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The relative influence of pioneer and follower price on reference price and value perceptions

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Abstract

Purpose – The purpose of this paper is to integrate literature in the pioneer brand advantage area with the literature on reference prices to examine how reference prices work in a pioneer and follower brand context. There is evidence to suggest that pioneers have a psychological advantage over follower brands, yet how that manifests in terms of reference price effects is not fully understood. The study tests whether the pioneer price and follower price have equal influence on reference prices, or whether the pioneer has a stronger influence.

Design/methodology/approach – This research uses a longitudinal experiment to simulate a market of a pioneer brand followed by follower brand, and measures the relative effects of pioneer and follower prices on reference price, value perceptions and purchase intentions. This approach allows greater confidence in the causal nature of the findings.

Findings – The results indicate a clear and strong causal effect for the pioneer's price on price and value perceptions of the pioneer *and* follower, whereas the follower's price only seems to influence perceptions of the follower, *not* the pioneer. This suggests that consumers overweight the price of the pioneer brand (as exemplar) in the category, and reference price perceptions are systematically biased in its direction. However, these effects were stronger for the more innovative product category being examined. For a less innovative pioneer this effect was not so strong. These findings imply that reference price is brand specific but the more innovative the pioneer brand the more influence it has on reference prices.

Research implications – These findings are consistent with and extend the literature on pioneer advantage by suggesting that the pioneer can define ideal levels of objective attributes such as price, rather than just defining the ideal attribute combination of subjective, less discernible attributes. This highlights and presents a more complete picture of the natural advantages to product innovation. It also implies the need to consider the multi-faceted nature of reference price in measurement and research.

Originality/value – A number of studies have examined reference price effects in existing and established product categories. Yet few studies have examined reference price effects in new product categories despite calls in the literature to do so. This study is one of the first studies to examine reference price effects in new product categories and contributes by integrating the literature on pioneer brand advantage with the

literature on reference price by examining asymmetric pricing effects between pioneer and follower brands in new product categories.

Paper type Research paper

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Introduction

Behavioral pricing has attracted increased attention in the marketing literature recently (Estelami and Maxwell, 2003) as a way to resolve some of the limitations of neoclassical economic theory (Skouras, Avlonitis and Indounas, 2005). The study of reference prices within the domain of behavioral pricing has a long tradition in marketing (Monroe, 1973). Signifying its maturity as an established and important area of research in the discipline, a conceptual article in the *Journal of Marketing* takes stock of our knowledge about reference prices and the scope of their effects as a way to understand consumer behavior (Mazumdar, Raj and Sinha, 2005). Yet all the research examined within their article focuses on studying reference price perceptions for existing, established product categories. Less research has examined reference price perceptions in new product categories despite calls in the literature to do so. For instance, Biswas and Sherrell (1993 p. 44) state "research should examine…reference price estimates for products in the early stages of market penetration". There is reason to suspect that the new product context is different, particularly for pioneering products, because pioneers attain several advantages from moving first (see Kerin, Varadarajan and Peterson, 1992 for a review). One such advantage is the pioneer's prototypicality and unique association with the category (Carpenter and Nakamoto, 1989; Schmalensee, 1982). Further calls in the literature suggest that integrating the pioneer advantage literature with the literature on reference prices could be important to understand reference price effects in new product categories. For instance, Rajendran and Tellis (1994, p. 30) speculate "…if a category has a prototypical brand, its price may well be the best contextual reference price".

This research begins to address this gap in the literature by examining how consumer reference price perceptions of pioneer and follower brands differ as a result of this unique and inimitable entry order advantage. Specifically, pioneer and follower brands are proposed to have different properties that have different pricing effects early in the product category.

Reference price perceptions in new product categories

Reference price research: Behavioral and survey approaches

Many studies have confirmed a reference price effect, or "sticker shock" (Winer, 1986), using indirect measures of reference price (Kalwani et al., 1990; Kalyanaram and Little, 1994; Putler, 1992; Rajendran and Tellis, 1994; Winer, 1986). Despite strong support for the phenomenon of reference prices, these types of observational studies are limited in some respects by a focus on existing product categories. To model reference price effects, typically researchers subtract the actual price from the reference price, defined as some weighted average of past prices. In other words, reference prices are modelled or assumed to be a direct function of past prices, and such research is only useful when the product being investigated has a price history.

