	1.26	0.03	0.8680
Vendor × care	1	9.60	0.21	0.6460
Country × fiber	1	125.05	2.76	0.0988
Country × care	1	23.26	0.51	0.4749
Fiber × care	1	7.35	0.16	0.6877
Error	149	6751.90		
Corrected total	159	8341.89		

An analysis of covariance for predicted price and perceived quality is shown in Table 6. Significant differences ($\alpha = 0.05$) in price were detected for quality ($p = 0.0001$) and fiber content ($p = 0.0147$). No significant differences were detected for vendor type/prestige ($p = 0.7923$). The fact that this was not significant tends to indicate that the effect of vendor, observed in the ANOVA, is primarily through its effect on perception of quality; vendor no longer has predictive value in the covariance model that includes quality. The significant differences detected for quality × vendor and quality × fiber interactions suggest the relationship between predicted price and perceived quality is not linear and that the quality × fiber ($p = 0.0160$) and the quality × vendor ($p = 0.0226$) interactions are important in adjusting for the nonlinearity. The contribution of quality × fiber and quality × vendor to the nonlinearity are of approximately equal importance. Since the relationship between store type/prestige and price was of particular interest and because the ANCOVA is potentially sensitive to heterogeneity of variance between stores, separate regressions were run to examine whether the variance of the responses for the two stores were homogeneous; the variances appear to be similar (MSE for store 1 and store 2 are 5.63 and 5.58, respectively).

Table 6. ANCOVA predicted price vs. perceived quality.

Source of variation	*df*	Sum of squares	*F* value	Probability
Model	48	7335.26	16.85	0.0001
Quality	1	573.85	63.28	0.0001
Subject	39	4822.03	13.63	0.0001
Vendor	1	0.63	0.07	0.7923
Country of origin	1	0.04	0.00	0.9493
Fiber content	1	55.68	6.14	0.0147
Care procedure	1	0.50	0.06	0.8143
Quality × vendor	1	48.46	5.34	0.0226
Quality × country	1	3.79	0.42	0.5193
Quality × fiber	1	54.23	5.98	0.0160
Quality × care	1	0.08	0.01	0.9259
Error	111	1006.64		
Corrected total	159	8341.89		

Discussion

Differences in perception of quality and prediction of price related to MIE cues were detected. A direct, positive relationship between price and quality was found, with store type/prestige and fiber content appearing to influence predicted price through modifying effects on the perception of quality. No effects due to country of origin and care procedures could be detected on either predicted price or perception of quality.

Previous research on store type/prestige and fiber content has consistently shown these two cues to be important in consumers' purchase decisions and in their perception of quality and prediction of price (e.g., Andrews & Valenzi, 1971; Sternquist & Davis, 1986). It is, therefore, not surprising that these cues were found to be significant when tested in the total MIE. The effect of store type/prestige on the predicted price/perceived-quality relationship was also consistent with Geistfeld's (1982) findings that the correlation between retail price and objective quality is higher for specialty stores than for other types of stores.

As noted earlier, findings of previous research are equivocal on the importance of country of origin in consumer perception and decision making but appear to show that country of origin has an influence on retail prices. The finding, in this study, that country of origin had no apparent influence on the subjects' perception of quality and prediction of price, is consistent with previous shopping simulations by Sternquist and Davis (1986). Prediction of prices in both this study and Sternquist and Davis' are not, however, consistent with the actual structure of retail prices found by Cline (1979) and Dardis et al. (1983), that is, prices of apparel imports from Asian countries are generally lower than prices of domestically produced items. Either consumers do not perceive this difference in market prices, or the experimental designs of these two studies prevent its detection. Further work is necessary to determine whether consumers actually do perceive a difference in retail prices. The quality ratings in both this study and Sternquist and Davis' suggest that consumers' shopping behavior may not be consistent with statements about the quality of imported versus domestically produced apparel reported by Dickerson (1982). The differences found between quality ratings and consumer statements may be due to differences in the demographics of the subjects in the three studies. Shapiro (1973) found that increasing education level is associated with less dependence on extrinsic cues in the perception of quality; both the study reported here and Sternquist and Davis' used subjects who have higher than average educational levels. Shopping simulations should be conducted with subjects other than undergraduates.

The finding that care procedures had no detectable effect on consumer perception of quality and prediction of price came as a surprise. This was a surprise not only because previous research appeared to show, through both self-report (Sproles, 1977) and behavior analysis techniques (Davis, 1987; Martin, 1971), that care labeling is important to consumers but also because experts generally consider less restrictive care procedures to be indicative of higher quality. In informal discussions with the subjects following collection of the data, a possible explanation for this finding was suggested. The subjects seem to interpret the care procedures in two different ways. Some subjects interpreted the less restrictive care procedure (Care procedure 1 on Table 1) as providing ease of care and therefore assigned it a higher quality and higher price because of the time savings it represented over the life of the garment. Other subjects used the restrictive procedure (Care procedure 2) as a surrogate for quality evaluation, that is, since high cost fibers such as wool and silk generally require hand washing or dry cleaning, by analogy, a cotton type sweater that requires hand washing should be higher quality and higher priced. Another possible explanation for care procedures not having a detectable effect on consumer perception of quality was provided by Sieben (1988). She suggested that to a large extent consumers underutilize care labeling because it is impractical to follow it precisely. Sieben found that, when school clothing (26 items) for two grade school boys was sorted and laundered according to the care labeling on each garment, 17 washing machine loads, 3 hand loads, and a minimum of 5 dryer loads was required. Thus, following the care labels clearly required a time commitment that the average consumer is unwilling to make.

Care must be taken in interpreting and generalizing the results of this study. The following limitations must be kept in mind: (1) due to the nature of the experimental design, subjects were constantly aware that they were being studied; (2) the sample was chosen for convenience and cannot be considered representative of the general population; (3) since only one product type was used, the effect of the MIE cues may be product specific; (4) a unidimensional quality scale was used. These limitations naturally suggest avenues for future work. Less intrusive experimental designs should be developed. Shopping simulations should be conducted using subjects with various demographic backgrounds. Examination of the use of MIE cues should be extended to other apparel items with particular attention to how the use of MIE cues might vary depending upon the fashionability of the item. Additionally the component dimensions of quality should be investigated.

In conclusion, the findings of this study are disquieting in that they appear to show that the subjects' perceptions were not based upon the actual price structure of the retail market and that the subjects were either not using one of the MIE cues, i.e., care procedures, which should be valuable in predicting the utility of a garment, or that a large proportion of the subjects were using it improperly. A better understanding of how consumers use MIE cues should help public policy makers to formulate regulations that will provide more useful information for consumers. Understanding how consumers are using these cues would also be useful to retailers and manufacturers in determining what information to provide on labels and possibly identifying potentially profitable directions for advertising.

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