Comparative Price Advertising: An Integrative Review

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After two decades of research, public policymakers, researchers, and managers still have questions regarding the use, abuse, and overall effectiveness of comparative price advertising. Using an integrative review of the literature as a basis, the authors examine the state of substantive knowledge regarding comparative price advertising effects. They use meta-analytical procedures to assess the effects of (1) presence of an advertised reference price, (2) advertised reference price levels, and (3) advertised sale price levels on consumers' internal reference price, perceived value, price offer believability, purchase likelihood, and search intentions. Evidence indicates that comparative price advertising is a powerful advertising tool, with a strong opportunity for deception, that requires careful management and monitoring.

The use of comparative price advertising is widespread. An advertised reference price (e.g., regular price, original price, manufacturer's suggested price) suggests that consumers will save money, that they will "get a deal." Advertisers often appeal to this desire to "get a deal" by comparing the offering price (e.g., sale price) with some higher reference price (e.g., regular price), thereby making the offered price more attractive. Whether consumers actually save money depends primarily on the validity of this advertised comparative reference price.

Studies during the past 23 years have attempted to explain consumers' responses to the inclusion of comparative reference prices in advertisements. Grewal and Compeau (1992) qualitatively review 28 studies and integrate Federal Trade Commission (FTC) guidelines to assess the informativeness or deceptiveness of comparative price advertising. They conclude that there are incentives for advertisers to use inflated reference prices because the effect of these exaggerated prices is strong. They did not assess, however, the empirical studies quantitatively. Thus, the robustness of the effects of reference prices has not been established. Moreover, since their article was published, many more studies have been conducted. The increased research attention is due, in part, to theoretical developments providing testable hypotheses (Monroe and Chapman 1987; Thaler 1985; Urbany, Bearden, and Weilbaker 1988) and heightened awareness of their deceptive potential (Grewal and Compeau 1992).

Meta-analysis has been used in marketing to synthesize results of prior research, even when only a small number of studies is available, to examine certain effects (e.g., Brown and Stayman 1992; Rao and Monroe 1989; Szymanski, Bharadwaj, and Varadarajan 1993). Biswas, Wilson, and Licata (1993) provide an important first step by conducting a meta-analytical review of the reference price literature. In the course of reviewing 26 studies, they use meta-analysis to assess the overall significance of reference price advertising from empirical results of 12 studies; however, the effect of advertised reference price on a given dependent variable (e.g., perceived value, purchase intentions) was not predicted or examined. Thus, we build on Grewal and Compeau's (1992) qualitative review and Biswas, Wilson, and Licata's (1993) integrative review and highlight how prior research results, integrated and taken together as a whole, can help policymakers and managers reduce deception.

The FTC and most states suggest that three elements must be demonstrated before an advertisement is deemed deceptive (Preston 1992). The first evidentiary burden pertains to identifying the claims the advertisement conveys to consumers. Comparative price advertisements, in general, convey an advertised reference price (ARP), which suggests that a deal is being offered. The implication is that the selling price (SP) is lower than what consumers might have paid had they shopped at some other time or store.

The second evidentiary burden discussed is the veracity of the claim. The advertisement must be shown to be false in some manner. This burden typically is handled by challenging the truthfulness of the ARP (see for example, *State of New York v. Sears, Roebuck & Co.*, New York State Supreme Court, Erie County, 13709/89; *State of Maryland v. The Hecht Co.*, Maryland Circuit Court, Montgomery County, Civil Case No. 11256; *State of Colorado v. The Mays Department Store Company*, Denver District Court, 89CV09274; *State of North Carolina v. J.C. Penny Company Inc.*, Wake County Supreme Court, North Carolina, 89 CVS 11819; see also Compeau, Grewal, and Grewal 1994; Kaufmann, Smith, and Ortemeyer 1994).

For the third evidentiary burden, the deception must be material; "that is, [the advertisement must have] the potential to affect consumers' purchasing decisions" (Preston 1992, p. 58). Therefore, even though an advertisement may be deemed untruthful (e.g., the prices advertised are fictitious), it matters little if the deception is not material, that is,

if consumers are not harmed (e.g., *Kraft Inc.* 1991). If the meta-analysis demonstrates clear, convincing, and robust effects of comparative price advertising on consumers' search and purchase behavior across many conditions, including different contexts and methods, then a link to materiality is demonstrated.

In summary; in this article, we report an integrative review using meta-analysis of comparative price advertising research to (1) synthesize current substantive findings; (2) probe for any inconsistencies across the studies; (3) provide a benchmark, a single source of summary information on comparative price advertising for public policymakers, managers, and researchers; and (4) draw public policy implications. In the next section, we develop a conceptual framework.

A Conceptual Framework

Prior studies have adopted and adapted several theories to explain and predict the effects of comparative price advertisements on a broad spectrum of consumer responses (for a description of the studies, see Appendix A). Our conceptual framework suggests that an ARP in the context of a comparative price advertisement provides a point of reference to judge the offer and sale price (Figure 1).

The Elaboration Likelihood Model (ELM; Petty and Cacioppo 1981) suggests that consumers using the central route of processing compare the ARP to an internal reference price (IRP). They then make the adjustments in their IRP that are predicted by Adaptation Level Theory (Helson 1964) and Assimilation-Contrast Theory (Sherif, Sherif, and Hovland 1961).[1] If the ARP is not too far from consumers' IRP range (i.e., in the latitude of acceptance), it will shift their range toward itself (Lichtenstein and Bearden 1989). For example, a consumer might have a category for videocassette recorders (VCRs). Attached to that category might be an IRP range of $250 to $450; if the consumer is exposed to an ARP of $200, the IRP shifts downward from $250 to $200. If the consumer encounters an ARP of $500, it shifts the range upward from $450 to $500. Both of these examples show how the ARP is assimilated into the IRP range (i.e., an *assimilation effect*).

A *contrast effect* occurs when the entire IRP range shifts in response to an ARP and produces different judgments and categories (Monroe, Grewal, and Compeau 1991; Ozanne, Brucks, and Grewal 1992). For example, a consumer might be exposed to an ARP of $800 for a VCR. It is likely that consumer will contrast the product from the category called VCRs and now form two categories, the original called Regular VCRs and the other called High-End or Professional VCRs. The range of IRPs also would shift, such that the IRP range for Regular VCRs would be lowered to $200 to $350 and that for High-End VCRs set at $600 to $1,000. Alternatively, the ARP might be ignored and would not shift the IRP.

If consumers are not motivated to process information centrally (low involvement) or do not have the knowledge to do so, peripheral processing will occur. The consumer relies

on a simple comparison between the ARP and the selling price. One implication of the ELM is that low-involvement (and most likely, low-knowledge) consumers are more susceptible to exaggerated or inflated reference price claims and the associated deception.[2]

Thaler (1985) suggests that the overall value of a price offer is contingent on two comparisons. The value of the acquisition of the product itself involves a comparison of what the consumer gets relative to what is given up (Grewal, Monroe, and Krishnan 1998). The value of the deal, or transaction value, involves a comparison of a reference price (highly involved consumers are more likely to use IRP, and less involved consumers are more likely to use the ARP) with the selling price. If the deal is judged acceptable, a purchase is made; if not, additional search will take place (Grewal, Monroe, and Krishnan 1998; Urbany, Bearden, and Weilbaker 1988).

Conceptual Issues Pertaining to the Dependent Variables

Several conceptual issues emerge from our examination of prior research. One of the most critical is a lack of consensus regarding the conceptual definition of key dependent variables.