Other more direct methods of reference price estimation through survey research and experimentation have also been used and validated in the literature, demonstrating multi-method convergence with indirect measures of reference price research (for instance, see Alba et al., 1999; Bearden et al., 1992; Lattin and Bucklin, 1989; Urbany et al., 1997). In survey research "sticker shock" has been operationalized as transaction value, representing a relatively short lived component of value, related to the notion of a deal (Thaler, 1985). For instance, "what a great deal" or "what a rip off" might be terms to describe transaction value. Studies operationalize the concept as P_r-P, where P_r is the reference price or price that the product *should* cost. Prior

research has empirically validated these links and shows higher transaction value to be linked with higher purchase intentions (Bearden et al., 1992; Grewal, Monroe and Krishnan, 1998; Lowe and Alpert, 2007; Thaler, 1985; Urbany et al., 1997). However, most of these studies, like those that measure reference prices indirectly, are for products in existing, established product categories. Price history lists may be presented to subjects in experiments (e.g., DelVecchio and Craig, 2008), but little research has looked at the reference price effects in new product categories where no historical prices are available.

Reference price research in new product categories

Research in pricing has illustrated the value of understanding price setting processes for new products (Bergstein and Estelami, 2002), but has yet to closely and empirically examine consumer response to price in new product categories. Some research has begun to look at the issue of reference price effects in new product categories (e.g., Doob et al., 1969; Slonim and Garbarino, 1999; Lowe and Alpert, 2007). For example, Doob et al. (1969) and Slonim and Garbarino (1999) examine how alternative introductory pricing strategies affect sales and consumer perceptions of value. For both studies, reference price effects were implied aspects of the research, rather than explicitly tested. Doob et al. (1969) study reference price effects by examining changes in sales for different pricing strategies of incrementally new products and do not specifically examine reference prices. Slonim and Garbarino (1999) perform a similar study in a lab setting, looking at how perceptions of expensiveness change for different pricing strategies of new products. However, they also do not examine reference price, relying instead on measures of perceived expensiveness. Lowe and Alpert (2007) take more explicit consideration of reference prices in new product categories and test the appropriateness of different measures of reference price in existing and new product categories, but do not examine the nature or

dynamics of reference price effects in new product categories (e.g., looking at what happens after a follower enters). This study addresses the gap in the literature by directly examining the relative impact of pioneer pricing versus follower pricing in establishing reference price and value perceptions in the category.

The role of pioneership

What is special about the pioneer brand other than simply it was first? Is there something unique about a pioneer brand that systematically biases reference price perceptions of other brands in the category? It could be that the pioneer is prototypical within the category and is an anchor upon which consumer reference price and value judgments are based (Carpenter and Nakamoto, 1989; Schmalensee, 1982). This may influence consumer judgments within a new category and is consistent with Rajendran and Tellis' (1994, p. 30) speculation that, "…if a category has a prototypical brand, its price may well be the best contextual reference price". Hardie, Fader and Johnson (1993, p. 391) make this distinction in their speculations about the relationship between pioneering and loss aversion by stating, "…the first brand to enter a new product class serves as a reference brand for consumers". Furthermore, Schmalensee (1982, p. 360) states if the first brand in a product class performs satisfactorily, "that brand becomes the standard against which subsequent entrants are rationally judged". In the present study the impact of the pioneer brand and follower brand is compared to test whether they have different reference price effects.

Pioneership, reference prices and value perceptions

The reference price literature suggests consumers use past prices or contextual prices to determine a reference price, which in turn is used to judge expensiveness and value (see

Mazumdar, Raj and Sinha, 2005). However, in a new product category consumers have no past prices and are unlikely to know what constitutes value and how expensive a brand really should be, particularly for an innovative pioneer where consumer perceptions are weakly formed. For instance, Nagle and Hogan (2006, p. 268) state, "… they lack a reference for determining what would constitute a fair or bargain price …". This suggests that consumers in new product categories may seek an anchor upon which to base their judgments. This anchor may systematically influence or bias reference price perceptions and value perceptions.

Despite controversy over the pioneer advantage hypothesis (Golder and Tellis, 1993; Tellis and Golder, 1996), pioneers have been found to attain a number of unique behavioral advantages by virtue of entry order, including becoming the prototype and category exemplar (Carpenter and Nakamoto, 1989; Schmalensee, 1982), being remembered better (Kardes and Kalyanaram, 1992), attaining advantages in retrieval, consideration, and choice (Kardes et al., 1993) and favourable consumer predispositions toward pioneer status (Alpert and Kamins, 1995). These advantages revolve around the pioneer's unique association with the category and its distinctiveness as the category prototype.

