

# Price Knowledge During Grocery Shopping: What We Learn and What We Forget<sup>☆</sup>

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## Abstract

Past research on consumer price knowledge has varied considerably partly due to differences in how and when price knowledge is measured. This paper applies a multi-point, multi-measure approach to reconcile differences in past price knowledge research by examining systematic relationships between time of measurement and type of measures applied. Examination of consumer price knowledge before, during, and after store visit sheds light on what is measured at the individual points in time: episodic price knowledge and/or reference prices? With a between-subjects design interviewing 1,204 respondents, the authors investigate three price knowledge measures (price recall, price recognition, and deal spotting) demonstrating that these are hierarchically related. Results suggest that reference prices dominate before store visit, but also that episodic price knowledge, surprisingly, is still accessible at the store exit. These findings enable the authors to reconcile diverging results from past research, showing how consumer price knowledge evolves and suggesting that the vast majority of consumers learn about prices, whether consciously or unconsciously, during grocery shopping. Thus, when applying a multi-point, multi-measure approach, consumers appear to know more about prices than suggested by past research. Determinants of price knowledge are also examined and the results indicate that price knowledge builds up not only because of active search but also due to accidental exposure to prices and with low degrees of conscious processing. Implications for managers are discussed.

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## Introduction

Economic theory largely assumes that consumers know the price of products they purchase with reasonable accuracy. When retailers and manufacturers set prices strategically, they also implicitly assume that consumers know the price of the products they purchase (Urbany, Dickson, and Sawyer 2000). Meanwhile, a generation of research suggests that consumer price knowledge is poor, even for items they have just chosen (e.g., Dickson and Sawyer 1990; Vanhuele and Drèze 2002; Wakefield and Inman

1993). However, results of studies on consumer price knowledge vary considerably, thus making it difficult to draw any consistent conclusions. For instance, as shown in Table 1, shoppers' ability to recall exact prices has been found to vary between 2.0 and 61.3 percent. Such wide variations may be attributed partly to differences in sociocultural or macroeconomic conditions, but their origin is more likely linked to differences in study design (see Estelami and Lehmann 2001; Estelami, Lehmann, and Holden 2001). In particular two design issues stand out: the timing of the measurement in relation to the buying process (before store entry, point of selection, after store visit) and the type of measures applied (recall, recognition, judgment, relative ranking). Other design issues possibly causing this variation include differences in consumer-related factors and product category selection. The overall objective of this paper is to reconcile differences in previous price knowledge research by examining systematic relationships between time of measurement and type of measures applied, while controlling for effects of consumer and product-related factors, leading to an improved understanding of mechanisms governing consumer price knowledge and its measurement.

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Table 1  
Time of measurement and measures applied in past price knowledge research.

	Before		During		After	
Price recall	Gabor & Granger (1961) <sup>b</sup>	51%	Conover (1986) (Study 1)	51%		
	Urbany & Dickson (1991) <sup>b</sup>	53%	<b>Conover (1986)</b> (Study 2)	26%	<b>Conover (1986)</b> (Study 2) <sup>a</sup>	27%
	Krishna et al. (1991) <sup>b</sup>	15%	Dickson & Sawyer (1990)	47%	McGoldrick & Marks (1987)	29%
	<b>Vanhuele &amp; Drèze (2002)</b> (Study 2)	2%	Wakefield & Inman (1993)	55%	McGoldrick, Betts, and Wilson (1999)	40%
			Le Boutillier et al. (1994)	61%	Rosa-Díaz (2004)	20%
			<b>Vanhuele &amp; Drèze (2002)</b> (Study 1)	10%		
Price recognition	Vanhuele & Drèze (2002) (Study 2)	42%				
Price judgment	Urbany & Dickson (1991) <sup>b</sup>	51–54%				
	Vanhuele & Drèze (2002) (Study 2)	33%				

Notes. Price judgment here refers to measurement of consumers' ability to judge an item's price compared to its normal price. References in bold represent studies using a multi-point approach. In addition to the above-mentioned studies, a number of laboratory experiments have applied price recall and relative price ranking to study price knowledge (e.g., Mazumdar and Monroe 1990; Zeithaml 1982).

<sup>a</sup> Conover (1986) conducted phone interviews with the same respondents two days after the initial simulated shopping experiment and therefore as an exit measurement the study is a borderline case.

<sup>b</sup> In-home survey.

With regard to timing, Table 1 shows that almost all previous studies measure consumer price knowledge at one point in time only, whether inside or outside the store. Exceptions include Vanhuele and Drèze (2002) who measured price recall with two different samples at the entrance and at the shelf respectively, and Conover (1986) who used a within-subjects design to measure immediate (simulated shopping experiment) and delayed price recall (phone interview two days later) with some very surprising results.<sup>2</sup> Otherwise, previous studies measure price knowledge at a single point in the buying process, which complicates cross-study comparisons as they may measure different aspects of consumer price knowledge. Monroe and Lee (1999) argue that in-store studies mainly measure in-store attention to price (i.e., short-term memory dominates the results), whereas long-term price knowledge becomes the focus when measuring outside the store. However, as past studies have concentrated on single-point measurement, we do not know to which extent differences in time of measurement account for differences in measured price knowledge, and whether there is any systematic relationship across different measurement points.

Another major reason for the variation in previous study results relates to how price knowledge was measured. From Table 1 it is evident that price recall has been the single most applied measure, and such studies have generally found that around half of the shoppers recall the accurate price at the point of selection: considerably less before and after the store visit, thus suggesting rather poor price knowledge. However, relying on price recall alone may underestimate the degree of consumer

price knowledge. Monroe and Lee (1999) distinguish explicit and implicit price memory and argue that some consumers process prices during product choice without being aware of it. These consumers do not recall the exposure event or the price itself, but they still may be able to judge the price of the product chosen according to its attractiveness. Such shallow price knowledge would not be uncovered in an explicit price memory test such as a price recall or a price recognition test. Monroe and Lee therefore recommend that future studies include tests to measure different levels of price knowledge. Table 1 reveals that very few studies have taken up this recommendation, and it is thus likely that past research has only revealed part of consumer price knowledge in the buying process.

To improve our understanding of consumer price knowledge and reconcile past research, multiple measures are required and price knowledge must be assessed at multiple points in time in the buying process. This is what we did in the present study. We conducted three price memory tests (price recall, recognition, and judgment), and we did so before, during and after the store visit. Thus, we examined all nine cells of Table 1 in a single study which allows us to pull back the curtain on price knowledge acquisition much more effectively than in past research.

## Research questions

As noted, we extend previous research by applying a multi-point, multi-measure approach to examine consumer price knowledge. This design enables us to address the following questions:

1. How price knowledgeable are consumers and how does this knowledge differ between the three stages of a store visit? Our design can uncover whether consumers know more about prices than suggested by past research. In addition, this design

<sup>2</sup> Surprisingly, Conover (1986) found no evidence of fading price recall after a two-day delay; for half the products, price recall even improved, which he proposes "may reflect heightened attention to those prices once price questions began, and rehearsal of them afterward" (p. 593).

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