Internal Reference Price

Thaler (1985) defines an IRP as an expected or "just" price. This definition is only one of many possible internal representations of reference price. An IRP also can be some average of the range of prices for similar products (Emery 1970). Furthermore, IRP can be defined conceptually as a range of expected prices (Gabor and Granger 1961; Lichtenstein, Bloch, and Black 1988; Monroe 1971; Urbany and Dickson 1991), an aspiration price, a particular market price remembered, an average price paid (Klein and Oglethorpe 1987), or an expected future price (Jacobson and Obermiller 1990). The conceptualization of IRP as a point estimate of some expected price is only one alternative representation.

Several studies have measured IRP (see Appendix A). Some employ alternative measures to capture the construct (e.g., Biswas and Blair 1991; Lichtenstein and Bearden 1989; Urbany, Bearden, and Weilbaker 1988). Urbany, Bearden, and Weilbaker (1988) consider IRP an "expected price range," indicated by subjects' perceptions of the high and low market prices. This definition is similar to Monroe's (1984) "acceptable price range." However, the expected price range might include prices that are not acceptable. More research is needed on how a reference price is represented and stored in memory. Furthermore, research must address whether the very act of measuring it influences or generates responses.

Price expectations also should integrate the consumers' knowledge regarding all relevant products and prices, including competing brands (Rajendran and Tellis 1994). The literature on price expectations suggests that an expectation is an integration of all relevant information (Grewal, Monroe, and Krishnan 1998). Consumers may have an internal reference point that consists of some other price

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[1] The IRP, though often conceptualized as a mathematical point, can be a range of values that constantly adapts to stimuli and cues (Monroe, Grewal, and Compeau 1991).

[2] We thank an anonymous reviewer for this conceptual link.

Figure 1.   A Model of Reference Price Processing
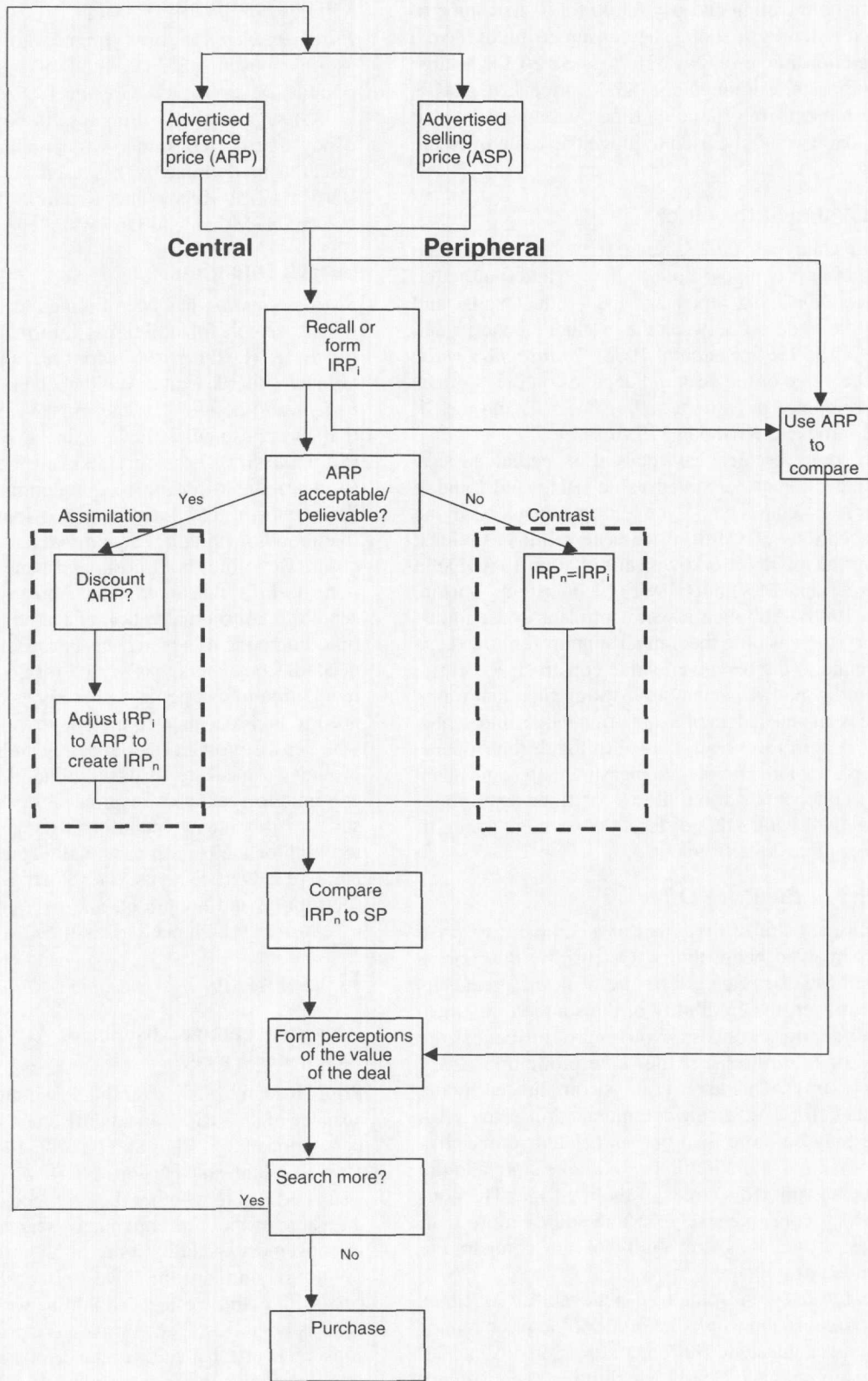
IRP$_i$ = Old internal reference price.
IRP$_n$ = New internal reference price.

(e.g., the last price paid). This IRP should hold less sway than the consumers' range of expected prices because it takes into account less information. For example, a consumer might be traveling and pay $3.00 for a small tube of toothpaste at a hotel gift shop. The consumer might have a price expectation range of, say, $1.75 to $2.50 for a large tube of toothpaste. Although the $3.00 price last paid is likely to be remembered for some time by the consumer, it is unlikely that it would be used to judge the value of future price offers.

Perceived Value of the Offer

Monroe and Chapman (1987) suggest that the perceived value of the offer is composed of acquisition and transaction value. *Acquisition value* represents the product value and depends on the trade-off between the product's benefits and its costs (Monroe 1990; Zeithaml 1988). *Transaction value* represents the value of the deal and depends on the comparison of the reference price (external or internal) and the SP (Grewal, Monroe and Krishnan 1998).

Although some research has focused on perceived savings as an indicator of perceived value (Blair and Landon 1981), other research has employed multiple measures in the form of perceptions of worth, price acceptability, savings, and value for the money (Berkowitz and Walton 1980; Della Bitta, Monroe, and McGinnis 1981; Lichtenstein, Burton, and O'Hara 1988). Although it seems prudent to use multiple indicators, there is little theoretical support for how these indicators relate to the perceived value construct. Recently, Grewal, Monroe, and Krishnan (1998) suggested that transaction value is an antecedent of acquisition value, and acquisition value is akin to overall value. Although their operationalizations are more complex to measure than some alternatives, this conceptualization allows for finer discrimination in the overall values that different consumers attach to a comparative price advertisement.

Believability of the Price Offer

One potential mediator of the effect of a comparative price offer is its perceived believability. Ostensibly, the more a consumer believes the price offer is truthful, the greater its effect is. Moreover, the credibility of the source (e.g., merchant, manufacturer, spokesperson) may influence the believability or truthfulness of the price promotion (Petty and Cacioppo 1981). This latter issue is complicated by the awareness that, for any given communication (advertisement), there may be more than one associated source. If a store is advertising a brand item, then both the store and the brand may be considered sources of the message. The conditions in which consumers rely on one source more than another in assessing the believability of the comparative price claim need examination.