"A prototype is usually the original item on which subsequent models are based," according to Steinberg (2009, p. 309). In a new product category, the pioneer brand is usually the original item. Thus the pioneer brand becomes the prototype that defines the attributes of the category. Price is an attribute of a product category. Therefore, it might be expected that the pioneer brand defines the reference price for brands in that product category. Categorisation is a natural and important process for consumers and is an important aspect of our knowledge of consumer learning. It determines how we organise, interpret and learn about new information (Medin and Schaffer, 1978; Mervis and Rosch, 1981). The pioneer, as defined above, represents the first brand into a product class and therefore influences how consumers learn about the new product

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class or category. Pioneering the product class allows the pioneer to become prototypical of the category. For instance, Rosch (1978) states that categories are represented by a prototypical member of the category. This prototypicality and representativeness is often attributed to the pioneer from its temporary monopoly and unique association with the category by providing unique and novel information (Carpenter and Nakamoto, 1988, 1989). The pioneer in being prototypical becomes the standard and referent, against which others are judged and in so being may often represent *how a brand should be*. Therefore, its price should become the reference price of other brands in the category. We will call this type of prototype, a concrete example, an actual brand in this case, as an exemplar of the category.

Yet, a conflicting categorisation principle is that category prototypical values adjust as new members enter the category (adaptation-level theory). The prototype becomes the average of the values of category members, and this is the way references prices are typically calculated in research (DelVecchio and Craig, 2008). That is, the prototype is not an exemplar (i.e., not an actual object), but an abstract image that automatically changes according to the adjustment formula (i.e, average of category members). By this model, the pioneer brand is nothing special and would not have stronger reference price effects than any other brand. Thus, there is an inconsistency between prototype-as-exemplar theory and prototype-as-category-average.

The reference price literature has some similarity to these literatures in that the reference price revolves around the establishment of some norm or referent in order to make simpler judgments. That referent might be an exemplar brand, or it might be the automatically adjusting category prototype. The reference price literature appears to take both perspectives. The typical approach to measuring reference price for existing products is to form some kind of average based on temporal or contextual prices (Briesch et al., 1997; Rajendran and Tellis, 1994). However, other research has defined reference price as the price of the last brand purchased or the price of a

prototypical brand (Hardie, Johnson and Fader, 1993). In this paper we try to integrate all these literatures.

For the new product context, we propose that the pioneer brand will have a stronger effect than the follower brand, as per exemplar theory, but the pioneer brand does not *set* the follower brand reference price to the pioneer brand price, as would be the full implication. At the same time, the follower brand is not equal to the pioneer brand in effect and we posit that the pioneer brand will have a stronger effect upon reference price and value perceptions of other category members, than the follower brand. This is consistent with psychological theory as when Sailor and Antoine (2005, p. 840), in their discussion of category adjustment models, draw these implications out by stating, "… responses to a stimulus should be consistently biased toward the category prototype".

So, whilst past research has suggested and confirmed that reference price is brand specific (Briesch et al., 1997), reference price perceptions of other brands in the category may be, in the case of new product categories, influenced by a prototypical brand such as the pioneer.

Our argument can be tested through comparing the relative influence of the pioneer brand versus the follower brand on reference price perceptions of brands in the category. Our argument implies that the pioneer brand's price will influence its reference price, and therefore transaction value and purchase intention for it, but also for follower brands. Whereas follower brand price will influence follower reference price and therefore transaction value and purchase intention, but will not influence reference price, transaction value and purchase intention of the pioneer brand. In other words, the *relative influence* of the pioneer brand price will be stronger than the follower brand price.

H_1: The pioneer's price influences a) reference price, b) transaction value and c) purchase intention for pioneer *and* follower brands.

H₂: The follower's price influences a) reference price, b) transaction value and c) purchase intention for the follower, but *not* for the pioneer.

