

Research Article

# Package size and perceived quality: The intervening role of unit price perceptions

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## Abstract

This research examines how package size can influence quality judgments for packaged goods, and also identifies a price-based mechanism for the observed size–quality relationship. Results from several studies show that a product in a smaller package is rated more favorably than the equivalent product in a larger package. Further, this effect is due to the smaller package being associated with a higher unit price (despite having a lower overall price), which suggests that unit price information is more diagnostic than overall price information when forming judgments of product quality. We also find a theoretically-derived reversal of this effect under conditions in which the greater diagnosticity of unit price is overwhelmed by its lower ease of use. Namely, when overall price is the only explicitly-provided price cue and consumers are too distracted to estimate unit price, a larger package is now rated as being better. Finally, two concluding studies examine the downstream consequences of changes in package size, building off our basic conceptualization to document effects on product choice as well as consumption experience. Published by Elsevier Inc. on behalf of Society for Consumer Psychology.

*Keywords:* Package size; Unit price; Quality perceptions; Dual role of price

A product is often sold in different package sizes. For example, the volume of a Coke could be 200 ml, 330 ml, 500 ml, 1250 ml, or 2500 ml. This is also true of many other packaged goods (cosmetics, shampoo, chocolate, etc.). Anecdotal evidence suggests that consumers associate package size with quality. In one web log,<sup>1</sup> for instance, a consumer reports that he and his friend have reached an agreement on Reese's peanut butter cups: "It seems that the smaller miniature cups... taste the best...the small cups seem to be far superior to the normal sized cups...and the 'Reese's big cup' tasted...inferior to the normal sized cups." Similarly, on websites such as Yahoo Answers, it's not uncommon to find questions such as "why does a soda taste better in a small bottle than in a large bottle or can?"<sup>2</sup>

These examples suggest that package size, which is one of the most accessible and easy-to-process product cues to which consumers are exposed, can have a significant impact on quality judgments. However, this influence has rarely been investigated empirically (for an exception, see Mathur & Qiu, 2012). Moreover, the mechanism underlying the effect has not been articulated. This paper reports five studies that provide empirical evidence regarding the impact of packaging products in different sizes on consumers' quality judgments. We begin by providing evidence for the basic effect, showing that smaller sizes typically yield inferences of higher quality. We then elucidate the psychological process that underlies the phenomenon. Our findings show that the size–quality relationship is mediated by differences in perceptions of unit price (price per unit volume) associated with different package sizes. Further, our theorizing enables us to identify particular conditions (e.g., when resources are constrained) under which quality perceptions are more likely to be guided by total price rather than unit price. In such cases, quality inferences are positively

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<sup>1</sup> <http://danielbroadway.blogspot.com>.

<sup>2</sup> <http://in.answers.yahoo.com/question/index?qid=20090112083116AAvLIH9>.

associated with larger package sizes, thus providing an interesting boundary condition for the size–quality effect. Finally, we leverage our conceptualization to look at two important downstream consequences of varying package size: namely, perceptions of the actual consumption experience, as well as pre-trial product choice.

This investigation of the relationship between package size and perceived quality, and the mediating influence of unit price on these perceptions, contributes to research in two major areas. First, our substantive focus on the size–quality issue adds to the recent and growing body of work concerning the effects of packaging characteristics on various types of consumer judgments and behavior, such as volume estimation (Raghubir & Krishna, 1999), self-control (Argo & White, 2011), and actual amount consumed (Wansink, 1996). Our results show that package characteristics (specifically, size) can also have an impact on more abstract judgments such as quality perceptions; further, this effect has important implications both for product choice and also the consumption experience.

Second, from a theoretical perspective, examining the critical mediating role of unit price perceptions enables us to inform the price–quality literature. Research in this area has focused on the use of total price in driving quality perceptions (Krishna & Johar, 1996; Shiv, Carmon, & Ariely, 2005). In contrast, examining quality perceptions through the lens of package size allows us to disentangle the effect of unit price from that of overall price. In doing so, we find support for the proposition that it is unit price that is the more diagnostic of the two cues. At the same time, we delineate theoretically-derived conditions that determine when each of these two opposing influences (total vs. unit price) may drive quality perceptions, thus identifying when lower package size leads to higher estimates of quality (reliance on unit price) versus lower estimates of quality (reliance on overall price).

It should be kept in mind that the current inquiry focuses on packaged goods alone; it is conceivable that the relationship between size, price and quality for other types of product categories (e.g., cars, houses, etc.) will be quite different, an issue to which we return in the [General Discussion](#).

## Conceptual background

### *Package size and the (unit) price–quality link*

Much research in the consumer literature has demonstrated that other things being equal, consumers use higher prices as being indicative of greater product quality (Rao, 2005; Rao & Monroe, 1989). In one early study, for instance, participants were presented the same brand of beer in bottles labeled with different prices. They rated the beer to be of higher quality when it was associated with a higher price (McConnell, 1968; see also Shiv et al., 2005).

These and other convergent studies (Jacoby, Olson, & Haddock, 1971; Rao & Monroe, 1989) have not distinguished between the effects of overall (i.e., total) price and unit price (i.e., price per unit volume) on quality perceptions. One

reason for this is that price–quality research has typically not varied package size. When package size is held constant, a higher overall price obviously implies a higher unit price as well. In contrast, the substantive question addressed in the current investigation has to do with the effect of varying package size, which brings the distinction between unit price and overall price sharply into focus. To illustrate, a very large bottle of relatively low-quality shampoo may carry a higher overall price than a much smaller bottle of a higher-quality shampoo; however, unit price is likely to be lower for the large bottle.

In cases such as these, when unit price and overall price offer competing predictions of product quality, we argue that unit price is the more diagnostic of the two cues. An overall price figure, while clearly important, simply informs consumers about the cost of a product. Unit price, on the other hand, informs consumers about the cost in relation to the unit of product volume that they will receive for that cost. The unit price cue thus incorporates information about both cost and value (cf. Monroe, 2003 for a discussion of the dual role of price). Drawing on the premise that cue diagnosticity is heavily influenced by its informativeness (Broniarczyk & Alba, 1994), a higher unit price should be more indicative of good quality than just a higher overall price.

Unit price takes on particular importance with regard to our size–quality inquiry because of an empirical regularity that has been observed between size and unit price in the context of packaged goods. Products in large packages, while being higher in overall price, typically cost less per unit volume (Granger & Billson, 1972). Given the ubiquity of this pattern, it seems reasonable to assume that consumers develop a learned association between size and unit price, such that they infer higher unit prices for smaller sizes. Indeed, this assumption has been validated by Wansink (1996), who found that for a majority of products across 21 different categories, perceptions of unit price (i.e., the ratio of estimated price to package size) increased as package size decreased.

This learned relationship between package size and unit price perceptions should directly influence quality assessments. Specifically, even when no price information is explicitly provided, simply being exposed to a product in a smaller (vs. larger) package will lead to inferences of higher unit price; in turn, this should be reflected in a perception of higher product quality. Formally, we predict that for packaged goods, when no price information is provided:

**H1a.** Products in smaller packages will be rated as possessing higher quality than equivalent products in larger packages. This effect will be driven by differences in perceptions of unit price, with smaller-size packages being perceived as being more expensive.

Given the critical role we attribute to unit price differences in driving the size–quality relationship, a straightforward corollary to the prediction above is:

**H1b.** If the unit price is held constant across differing package sizes, a package size difference will no longer impact quality perceptions.

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