Prior research has conceptualized believability as either global (e.g., Kamins and Marks 1988) or of the price reduction only (e.g., Lichtenstein, Burton, and Karson 1991). The research does not indicate clearly which price(s) consumers believe, the ARP, the SP, or both. Further research should examine the potential multidimensionality of the believability of the price offer; research should measure specifically the believability of the ARP, the advertised sale price (ASP), and the price reduction (i.e., ARP − ASP).

Purchase Intention

Purchase intention, or willingness to buy, has been defined as the consumer's likelihood of purchasing the product (Dodds, Monroe, and Grewal 1991). Dodds and Monroe (1985) suggest that willingness to buy is a behavioral tendency that the consumer will purchase the product. Prior research predominantly has used purchase intention (e.g., Barnes 1975; Keiser and Krum 1976) rather than actual choice (cf. Moore and Olshavsky 1989; Varadarajan 1986).

Search Intention

Search intention has been defined as the consumer's intention to search for additional information before making a purchase (Della Bitta, Monroe, and McGinnis 1981). Urbany, Bearden, and Weilbaker (1988) focus on *search benefit* and define it as the improvement in value or price that the consumer believes can be obtained by searching (Stigler 1961). Ostensibly, the better the current price offer (or deal), the lower the need to continue searching, because the benefit of additional search is reduced given the lower likelihood of finding a better deal and the additional search costs. Therefore, both costs and benefits are integral components in a consumer's decision to engage in additional search. A conceptualization of search that incorporates multiple components (search costs, benefits, and intention) is needed. Consumers may search for a variety of information, in addition to just getting a better deal. Search benefits may need to be broadened to include these types of search (e.g., whether the product fits needs). Search intention alone only provides a measure of the likelihood that a consumer will continue to seek a lower price. It does not capture the reasons for this intent, including whether the search costs are too high or the benefit too small. Thus, the effects of comparative advertisements on search costs, search benefits (both price and nonprice), and overall intentions to undertake further search need assessment.

Hypotheses

Presence Versus Absence of Advertised External Reference Price

Prior research has examined whether the presence or absence of an ARP in an advertisement influences consumer perceptions (e.g., Blair and Landon 1981; Keiser and Krum 1976; Liefeld and Heslop 1985). A central public policy issue pertains to whether the presence of the ARP enhances the value of the offer, attenuates search process, and results in consumers spending more on the product than necessary (by not buying it at the lowest price). From a public policy perspective, these effects should be welcome, as long as the ARP is bona fide. The comparative price information helps consumers attach a value to the offer and could result in substantial savings in money, time, and effort. However, if the ARP is fictitious, then the advertisement is deceptive, potentially can be harmful to consumers, and is in need of further scrutiny.

According to our framework (which builds on prior models, including Grewal and Compeau [1992], Grewal, Monroe, and Krishnan [1998], and Urbany, Bearden, and Weilbaker [1988]), the presence of a higher ARP should result in an upward shift in the IRP, which will create increased perceptions of value and purchase intentions. This higher ARP also should result in reduced believability (because it is further from both the IRP and the SP) and intent to search (because the consumer will believe that it would be difficult to do any better). We hypothesize that

H₁: The mere presence of an ARP in a comparative price advertisement (a) increases consumers' IRP, (b) increases consumers' perceptions of value, (c) increases consumers' perceptions of believability, (d) increases consumers' purchase intentions, and (e) decreases consumers' search intentions.

Advertised Reference Price Levels

Another key public policy issue is how the level of the ARP affects consumers. Results of studies that examine this issue provide evidence pertaining to the role of the ARP (and if it was inflated or fictitious) and consumer perceptions and intentions (e.g., Berkowitz and Walton 1980; Biswas 1992; Della Bitta, Monroe, and McGinnis 1981; Moore and Olshavsky 1989). If these reference prices are fictitious, it would be useful to assess the magnitude of the deception.

We predict that the higher the ARP, the higher consumers' estimates of their IRP, perceptions of value, and purchase intentions will be. However, the higher levels of ARP are likely to reduce the believability of the offer and search intention. When we compare H_1 with this hypothesis for varying levels of ARP (H_2), the predicted effect on believability for the mere presence of a reference price might seem counterintuitive. However, studies typically have compared an advertisement that simply indicates that an item is on sale with an advertisement that also presents an ARP. Thus, believability should be enhanced when some additional information about the product's regular or list price is provided, compared with cases in which only a price labeled as on sale appears (H_1), whereas believability should decrease as the level of the ARP is increased. Thus, we hypothesize the following:

H₂: As the level of an ARP in a comparative price advertisement increases, (a) consumers' IRPs increase, (b) consumers' perceptions of value increase, (c) consumers' perceptions of believability decrease, (d) consumers' purchase intentions increase, and (e) consumers' search intentions decrease.

Note that the prediction for the effects on believability is the reverse of H_1. When the ARP is always present but increasing, it leads to lower believability because it moves farther from the IRP and SP.

Advertised Selling Price

In addition to different reactions in response to different levels of ARP, consumers also may react differently if the ARP is constant but the SP is changed. The SP will be compared with the IRP (which may have been influenced by the ARP) to judge the offer. As the SP decreases and moves farther from the ARP, consumers attach more value to the deal,

believe the offer less, increase their intent to purchase, and decrease their intent to search. However, the SP also may influence the IRP, producing a downward pressure on it as the SP is lowered.

In the presence of a higher ARP, this SP should have a smaller effect on the IRP because consumers are likely to view the ARP as the "normal" or real price (at least, that is what the advertisement suggests) and the "sale" price as unusual or abnormal, which is why it is on sale. This effect may not hold, however, if consumers are exposed constantly to the sale price and learn to disregard the ARP. Thus, in general, lower SPs should result in more favorable responses (Lichtenstein and Bearden 1989; Lichtenstein, Burton, and Karson 1991). As the SP decreases, consumers' perceptions of value and purchase intentions should increase. Alternatively, IRP, believability, and search intentions should decrease.

H₃: As the level of an SP in a comparative price advertisement decreases, (a) consumers' IRPs decrease, (b) consumers' perceptions of value increase, (c) consumers' perceptions of believability decrease, (d) consumers' purchase intentions increase, and (e) consumers' search intentions decrease.

Method

The studies used in this meta-analysis were identified by a computerized search of the Psychlit database, a manual search of periodical indices, the "invisible college" technique (i.e., colleagues working in this research area provided references, full bibliographies, and copies of studies) (Cooper 1984), and an issue-by-issue search of six journals (*Journal of Marketing*, *Journal of Marketing Research*, *Journal of Consumer Research*, *Journal of Public Policy & Marketing*, *Journal of Retailing*, and *Journal of the Academy of Marketing Science*) and two series of proceedings (American Marketing Association and Association for Consumer Research). We also performed an ancestral trace of references in a recursive manner as each article was identified. In total, 38 studies were identified for inclusion in the meta-analysis. The meta-analysis examines 15 central relationships,[3] including the effects of presence and absence of reference price and levels of reference price and SP, which resulted in 86 effect sizes, as measured by eta. Eta is a correlational index, calculated as the square root of the proportion of variance accounted for. It is analogous to a correlation coefficient (Rosenthal and Rosnow 1984). For a complete discussion on calculating and using eta as an effect size indicator, see Hedges and Olkin (1985), Hunter, Schmidt, and Jackson (1982), and Rosenthal (1984).