Method

The two hypotheses were examined in the context of a between-subjects longitudinal experiment with pioneer and follower brands simulating the introduction of a novel product category. The experimental method is suitable for studying reference price perceptions in new product categories because it can control respondents' experiences and enhance internal validity in the findings. Several calls to conduct reference price research using the experimental method have also been made in the literature. For instance, Rajendran and Tellis (1994 p. 31) advocate, "Experiments provide rigorous tests of the causes of reference price and are especially useful in developing theory". Likewise, Chang, Siddarth and Weinberg (1999 p. 190) state "Laboratory and survey work could be used to uncover the mechanisms that consumers actually use to form reference prices in different product categories".

Experimental design and procedure

Using a between-subjects design entry order was simulated, and two price levels were studied for the pioneer and follower, in order to reduce the risk of an undetected price level effect (providing better generalizability), to provide a replication at a different price level, and for realism (reflecting the pricing strategies of skimming strategy versus penetration strategy). In time period 1 (T_1) respondents were exposed to a pioneer in a novel product category. Respondents were either exposed to a pioneer at an initial high price (e.g., following a skimming strategy) or a pioneer at an initial low price (e.g., following a penetration strategy). After exposure to the

category and the pioneer at one of the price levels, respondents were given a brain teaser to simulate the passage of time, following the procedures outlined in Broniarczyk, Hoyer and McAlister (2003) and Carpenter and Nakamoto (1989). They were then told the pioneer's price had increased (to reflect a penetration strategy) or decreased (to reflect a skimming strategy), converging to a 'regular price', and that a follower brand had entered. The follower brand, which varied by brand name, product description and price, was either presented at a small discount or a large discount to the pioneer's price in T_2. This forms a 2x2 between subjects experimental design manipulating the pioneer's initial price (initial high price versus initial low price) and the follower's initial price (small discount to the pioneer versus large discount to the pioneer), with replication across two product categories for generalizability.

Following exposure to the emerging category subjects were asked questions related to their reference price perceptions, value perceptions and purchase intentions for each of the brands. For generalizability, the results were replicated across two product categories; an 8-hour sun-protection product and wireless earphones. After much search, these products at the time of the research met the criteria of new, easy to communicate, of broad interest, and neither too expensive (e.g., car) nor too cheap (e.g., gum). To control for brand preference effects, the pioneers and followers were counterbalanced for order of entry (i.e., each of the two brands of wireless earphones was pioneer half the time and follower half the time) – therefore, any differences resulting from the data could be attributed to order of entry rather than differences in preference between brands and the product descriptions. Following Kardes et al. (1993) novel brand names were selected through a series of pilot studies designed to provide brand names of equal preference to respondents. This controlled for familiarity and prior brand knowledge in relation to the treatments. In the experiment it was crucial that the pioneer and follower brands were equally preferred in the absence of the entry order manipulation. For both product

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categories, rigorous pilot tests were carried out to ensure that both brands were preferred equally and were not objectively better or worse than one another. Digitally modified photos were provided alongside the concept statements to enhance the realism of the experimental manipulations. This is particularly relevant for new products in a lab setting in order to enhance understanding about the new product category.

Price levels for the pioneers and followers were derived from a series of pilot studies designed to elicit experimental demand curves. For the wireless earphones pioneer, in T_1, the low price condition was $29.99 and the high price condition was $79.99. Prices for the pioneer then converged to $54.99 in T_2. The follower's small discount condition was $51.99 and the large discount condition was $39.99. For the sun protection pioneer, in T_1, the low price condition was $9.99 and the high price condition was $19.99. Prices for the pioneer then converged to $14.99 in T_2. The follower's small discount condition was $14.29 and the large discount condition was $10.99. For the pioneers these prices were designed to reflect a skimming and penetration pricing strategy. For the followers the discount levels were designed to reflect a small discount and a large discount. As such the small discount was kept within the range of price insensitivity at around 5% (Gupta and Cooper 1992) and the large discount was chosen based on the pilot studies, to represent the point at which discounts begin to lose their effectiveness.

Measurement and sampling

Dependent variables. Measures of transaction value were adapted from existing research (Urbany et al. 1997; Bearden et al., 1992). Reference price research distinguishes between the distinct effect of expected, fair and reservation prices on demand (Garbarino and Slonim, 2003), highlighting the importance of carefully selecting a reference price measure. Recent research highlights the importance of perceptions of price fairness (Maxwell, 2008; Xia, Monroe and Cox,

2004), and suggests that for new product categories fair price is a better measure of reference price than other commonly used measures such as an expected price (Lowe and Alpert 2007). Therefore, respondents were asked what a fair price for the product was.