Effects of Method Factors

Differences in method often are cited to explain variances in the results across studies in a given research area (Appendix B). We tested the effects of method factors on the magnitude of effect sizes across the 38 studies. Because of the large number of relationships examined across these 38 studies,

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[3]We also examined the effects of store and brand name but do not report them here because too few studies were available to test across most cells and the theory to develop hypotheses still is developing. Clearly, there is a need for research examining these effects.

Table 1.   A Quantitative Assessment of Substantive Results

Hypothesis	N	Average Eta	95% Confidence Interval		File Drawer N		
			Lower	Upper	.05	.10	.15
Presence Versus Absence of ARP							
H_{1a}: PARP→IRP	5	.26	.03	.50	21	8	4
H_{1b}: PARP→PV	5	.21	.03	.39	16	6	2
H_{1c}: PAR→BEL	1	.29	NC	NC	5	2	1
H_{1d}: PARP→PI	10	−.03	−.01	.08	NC	NC	NC
H_{1e}: PARP→SI	3	.17	.09	.25	7	2	1
Level of ARP							
H_{2a}: ARP→IRP	7	.29	.14	.44	43	17	8
H_{2b}: ARP→PV	6	.25	.10	.41	28	11	5
H_{2c}: ARP→BEL	4	.21	−.24	.65	NC	NC	NC
H_{2d}: ARP→PI	6	.11	.01	.19	7	1	NC
H_{2e}: ARP→SI	4	.12	.03	.21	6	1	NC
Level of Advertised SP							
H_{3a}: SP→IRP	6	.25	.12	.37	24	9	4
H_{3b}: SP→PV	8	.35	.22	.48	48	20	11
H_{3c}: SP→BEL	5	.10	.01	.09	5	NC	NC
H_{3d}: SP→PI	8	.21	.17	.24	26	9	3
H_{3e}: SP→SI	7	.27	.16	.37	31	12	6

PARP = presence versus absence of advertised reference price,
RP = advertised reference price,
SP = advertised selling price,
IRP = internal reference price,
PV = perceived value,
BEL = perceived believability of price offer,
PI = purchase intentions,
SI = search intentions, and
NC = not calculated.

few effect sizes are available to test many of the method variances. Therefore, we performed exploratory tests on method differences when data were sufficient.

Our meta-analysis of the 38 studies for the proposed 15 relationships resulted in 86 effect sizes. Our exploratory analysis suggests that methodological factors at the overall level, such as use of manipulation checks, type of advertisement, and order of price information, did not affect the magnitude of the effect sizes.[4] Unfortunately, we could not assess the impact of other variables (e.g., type of IRP measured, design, measurement of purchase intention versus choice) because of the restrictive cell sizes.

Results

A summary of the substantive results of the 38 empirical studies that examine comparative price advertising is provided in Table 1. Although 38 empirical studies have been conducted, certain relationships have received little attention. As we previously mentioned, the dearth of studies

examining the effects of store and brand name did not allow for complete examination. The quantitative assessment of the research results in terms of the size of the measured effects is expressed by η (Rosenthal and Rosnow 1984). Table 1 is organized according to three key independent variables: (1) the presence or absence of a comparative external reference price, (2) the level of the advertised comparative reference price, and (3) the level of the SP. The following discussion of the substantive findings therefore is organized according to these three independent variables and their effects on the five foremost dependent variables: (1) IRP, (2) perceived value of the offer or deal, (3) believability of the offer, (4) purchase intention, and (5) search intention.

Because our primary objective was to examine whether comparative price advertising was effective, we calculated the simple average effect size estimate (η), the 95% confidence interval (CI) (Hunter and Schmidt 1990; Rosenthal 1984), and the file drawer N, which indicates how robust the results are (Rosenthal 1984). If the 95% CI does not include zero, the relationship under examination is significant.

The file drawer N provides an assessment of how vulnerable our analysis is to future null results. It represents the number of studies that have not been published because of null results that would be needed to bring the significant effect (i.e., the simple average η in Table 1) down to a tar-

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[4]The magnitude of the effect size did not vary as a function of whether the study conducted a manipulation check ($\overline{X}_{no\ MC}$ = .19, n = 45 versus $\overline{X}_{MC}$ = .23, n = 40, $t_{(83)}$ = −1.24, p = .22), the nature of advertisement ($\overline{X}_{real}$ = .20, n = 8 versus $\overline{X}_{simulated}$ = .20, n = 77, $t_{(83)}$ = .00, p > .9), or order of price information ($\overline{X}_{RP/SP}$ = .17, n = 6 versus $\overline{X}_{SP/RP}$ = .22, n = 41, $t_{(36.14)}$ = −1.63, p = .11 [unequal variance t-test]).

geted η level (three levels were examined: .05, .10, and .15). For example, to bring the significant effect of ARP on buyers' IRP from an η = .26 to η = .05 would require that 21 null results be uncovered and added to our analysis. In Table 1, we summarize this information.

Homogeneity Tests

Following procedures suggested by Rosenthal and Rosnow (1984), for each hypothesis, we tested the various effect sizes for homogeneity.[5] If homogeneous, they were combined, and a 95% CI was calculated to assess support for the hypothesis (see Table 1). The tests disclosed that there was a consistency of results for most of the relationships examined. Thus, the seemingly inconsistent results in terms of the magnitude and direction of the effects reported in the research are misleading. The differences can be attributed to the distribution of effects over the population.

Substantive Results

We present the substantive results in Table 1; they are fairly self-evident. Cells in which the CI does not include zero demonstrate that the average effect size is significantly different from zero.

H_1

The results support hypotheses H_{1a}, H_{1b}, and H_{1e}; the presence of an ARP in a comparative price advertisement increases consumers' IRP and their perception of value and reduces their intentions to search for a lower price. Only one study examined whether the presence of an ARP affected consumers' believability of the price offer (H_{1c}), and thus, this hypothesis is not tested or discussed. Eleven effect sizes were found that examined H_{1d}, that is, whether the presence of an ARP enhanced consumers' purchase intentions. The 11 effect sizes were not found to be homogeneous. When we eliminated the effect from Varadarajan's (1986) study, the resulting 10 effect sizes were homogeneous and do not support the hypothesis (average η = -.03, CI = -.01 to .08). A possible reason for Varadarajan's (1986) unusually large effect size (η = .31) is that his field study used actual purchase as the dependent variable and not purchase intention (which was used by the other studies). Thus, the differences between purchase intentions and purchases warrant additional research.

H_2

Including a reference price provides the consumer with a point of comparison by which to judge the lower offering price. The meta-analysis results indicate that, as the level of the ARP increases, consumers' IRP, perceptions of value, and purchase intentions also increase, and their search inten-

tions for a lower price decrease (i.e., support for H_{2a}, H_{2b}, H_{2d}, and H_{2e}). The expected negative effect on believability, however, was not supported. Although prior research does not make any definitive prediction whether the level of ARP increases or decreases the believability of the price offer, we based H_{1c} and H_{2c} on the notion that, as the ARP moves farther and farther from the SP, it becomes less believable (Biswas 1992; Gupta and Cooper 1992). The results of the meta-analysis of four effect sizes does not support a relationship between the level of the ARP and the believability of the price offer (average η = .21, CI = -.24 to .65).

H_3

The results also support H_{3a-e}; as the SP decreases, consumers' IRP, believability of price offer, and price search intention decrease, whereas their perception of value and purchase intention increase.

Discussion

In this review, we summarize and critique the conceptual, methodological, and substantive domains of the comparative price advertising research. We next discuss implications for public policymakers, limitations of the meta-analysis, and avenues for further research.

Public Policy and Managerial Implications

We believe that the use of meta-analysis is a powerful tool to study public policy issues. It provides a comprehensive integration of the extant research and enables researchers to draw conclusions from seemingly disparate results. In this research study, we focused on whether the ARP provided in a comparative price advertisement enhances buyers' IRP estimates, value perceptions, and purchase intentions and lowers their search intentions. The results largely support the hypotheses.

Examining the results of various studies individually would suggest that many of the studies contradict one another. Thus, marshaling the evidence from this meta-analysis into a courtroom can offer clear and substantial evidence that incorporates the results from all known studies in a research area. Furthermore, the results of such meta-analytical reviews can be used to counter legal tactics, such as muddling an issue with seemingly different results from different studies to support one claim or another, or to introduce confusion or reasonable doubt.

This meta-analysis illustrates that the magnitude and homogeneity in effect sizes leaves little doubt that comparative price advertisements work. That this effect is unaffected by vast differences in methods suggests that it is robust. Overall, the potential for deception seems rife because external reference prices have a strong influence on consumers, even when they are exaggerated (see also Urbany, Bearden, and Weilbaker 1988). The effects on believability are not supported by our meta-analysis in general, and the one significant effect we were able to identify, the effect of SP on believability, was quite small for a mental response variable (.10). These results no doubt are due, in part, to the small number of effect sizes available.

The average sizes for the external reference price effects are smaller than those for the effects of the SP. This suggests

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[5]We assessed the statistical homogeneity of the effect sizes by first calculating the associated Fisher z appropriate to each of effect sizes (eta, η), and N – 3, where N is the number of sampling units on which each effect size is based. Then we obtained the statistical significance of the homogeneity of the effect sizes from a chi-square computed with the following formula (see Brown and Stayman 1992; Rosenthal and Rosnow 1984):

$\Sigma[(N_j - 3)(\bar{z}_j - z)^2]$ is distributed as χ^2 with K – 1 df,

where $\bar{z}$ is the weighted mean z as follows:

$\bar{z} = \Sigma(N_j - 3)z_j/\Sigma(N_j - 3)$.

that the adverse effects of reference prices may not be as severe as previously suggested (Keiser and Krum 1976). The magnitude of the average effect sizes suggests that consumers are more responsive to reductions in SPs than to increases in ARPs. This effect indicates that consumers place a greater value on reducing the monetary sacrifice represented by the SP (reducing the loss) than on increasing the value of the deal (increasing the gain). Public policymakers can rely on consumers to offer some defense to the widespread use of grossly exaggerated reference prices.

Nonetheless, an inflated and/or false ARP is likely to enhance consumers' IRP estimates and ultimately increase perceptions of value and likelihood of purchases and reduce search. When ARPs are inflated, they are always deceptive. It is difficult, however, to determine the veracity of different types of advertised comparative prices, some being more difficult to judge than others. "Regular price" appears somewhat easier to verify because consumers can examine the historical price offerings and actual sales to judge whether a regular price is bona fide; however, that perception is misleading.

Policymakers encourage retailers and advertisers to provide consumers more information so they can assess the truthfulness of these advertisements better. However, there is something wrong in the legal logic that suggests that disclosing a deceptive practice compensates for the deception. Advertisers that inflate the savings associated with the comparative price claim will be hesitant to disclose the deception openly, truthfully, completely, and in a compelling manner; advertisers that do not inflate the comparative price claim do not need to provide additional information. Moreover, advertisers recently have attempted to protect themselves against deceptive advertising charges by skillfully disclosing the methods used to develop the ARP; however, this tactic is woefully inadequate (*Colorado v. Mays Department Store* 1990). Explaining the deceptive manner in which the inflated ARP was formed does not mean that consumers are not harmed. Much of the time, this disclosure is hidden in small print as a footnote buried in vague and confusing language. Some consumers even may interpret this disclosure as testimony to the veracity of the comparative price claim.

Aggressive legal actions against deceptive ARPs may serve as a deterrent from future abuses (see the review of recent cases in Compeau, Grewal, and Grewal 1994); however, the inconsistencies from state to state in the nature of the regulations and the general lack of vigor in identifying violations and aggressively prosecuting violators suggest that federal enforcement efforts should be stepped up to complement the states' efforts. As consumers who are sensitized to this area because of our research interests, we find inflated comparative price claims in advertisements on a regular basis, with apparently no concern for potential legal prosecution. Although it appears that current laws are adequate, a lack of a highly visible and vigorous enforcement suggests that the federal government should take the lead in educating sellers about the FTC guidelines and then aggressively enforcing them. A push for simple disclosure, though it would require less effort and money, is likely to be ineffective. Moreover, before pursuing such disclosure as a remedy, policymakers must determine what kinds of disclosures reduce the potential for deception, such as retailers inform-

ing customers about the duration of the sale, the schedule of sales they plan to run during the year, and so forth. Not all forms of disclosures actually assist the consumer in judging the veracity of the claim.

The findings from the meta-analysis suggest that comparative price advertising can be an effective tool for managers. Simply put, the mere presence of an ARP increases consumers' IRP and, thus, their perceptions of value and intent to purchase. From a managerial perspective, the use of comparative price advertisements conveys to consumers a higher value for a product that currently is selling at a lower price. In one respect then, it is an attempt to "counteract" the possible lowering effect of the SP on consumers' quality judgments, while preserving the lower SP's ability to reduce the perception of the monetary sacrifice. It has been demonstrated that this lower SP also can reduce a consumer's IRP. Ironically, though dropping the SP may increase consumers' perceptions of value, because of the lower sacrifice, it also may reduce value perceptions because of lower quality perceptions and a comparison with a new, reduced IRP. Thus, the net effect of lowering the SP depends on the extent to which consumers allow the SP to influence their quality perceptions and IRP, an issue not addressed by prior research.

Another significant finding is that lowering the SP appears to have a greater impact on consumers' perceptions of value than increasing the external reference price does. That is, there appears to be an offsetting influence that constrains the effect of higher reference prices, but not of lower SPs. This effect is plausible, however, only when consumers have some basic knowledge of price ranges. That is, given some knowledge of general price ranges, a decrease in an SP will produce a greater effect than an identical increase in the ARP. A question remains as to whether a floor exists for this effect.

Managers should maximize the effect of the ARP on the IRP and minimize the impact of the SP on the IRP. One way to accomplish this is to differentiate the SP from the actual value of the item as much as possible, striving to emphasize that the SP is a unique offering, not reflective of "normal" circumstances. Items that appear on sale a good deal of the time are likely to provide a greater impact of the SP on the IRP. That is, a consumer's IRP likely will approximate the sale price after he or she repeatedly sees the item at that sale price, and perceptions of value will not be affected greatly.

Limitations and Directions for Further Research

In this review, we examine a small group of variables prominent in the literature. Other variables have been investigated (e.g., source credibility, store, brand) and, with additional data points, should be examined in subsequent reviews. The lack of a significant effect for the level of the external reference price on believability also may be due to a limited number of effect sizes or to the alternative operationalizations of the price offer believability construct.

Additional research should explicitly incorporate the simultaneous examination of ARP, SP, and their interactions on the various dependent measures (e.g., 3 × 3 with an absent level, two levels of increasing ARP, and two levels of decreasing SP).[6] In addition, research must address the

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[6]We thank an anonymous reviewer for making this suggestion.