Measures for purchase intentions were taken and adapted from past research (Bearden et al., 1992; Urbany et al., 1997). The Cronbach's Alpha was high for the multi-item scale during pre-testing (e.g., >0.95), confirming qualitative comments about repetitiveness made by respondents. Therefore, in the interests of parsimony items were deleted, leaving the scale "Please indicate how likely or how certain you would be to purchase this product", anchored by "very unlikely" and "very likely." Recent research shows that single-item measures can, in the right circumstances, perform as well as multi-item measures, and are suitable in consumer behavior research (Bergkvist and Rossiter, 2007; Rossiter, 2002).

Covariates and manipulation checks. Manipulation checks and other experimental controls were used for internal validity. For the product category knowledge covariate, scales were adapted from Cowley and Mitchell (2003). Respondents were asked how much knowledge they had about the category and how familiar they were with it, anchored by 1 (not very knowledgeable/familiar) and 7 (very knowledgeable/familiar). For the innovativeness manipulation check, perceived innovativeness was measured using a 7-point single item scale, adapted from Olshavsky and Spreng (1996) asking "How innovative is [brand]" anchored by 1 (minor variation of an existing product) and 7 (completely new product). Finally, perceived product quality was measured for the pioneer and follower with a single item 7-point semantic differential scale adapted from Slonim and Garbarino (1999, p. 7).

Sampling. The sample size for the experiment was 385, allocated evenly across treatments. The products used in the experiment were suitable for students, a student sample is more homogenous and suitable for causal research, and such samples have a long history in consumer

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research (e.g., Carpenter and Nakamoto, 1989; DelVecchio and Craig, 2008; Slonim and Garbarino, 1999). Based on a manipulation check, none of the subjects had heard of or purchased wireless earphones or an 8-hour sun-protection product, so the categories were new to them.

Analysis

The relative influence of pioneer and follower price level

Responses for both product categories were analyzed using a MANOVA with pioneer price level, follower price level and brand name as independent variables, and measures of reference price, transaction value and purchase intention for both the pioneer *and* follower brands as dependent variables. The assumptions underlying the MANOVA were largely met with the data for both product categories, exhibiting homogeneity of the variance matrix, univariate normality of the dependent variables and correlation of the dependent variables. Despite Box's M being statistically significant (and thus potentially violating the assumption of equality of the covariance matrix), the cell sizes for each experimental group were approximately equal (defined as when the ratio of the size of the largest group to the smallest group is less than 1.5 – the largest ratio with this data is 1.11). When cell sizes are approximately equal then violation of this assumption is not problematic (Hair et al. 1998). For the earphones the multivariate tests were statistically significant for both pioneer and follower price levels (Pioneer price level: *Wilks' lambda* = 0.797, $p = 0.000$, power = 1.000; Follower price level: *Wilks' lambda* = 0.688, $p = 0.000$, power = 1.000). For the sunscreens the multivariate tests were also statistically significant for both pioneer and follower price levels (Pioneer price level: *Wilks' lambda* = 0.921, $p = 0.019$, power = 0.846; Follower price level: *Wilks' lambda* = 0.632, $p = 0.000$, power = 1.000), suggesting further univariate testing for both product categories. The power values were also higher than the 0.80

level recommended by Cohen (1988). This is important to rule out the possible influence of a small sample size, rather than the follower's weakness, when examining H_2. For both product categories, the multivariate test for brand name was not significant so the data was aggregated across the counterbalanced brands. The descriptive statistics from the MANOVA are shown in Table 1.

<center>**<TAKE IN TABLE 1>**</center>

Based on the univariate tests for the earphones, as expected, the pioneer's price level significantly influences perceptions of the pioneer (Pio P_r $F = 40.515$, $p = 0.000$; Pio TV $F = 12.783$, $p = 0.000$; Pio PI $F = 11.797$, $p = 0.001$), but the pioneer's prototypicality advantages seem to extend further by influencing perceptions of the follower too (Fol P_r $F = 12.186$, $p = 0.001$; Fol TV $F = 11.578$, $p = 0.001$; Fol PI $F = 8.638$, $p = 0.004$). On the other hand the follower's price level significantly influences perceptions of the follower (Fol P_r $F = 13.989$, $p = 0.000$; Fol TV $F = 14.526$, $p = 0.000$; Fol PI $F = 7.179$, $p = 0.008$), as expected, but, given the statistically insignificant univariate tests, its influence does not seem to extend as far as influencing perceptions of the pioneer (Pio P_r $F = 0.275$, $p = 0.601$; Pio TV $F = 1.627$, $p = 0.204$; Pio PI $F = 0.844$, $p = 0.359$). Thus, for the earphones, the pioneer seems to be strong enough to influence perceptions of the pioneer, as we would expect, but also strong enough to influence perceptions of the follower too. The follower's price level seems to be only strong enough to influence its own brand perceptions, and not the pioneer's. These findings provide strong support for H_{1a} to H_{1c} and H_{2a} to H_{2c} for the wireless earphones data. As such we accept H_{1a} to H_{1c} and H_{2a} to H_{2c} for the wireless earphones data.