Appendix A.   An Overview of the Empirical Comparative Price Advertising Research

Study: Author (cite)	Independent Variable[a]	Dependent Variable[b]	Theory[c]
# 1: Fry and McDougall (1974)	*Discount* (4): 25%, 50%, 11%, 44%; *Store* (2): low, high credibility	*Bel* (1,3)	EX
# 2: Barnes (1975)	*Semantic Cues* (3): Special SP, 25% off SP, RP/SP; *Newspaper* (3): high, moderate, low prestige; *Store* (2): high prestige department, low prestige discount	*Bel, PV, PI,* all (7,6)	EX
# 3: Keiser and Krum (1976)	*Semantic Cues* (2): RP/SP, SP	*PJ* (1,5); *Willingness to Read Advertisement* (1,5); *Bel* (1,5); *PI* (1,5)	EX
# 4: Sewall and Goldstein (1979)	*None*	*Reference Price Interpretation* (open)	EX
# 5: Berkowitz and Walton (1980)	*Semantic Cues* (4): RP/SP, Total value/SP, Compare at/our price, % off/now only SP; *Discount* (2): 10%, 40%; *Store* (2): discount, department; *Product* (3): low, medium, high price	*PV* (1,7); *PJ* (1,7); *PI* (1,7)	AL
# 6: Blair and Landon (1981)	*Semantic Cue* (3): SP, RP/SP, SP/MSLP	*Normal Price* ($); *Lowest Price* ($); *PV* (1,4)	EX
# 7: Della Bitta, Monroe, and McGinnis (1981) Exp. 1	*Semantic Cues* (8): SP, RP/SP, RP/% off, RP/$ off, RP/SP/$ off, RP/SP/% off, RP/% off/$ off, RP/SP/% off/$ off; *Amount Off Discount* (5): 10%, 20%, ..., 50%; *Reference Price* (2): $50, $120	*PV* (3,7); *SI* (2,7); *Bel* (1,7); *PI* (3,7) (all α > .61)	AC
Exp. 2	Complete replication of Exp. 1	Complete replication of Exp. 1, (all α > .61)	
# 8: Ahmed and Gulas (1982)	*Context* (2): catalog, newspaper advertisement	*PV* ($); *PJ* ($); *Bel* ($)	EX
# 9: Friedman et al. (1982)	*Discount* (4): ab, 28%, 50%, 75%; *Sale Price* (1): $49.95; *Reference Price* (4): ab, $200, $100, $75	*PI* (1,6); *Normal Price* ($); *Maximum Willing to Pay* ($)	AC
#10: Raju and Hastak (1983)	*Price Deals* (3): ab, $.40 off, $1.79 off	*Cognitive Responses; Attitude:* (Bel × Eval) for 6 attributes; *Attitude-brand* (3,7, α = .9); *Attitude-act* (4,7, α = .87); *PI* (1,7)	EX
#11: Oglesby (1984)	*Discount* (4): 10%,30%,50%,70%; *Semantic Cue* (2): RP/% off/SP, RP/SP	*Perceived Price Attitude* (5,5, α = .8); *Perceived Quality* (1,7)	EX
#12: Bearden, Lichtenstein, and Teel (1984)	*Semantic Cue* (2): RP/SP, SP; *Coupon* (2): ab, present	*PJ* (5,7); *PI* (4,7); *Attitude-Purchase and Use* (7,7);	AC

Study	Manipulations	Measures	Type
Exp. 1	*Brand (3):* national, generic, private	*(all α > .85)*	EX
Exp. 2	Complete replication of Exp. 1	Complete replication of Exp. 1	
Exp. 3	Complete replication of Exp. 1	Complete replication of Exp. 1	
Exp. 4	Complete replication of Exp. 1	Complete replication of Exp. 1	
#13: Liefeld and Heslop (1985)	*Semantic Cues (5):* SP, AP/MSLP, Sale/SP, Sale/RP/SP, Sale/MSLP/SP	*Normal Price ($), Price Accuracy* (normal price – actual price)	AC
#14: Varadarajan (1986)[d] Exp. 1	*Semantic Cues (3):*	*Choice*	AC
Exp. 2	Get 2 for price of 1, Buy 1 get 1 free, $.01 with a purchase of 1 regular priced; 50% off regular price, ½ off regular price, $1.00 off regular price; RP/$1.00 off/SP, RP/SP, SP	*Choice*	AC
Exp. 3		*Choice*	
#15: Chapman (1987)	*Promotional Frame (4):* SP, RP/SP, RP/coupon, RP/rebate; *Sale Price (4):* $84.95, $99.95, $114.95, $124.95	*Perceived Quality (4,7); Monetary Sacrifice (3,7); Reference Sacrifice (3,7); PI (3,7) Acquisition Value (3,7); Transaction Value (3,7); Redemption Effort (3,7)* (all α = .78–.85)	TU
#16: Burton and Lichtenstein (1988)	*Reference Price (3):* $319, $399, $699; *Price (1):* $299; *Consistency (2):* low, high; *Distinctiveness (2):* low, high	*Attitude-Ad-Cognitive (5,9, α = .82); Attitude-Ad-Affective (6,9, α = .92); Attitude-Deal (4,9, α = .92)*	TU
#17: Diamond and Campbell (1988)	*Promotion (4):* discount, extra product, premium product, control group	*Average Price ($); Expected Price ($); Frequent Price ($); Fair Price ($); Most Price ($); Expensive (1,7); Quality (1,7)*	EX
#18: Kamins and Marks (1988)	*Appeal Sidedness (2):* 1 versus 2; *% Savings (4):* 5,10,14,20	*PV (1,7); Bel (1,7); Quality (1,7); PI (1,7)*	AL, AT
#19: Lichtenstein and Bearden (1988)	*Reference Price (2):* $8215, $7414; *Price (1)* –$7272; *Consistency (2):* low, high; *Distinctiveness (2):* low, high	*Normal Price ($)*	EX
#20: Mobley, Bearden, and Teel (1988) Exp. 1	*Semantic Cue (2):* Save up to %, Save %; *Discount (2):* 25%, 50%; *Product (2):* tennis shoes, sport shirt	*PV (3,7, α = .82); Perceived Informational Value of Advertisement (4,7, α = .79); Bel (average market price – expected price to pay)*	TU
Exp. 2	*Semantic Cues (2):* Save up to %, Save %; *Discount (2):* 25%, 50%	*PV (3,7, α = .85); Perceived Informational Value of Advertisement (4,7, α = .94); Bel (same)*	
#21: Urbany, Bearden, and Weilbaker (1988) Exp. 1	*Reference Price (4):* ab, $359, $419, $719; *Price (1):* $319	*AP ($); Lowest Market Price ($); Normal Price ($); PV (3,7, α = .79); Choice; Bel (2,7); Search Benefits (lowest expected price – sale price)*	AL, AC, TU
Exp. 2	*Reference Price (3):* ab, $419, $719; *Price (2):* $279, $319	*Same Variables with α = .86 for PV*	