For the sunscreens a similar pattern emerges, though the effect is not so strong. Again, based on the univariate tests the pioneer's price level significantly influences perceptions of the pioneer's reference price (Pio P_r $F = 11.307$, $p = 0.001$) and the pioneer's transaction value (Pio

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TV $F = 6.641$, $p = 0.011$), but not the pioneer's purchase intention (Pio PI $F = 1.058$, $p = 0.305$). The pioneer's price level also influences the follower's reference price (Fol P_r $F = 5.334$, $p = 0.022$), but its influence does not extend further towards other follower perceptions such as transaction value (Fol TV $F = 0.544$, $p = 0.458$) and purchase intention (Fol PI $F = 0.746$, $p = 0.389$). The follower's price level, as expected, affects follower perceptions of reference price, transaction value and purchase intention (Fol P_r $F = 9.946$, $p = 0.002$; Fol TV $F = 36.389$, $p = 0.000$; Fol PI $F = 16.591$, $p = 0.000$). Again, as expected, it does not affect perceptions of the pioneer (Pio P_r $F = 3.169$, $p = 0.077$; Pio TV $F = 2.419$, $p = 0.122$; Pio PI $F = 0.418$, $p = 0.519$). The sun-protection data seems to contrast somewhat with the wireless earphones data, presenting an interesting extension to the predictions. There is strong support for H_{1a} but not H_{1b} and H_{1c}. Strong support exists for H_{2a} to H_{2c} and for the follower, reference price is clearly brand specific. As such we accept H1a, but not H1b to H1c, and we accept H2a to H2c for the sunprotection data. In particular it seems that the hypotheses hold strongly for the wireless earphones data but do not hold so well for the sun-protection data.

To ascertain reasons for these differences a protocol analysis was conducted with eighteen respondents. Following the method in Chen, Monroe and Lou (1998), subjects were asked to complete the questionnaire in the same way as before. However, this time, after completing the questionnaire subjects were asked to write their thoughts.

Based on the protocol study it seems as if respondents may perceive these product categories somewhat differently. Across both categories respondents seemed to be positive to the ideas but the wireless earphones appeared to be newer and more interesting. For instance, one respondent commented "Nifty idea. Where can you buy them?" and another respondent commented that they were "High tech". Some of the respondents for the sun-protection product weren't able to see the new benefit involved in this kind of product. For instance, one commented, "Seems like any other

sunscreen", and another commented, "I have a sunscreen that I like using and I wouldn't change". Though not negative the tone suggests that respondent evaluations were less excited about the new sun-protection products than for the wireless earphones. For instance, one respondent exposed to the sun-protection product just said "It's OK". Based on these qualitative comments it could be that respondents found the wireless earphones as a more innovative product with greater benefits than the existing product generation. If this is the case, this could explain the differing results between the two categories because with a less innovative pioneer, it is less prototypical and will have less influence over consumers' reference price perceptions.

The nature of the two product categories under investigation may explain the differences observed in respondents' perceptions. For instance, the wireless earphones appear high tech because they rely on new technology that is readily observable by consumers. However, with the sun-protection products, even though they may be just as *new* in an objective sense, and may also facilitate a desirable change in behavior, they do not *appear* to be as high tech and therefore may still be perceived to some degree as a conventional sunscreen. That is, the technology enabling eight hours of sun-protection is invisible, the product looks just like ordinary sunscreen, even though it delivers the benefit of not having to worry about when to re-apply sunscreen if you are out in the sun all day.

To statistically test for differences in perceived innovativeness between product categories, mean perceived innovativeness from the data in the original experiment was compared between the wireless earphones and the sun-protection product. The results indicate that both product categories were perceived to be relatively innovative (as indicated by initial pilot studies), but the earphones were perceived to be more innovative ($M_{Earphones}$ = 4.79) than the sun-protection products ($M_{Sunscreen}$ = 4.32). These differences were statistically significant using an independent samples t-test (t = 3.040, p = 0.003) and lend credence to the speculation that differences in the

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results could be due to differences in perceived innovativeness between the two product categories.

Discussion and implications

These results suggests that reference price is indeed brand specific, consistent with other research in the area (Briesch et al., 1997), because perceptions of the pioneer were found to be associated with movements in price for the pioneer, and perceptions of the follower were found to be associated with movements in price for the follower. However, when there is a prototypical brand in the category, this distinctiveness can influence perceptions of other brands. These results suggest an interesting extension to the literature on reference prices and pioneer advantage, showing that the pioneer's perceptual prominence is strong enough to exert an influence on reference price, value perceptions and purchase intentions for *both* pioneer and follower brands, yet the follower's influence only extends as far as perceptions of the follower brand, illustrating an asymmetric pricing effect.

However, it appears this effect is less strong in other, less innovative product categories. Further protocol analysis and post hoc inspection of the data suggests that this could be due to differences in perceived innovativeness. Both categories were clearly perceived to be innovative by subjects, but the wireless earphones had a higher perceived innovativeness rating than the sun-protection products. Thus for pioneers perceived to be less innovative, the pioneer's prototypicality advantage may be weaker and the benefits accruing from this prototypicality advantage are weaker. That is, the less innovative the pioneer is perceived to be, the less its degree of "prototypicalness". The results also further the debate on how a reference price arises. The analysis shown here suggests that reference price is indeed some average of other prices,

either temporally or contextually, and this average is *biased* by a prototypical brand in the category. That is, the appropriate reference price is not that price of a prototypical brand in the category, but rather an average price with the prototypical brand carrying extra weight (e.g., the overweighting of the pioneer brand).

In terms of limitations, the usual cautions about an experimental design apply and replication in other contexts and with other samples is desirable. For future research, the concept of "degree of innovativeness," that may help explain some of the findings, needs further conceptual and measurement development. Perhaps it should be included in future pioneer brand research studies.

Conclusion

In sum, this study extends a growing body of research by trying to understand the asymmetric influence of the pioneer brand over the follower brand in establishing reference price perceptions, value perceptions and preferences in the category. It does this by integrating two important streams of research in marketing – the reference price literature and the literature on pioneer brand advantage.

The results show that the pioneer's prototypicality systematically influences perceptions of the pioneer *and* follower, whereas the follower's price only seems to influence follower perceptions. This effect appears to be moderated by perceived innovativeness and the prototypicality of the pioneer. The findings also provide some guidance on how consumers incorporate the prices of new brands to form a reference price. These results are suggestive of the benefits of a strategy of pioneering and innovation. Furthermore, these findings are also consistent with and extend the literature on pioneer advantage (Carpenter and Nakamoto, 1989) by suggesting that the pioneer

can define ideal levels of objective attributes such as price, rather than just defining the ideal

attribute combination of subjective, less discernible attributes.

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Table 1: Reference Price, Transaction Value and Purchase Intention by Treatment

		Wireless Earphones		Sun Protection	
		Small Discount	**Large Discount**	**Small Discount**	**Large Discount**
Pioneer Reference Price ($)	**Pioneer (low price)**	37.71	36.53	12.75	12.04
	Pioneer (high price)	50.66	49.69	14.27	13.44
Pioneer Transaction Value	**Pioneer (low price)**	3.09	3.20	3.98	3.65
	Pioneer (high price)	4.17	3.55	4.50	4.19
Pioneer Purchase Intention	**Pioneer (low price)**	3.02	3.17	4.67	4.46
	Pioneer (high price)	4.30	3.67	4.89	4.77
Follower Reference Price ($)	**Pioneer (low price)**	40.33	36.72	12.51	11.66
	Pioneer (high price)	50.32	39.86	13.82	12.18
Follower Transaction Value	**Pioneer (low price)**	3.13	4.36	3.74	5.23
	Pioneer (high price)	4.28	4.63	4.18	5.08
Follower Purchase Intention	**Pioneer (low price)**	3.12	4.51	4.15	5.08
	Pioneer (high price)	4.57	4.49	4.30	5.35