Study	Manipulations	Measures	Codes
#22: Lichtenstein and Bearden (1989)	Reference Price (3): $319, $399, $699; Consistency (2): low, high; Distinctiveness (2): low, high	PV (4,9, α = .8); Attitude-Deal (4,9, α = .92); Source Credibility (5,9, α = .78); Normal Price ($); Lowest Price ($); Fair Price ($)	AL, AC, AT
#23: Grewal (1989) Exp. 1	Selling Price (2): $75, $135	Perceived QL (5,7, α = .88); Perceived MS (4,7, α = .76), Perceived Benefits (5,7, α = .88), AV (4,7, α = .91), Reference Sacrifice (4,7, α = .82), TV (4,7, α = .87), PV (4,7, α = .87), PI (4,7, α = .84), SI (4,7, α = 6), Bel (4,7, α = 6), Normal Price ($), AP ($)	TU, AL, AC
Exp. 2	Selling Price (2): $99, $180; Reference Price (2): $200, $250	Perceived QL (4,7, α = .84); Perceived MS (4,7, α = .87), Perceived Benefits (5,7,α = .9), AV (4,7, α = .93), Reference Sacrifice (4,7, α = .86), TV (4,7, α = .89), PV (4,7, α = .88), PI (4,7, α = .92), SI (4,7,α = .79), Bel (4,7, α = .7), Normal Price ($), AP ($)	TU, AL, AC
Exp. 3	Selling Price (3): $100, $140, $180; Reference Price (4): ab, $200, $250, $350; Attributes (3): ab, functional, nonfunctional	Perceived QL (4,7, α = .85); Perceived MS (4,7, α = .87), Perceived Benefits (5,7, α = .89), AV (4,7, α = .92), Reference Sacrifice (4,7, α = .83), TV (4,7, α = .86), PV (4,7, β = .92), PI (4,7, α = .93), SI (4,7, α = .76), Bel (4,7, α = .83), Normal Price ($), AP ($)	TU, AL, AC
#24: Lichtenstein, Burton, and O'Hara (1988) Exp. 1	Reference Price (2): $8215, $7414; Reference Price (3): $319, $399, $699	PV (4,9, α = .85); Attitude-Deal (5,9, α = .94)	AT
Exp. 2		PV (4,9, α = .92); Attitude-Deal (5,9, α = .92)	AT
#25: Moore and Olshavsky (1989)	Discount (3): 5%, 30%, 70%; Brand (2): low, high familiarity; Store (2): department, discount	Choice	AT
#26: Diamond and Sanyal (1990)	Promotional Frame (2): gain, reduced loss	Choice	TU
#27: Gotlieb (1990)	Price Saving (2): ab, 30%; Source Credibility (2): low, high	Cognitive Responses; Involvement (16,7, α = .96); Attitude-Product (3,7, α = .93); Technical QL (2,7, α = .83); Functional QL (3,7, α = .75)	ELM
#28: Gotlieb and Fitzgerald (1990)	MSLP (2): $289, $429; Involvement (2): low, high; Experience (2): low, high	PI (1,9)	ELM
#29: Gotlieb and Swan (1990)	Price Saving (2): ab, 30%; Source Credibility (2): low, high; Experience (2): low, high	Cognitive Responses; Involvement (16,7, α = .96); Attitude-Product (3,7, α = .93); Attitude-ad (2,7, α = .84)	ELM
#30: Inman, McAllister, and Hoyer (1990)	Promotion Type (3): real, signal-only, absent; Need for Cognition (2): low, high	Choice	ELM

Study	Independent Variables[a]	Dependent Variables[b]	Theory[c]
#31: Biswas and Blair (1991)	Reference Price (2): $599, $299; Store (2): discount, department;	Normal Price ($); Low Price ($); Average Price ($); High Price ($); PI (1,2);	AL, AC, TU
#32: Gotlieb and Dubinsky (1991)	Brand (2): familiar, unfamiliar; Selling Price (1): $229	PV (normal – selling); Discount (RP – normal); Shop Around Savings (Selling – Low)	AL
#33: Gupta and Cooper (1992)	Sale Price (2): $289, $429; Competitors Price (2): $199, $599; Credibility (2): low, high	Cognitive Responses; Issue Involvement (20,7, α = .95); PI (3,7, α = .91)	AL
#34: Lichtenstein, Burton and Karson (1991)	Discount (7): 10%, 20%,..., 70%; Brand (2): National, Store; Store (2): high, low image	Perceived Discount ([Perceived Regular Price – Perceived Discounted Price]/Perceived Regular Price); Change in PI (1,19)	AL, AC, AT, CI
	Reference Price/Sale Price Cue (6): $159/$79, $119/$79, $99/$79, $119/107, $119/59, control; Semantic Cues (5): 3 low consistency (was/now a $ value/sale, regular/sale, % off/now only 2 at high distinctiveness (compare at/our price, seen elsewhere/our price)	Fair Price (1,7); Normal Price (1,7); Most Price ($); Bel (2,7, r = .50) PV (4,7, α = .90); Attitude-Deal (3,7, α = .95); Source Credibility (5,7, α = .86)	
#35: Gotlieb and Sarel (1991a)	Ad (2): comparative, noncomparative; Source Credibility (2): low, high; Sale Price (2): $289, $429	PI (3,7, α = .89)	AB
#36: Gotlieb and Sarel (1991b)	Sale Price (2): $289, $429; Competitors Price (2): $199, $599; Credibility (2): low, high	Perceived Quality (3,7, α = .85); PI (3,7, α = .91)	AL
#37: Kalwani and Yim (1992)	Price Discount Frequency (4): 1,3,5,7 times in 10 weeks; Price Discount (4): 10%, 20%, 30%, 40%	Expected Brand Price ($); Brand Choice	EX, AL, AC
#38: Biswas (1992)	Brand (2): familiar, unfamiliar; Reference Price (2): plausible ($299), implausible ($599)	Low Price ($); AP – Market (IRP) ($); PI (1,2); Discount (RP – NP); Shop Around Savings (SP – Low); TV (SP – IRP)	TU, AL, AC

[a]SP = sales price, RP = reference price, NR = not reported, PR = price, MSLP = manufacturer's suggested list price, ab = absent. Following each independent variable are the number of levels in parentheses and a brief description of each level.

[b]PV = perceived value, Bel = believability, QL = quality, MS = monetary sacrifice, PI = purchase intention, SI = search intention, AP = average price, NP = normal price, TV = transaction value/utility, AV = acquisition value/utility. When available, the number of items, number of points on scale, and reliability of the measure are presented in parentheses after each dependent variable.

[c]EX = exploratory, AL = Adaptation Level Theory, AC = Assimilation-Contrast Theory, TU = Transaction Utility Theory, AT = Attitude Theory, ELM = Elaboration Likelihood Model, AB = Attribution Theory, CI = Correspondence Inference Theory.

[d]Only the abstract was published, but the author provided data. The complete study was published later in Leigh and Varadarajan (1991).

Appendix B.   Methodological Characteristics of Empirical Comparative Price Advertising Research

	Design[a]	Nature of Advertisement	Price Order	Analysis	Manipulation Check	Sample
#1: Fry and McDougall (1974)	Field Quasi-Ex	Real	NR	Reg	No	332 adults
#2: Barnes (1975)	Mail Quasi-Ex 3 × 3 × 2	Real	NR	MANCOVA	No	900 adults
#3: Keiser and Krum (1976)	Lab Ex	Simulated	NR	Chi-square	No	143 students
#4: Sewall and Goldstein (1979)	Field Survey	Catalog	NR	Chi-square	No	110 adults
#5: Berkowitz and Walton (1980)	Lab Ex 4 × 2 × 3	Simulated	RP-SP	MANOVA	No	568 adults
#6: Blair and Landon (1981)	Field Survey	Simulated	SP-RP	t-test, MANOVA	No	132 adults
#7: Della Bitta, Monroe, and McGinnis (1981)	E1: Lab Ex 2 × 5 × 8 E2: Lab Ex 2 × 5 × 8	Simulated Simulated	RP-SP PR-SP	MANOVA, MC, CI, C MANOVA, MC, CI, C	No No	400 students 400 students
#8: Ahmed and Gulas (1982)	Mail Survey	Real	NR	t-test	No	257 adults
#9: Friedman et al. (1982)	Lab Ex	Simulated	NR	ANOVA, t-test	No	243 adults
#10: Raju and Hastak (1983)	Lab Ex 4 × 2	NR	RP-SP	ANOVA	Yes	120 students
#11: Oglesby (1984)	Lab Ex 4 × 2	NR	RP-SP	ANOVA	Yes	120 students
#12: Bearden, Lichtenstein, and Teel (1984)	E1: Lab Ex 2 × 2 × 3 E2: Lab Ex 2 × 2 × 3 E3: Lab Ex 2 × 2 × 3 E4: Lab Ex 2 × 2 × 3	Simulated Simulated Simulated Simulated	NR NR NR NR	MANCOVA MANCOVA MANCOVA MANCOVA	Yes Yes Yes Yes	292 adults 161 adults 259 adults 144 adults
#13: Liefeld and Heslop (1985)	Field Ex	Real	NR	ANOVA, Chi-square	No	207 adults
#14: Varadarajan (1986)	E1: Field Ex E2: Field Ex E3: Field Ex	Real Real Real	NR NR SP-RP	ANOVA ANOVA ANOVA	No No No	NR adults NR adults NR adults
#15: Chapman (1987)	Lab Ex 4 × 4	Text	RP-SP	ANOVA, MC	No	255 students
#16: Burton and Lichtenstein (1988)	Lab Ex 2 × 2 × 3	Simulated	RP-SP	ANOVA, ANCOVA, Reg	Yes	278 students
#17: Diamond and Campbell (1988)	Lab Ex 1 × 4	Simulated	SP	ANOVA, MC	No	103 students
#18: Kamins and Marks (1988)	Lab Ex 2 × 4	Text	SP-RP	ANOVA, MC, Reg	No	171 students
#19: Lichtenstein and Bearden(1988)	Lab Ex 2 × 2 × 2	Simulated	RP-SP	ANOVA	Yes	528 students
#20: Mobley, Bearden, and Teel (1988)	E1: Lab Ex 2 × 2 × 2 E2: Lab Ex 2 × 2	Real Real	NR NR	MANCOVA MANCOVA	Yes Yes	160 students 83 students

Study	Design	Setting	Price	Analysis		Sample
#21: Urbany, Bearden, and Weilbaker (1988)	E1: Lab Ex 1 × 4	Simulated	NR	MANOVA, LOGIT, C	Yes	113 students
	E2: Lab Ex 2 × 3	Simulated	NR	MANOVA, LOGIT, C	Yes	168 students
#22: Lichtenstein and Bearden (1989)	Lab Ex 2 × 2 × 3	Simulated	RP-SP	MANOVA, ANOVA	Yes	278 students
#23: Grewal (1989)	E1: Lab Ex 2 × 1	Text	RP-SP	ANOVA	No	29 students
	E2: Lab Ex 2 × 2	Text	RP-SP	ANOVA	No	58 students
	E3: Lab Ex 3 × 4 × 3	Text	RP-SP	ANOVA, C	No	576 students
#24: Lichtenstein, Burton, and O'Hara (1988)	E1: Lab Ex 2 × 2 × 2 × 2	Simulated	RP-SP	FACTOR, Reg	Yes	544 students
	E2: Lab Ex 2 × 2 × 3	Simulated	RP-SP	ANOVA, Reg	No	278 students
#25: Moore and Olshavsky (1989)	Lab Ex 3 × 2 × 2	Simulated	RP-SP	CATMOD, ANOVA	No	228 students
#26: Diamond and Sanyal (1990)	Lab Ex 2	Simulated	SP	Chi-square	No	73 adults
#27: Gotlieb (1990)	Lab Ex 2 × 2	Simulated	NR	ANOVA	Yes	126 students
#28: Gotlieb and Fitzgerald (1990)	Lab Ex 2 × 2 × 2	Simulated	RP	ANOVA	Yes	97 adults
#29: Gotlieb and Swan (1990)	Lab Ex 2 × 2 × 2 × 2	Simulated	NR	ANOVA	Yes	126 students
#30: Inman, McAllister, and Hoyer (1990)	Lab Ex 2 × 3	Simulated	NR	ANOVA, t-test	No	155 students
#31: Biswas and Blair (1991)	Lab Ex 2 × 2 × 2	Simulated	RP	ANOVA	Yes	234 students
#32: Gotlieb and Dubinsky (1991)	Lab Ex 2 × 2 × 2	Simulated	SP-RP	ANOVA	Yes	118 students
#33: Gupta and Cooper (1992)	Lab Ex 2 × 2 × 2	Text	MIXED	ANOVA	Yes	290 students
#34: Lichtenstein, Burton, and Karson (1991)	Lab Ex 5 × 6 + Control	Real	NR	MANOVA, ANOVA	Yes	830 students
#35: Gotlieb and Sarel (1991a)	Lab Ex 2 × 2 × 2	Simulated	SP-RP	ANOVA	Yes	148 students
#36: Gotlieb and Sarel (1991b)	Lab Ex 2 × 2 × 2	Simulated	SP-RP	ANOVA	Yes	118 students
#37: Kalwani and Yim (1992)	Lab Ex 4 × 4	NR	NR	ANOVA, MC	Yes	188 students
#38: Biswas (1992)	Lab Ex 4 × 4	NR	NR	ANOVA, MC	Yes	188 students

[a] All designs were between-subjects designs. Studies #1, #8, #13, and #30 also used at least one within factor.

Note:
Ex = experimental design,   Lab = laboratory setting,
RP = reference price,   SP = sales price,
MC = multiple comparisons,   C = contrasts,
CI = confidence interval,   Reg = regression.
NR = not reported,

effects of ARP relative to individual subjects' IRPs (e.g., above, at-level, and below) using a pre- and postresearch design.

Although public policy implications can be gleaned from a meta-analysis that examines theory-testing research, there is a need for research that specifically examines some of the issues we raise with regard to potential deception. Studies directly examining and measuring deception would be most useful in determining the conditions in which comparative price advertisements are more likely to deceive consumers. One method that could be used to measure deception is to measure specifically the shift in IRP in response to inflated and fictitious levels of ARP.

Manipulations of involvement, knowledge, time pressure, product type, level of advertising expenditure, and frequency of comparative price advertising could help significantly in understanding these variables' effects on the likelihood of deception. Understanding the effects of comparative advertising in conditions of high versus low involvement would provide a more comprehensive test of our conceptualization.

There is also a need for longitudinal investigation into the longer-term effects of repeated exposure to comparative price advertisements. Although the data hint at diminishing returns, we simply do not know at this point whether consumers become desensitized to ARPs over time. We expect that comparative price advertising would lose its distinctiveness over time if overused.

Prior research has attempted to distinguish between an ARP supplied by a manufacturer (e.g., manufacturer's suggested list price) (Ahmed and Gulas 1989; Blair and Landon 1981; Liefeld and Heslop 1985) and one supplied by a retailer/merchant (Lichtenstein and Bearden 1989). Because these different reference prices evoke different levels of source credibility, there is a need for a conceptual distinction between the source of the reference price claim and its effect on price perceptions. One limitation of our meta-analysis was that, due to a lack of studies, we could not examine the role of different reference prices (or semantic cues).

Other issues in need of further research include the effects of brand and store image. What little research exists indicates that these variables may have key roles in consumers' responses and moderate the effects of reference price. The exact nature and impact of these roles, however, cannot be established currently. Additional research is needed to incorporate the price–quality relationship in predicting and understanding the effects of the reference and selling price. Finally, this research also can be extended by including a review of dissertation abstracts in the database of studies to be examined.

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