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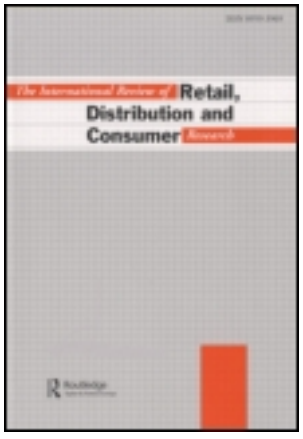

The International Review of Retail, Distribution and Consumer Research
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/rirr20

Cutting through the clutter: purchase intentions as a function of packaging instrumentality, aesthetics, and symbolism

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Published online: 10 May 2013.

To cite this article: Iris Vilnai-Yavetz & Ran Koren (2013) Cutting through the clutter: purchase intentions as a function of packaging instrumentality, aesthetics, and symbolism, The International Review of Retail, Distribution and Consumer Research, 23:4, 394-417, DOI: 10.1080/09593969.2013.792743

To link to this article: http://dx.doi.org/10.1080/09593969.2013.792743

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The International Review of Retail, Distribution and Consumer Research, 2013
Vol. 23, No. 4, 394–417, http://dx.doi.org/10.1080/09593969.2013.792743

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Cutting through the clutter: purchase intentions as a function of packaging instrumentality, aesthetics, and symbolism

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(*Received 28 June 2012; final version received 1 April 2013*)

This study contributes to the theoretical understanding of the impact of packaging in marketing, and confirms the importance of perceived instrumentality, aesthetics, and symbolism in this process. This study examined two types of packaging used by a firm that makes chilled meals. One package had a transparent cover showing the food inside and the other had an opaque wrapper showing a picture of the food. Sales for the product with the transparent cover were 30% lower than for the same product packaged in the opaque wrapper. An experimental study examined the effects of packaging on buying intentions. Supermarket shoppers ($n = 100$) were shown the same product in one of the two packages and answered a survey about the mediating variables: perceived instrumentality, aesthetics, and symbolism, and the dependent variable, purchase intentions. As predicted, participants expressed more interest in buying the product with the opaque packaging. In addition, the transparent packaging was perceived as more instrumental, less aesthetic, and less symbolic of quality than opaque packaging. Perceived aesthetics and symbolism, but not instrumentality, were documented to mediate this process. Analyzing packaging using the instrumentality, aesthetics, and symbolism model can help marketers and designers develop more effective packaging for various products, contexts, and consumer groups. The study views packaging as a critical marketing tool and not merely a logistic tool, and identifies one psychological mechanism that underlies the impact of packaging on purchase intentions.

Keywords: packaging design; packaging transparency; instrumentality; aesthetics; symbolism

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Introduction

Packaging – 'the silent salesman' (Kornblau 1961) or 'the salesman on the shelf' (Silayoi and Speece 2004) – is well known for its marketing power. As many choices are made at the point of sale, packaging becomes a critical factor in the consumer decision-making process. It accompanies and sometimes even substitutes for traditional advertising in the marketing mix to create brand awareness (Hawkes 2010). This is possible because packaging, when designed effectively, serves to communicate information, create brand impressions, and provide brand cues (Littel and Orth 2012; Orth and Malkewitz 2008). Most fundamentally, effective packaging helps cut through the clutter and ensures that the product is noticed by the consumer (Louw and Kimber 2007) to create purchase intentions (Mueller and Szolnoki 2010; Silayoi and Speece 2007). The question arises: what is the psychological mechanism that underlies this process?

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Many explanations for the impact of packaging on consumer decision-making and buying behavior have been suggested. In a review of the packaging literature, Kuvykaite, Dovaliene, and Navickiene (2009) show that there is no agreement with regard to the classification of packaging elements and their relative impact on purchase intentions. For example, Butkeviciene, Stravinskiene, and Rutelione (2008) present a model that analyzes 17 aspects of packaging (e.g., color, form, ergonomics, brand, and so on) to predict the impact on purchase decisions, and Silayoi and Speece (2007) examine the relative importance of packaging elements (shape, color, graphics, product information, and convenience) in influencing purchase decisions. Kuvykaite, Dovaliene, and Navickiene (2009) suggest a more succinct model in which all packaging elements are categorized by two aspects: visual (e.g., graphics and material) and verbal (e.g., product information and brand name). Löfgren (2005) and Rundh (2005, 2009) suggest a different approach, proposing process-oriented models in which an algorithm involving the sequence of actors and actions in the supply chain or the service process is claimed to explain the impact of packaging on consumer buying behaviors. Finally, Orth and Malkewitz (2008) and Orth, Campana, and Malkewitz (2010) take a more holistic perspective and present a higher order model, in which package design factors are considered not in terms of their concrete elements (e.g., form and color), but as conveying something more abstract, complex, and subjective (e.g., harmony or naturalness). Orth, Campana, and Malkewitz (2010) suggest a process in which these factors affect two mediators – the attractiveness and perceived quality of the product – which in turn create price expectations. However, they did not study the impact of packaging on purchase intentions, thus leaving open the question of the psychological mechanism underlying such intentions.

This study aims at bridging this gap in the literature. Building on Orth, Campana, and Malkewitz (2010), we suggest and validate a three-dimensional mediation model, in which packaging design improves product attractiveness to increase purchase intentions. In this, we also rely on Ajzen (1991), whose persuasion theory of planned behavior deals with the relationship between attitudes, behavioral intentions, and behaviors. Ajzen (1991) suggests that attitudes toward, perceptions of, or expectations from an object are translated into behavioral intentions, which are good predictors of actual behavior. As the main objective of packaging in marketing is influencing purchasing behavior, we believe that we can add to the findings of Orth, Campana, and Malkewitz (2010) and better predict buying behavior by studying the impact of packaging on purchase intentions.

We start with a review of the literature on the role of packaging in marketing in general and in the food industry in particular. We then review various approaches to the role of packaging design in consumer behavior, and build on Rafaeli and Vilnai-Yavetz (2004) to suggest a three-dimensional model – the instrumentality, aesthetics, and symbolism (IAS) model – to explain the impact of packaging on purchase intentions. We continue with a description of our research hypotheses, methodology, and results, and conclude with a discussion of the results and some managerial and research implications.

Theoretical framework

The role of packaging in food marketing

Packaging studies investigate a variety of products, but most focus on the packaging of food products – e.g., cereals (McNeal and Ji 2003), pasta and jam (Clement 2007), wine (Orth and Malkewitz 2008; Orth, Campana, and Malkewitz 2010), orange juice (Lee, Gao, and Brown 2010), milk (Butkeviciene, Stravinskiene, and Rutelione 2008; Kuvykaite, Dovaliene, and Navickiene 2009), bottled water (Littel and Orth 2012), cookies and

crackers (Deng and Kahn 2009), instant curry (Silayoi and Speece 2007), and others (Bech-Larsen 1996; Levin and Levin 2010). Additional studies of food packaging have focused on consumers' preferences and decisions in general (Silayoi and Speece 2004; Venter et al. 2010) or on technical or logistical aspects (Rundh 2009).

Packaging is highly important in the purchase, use, and disposal of food products. Indeed, Rundh (2005) argues that food products are where packaging has the largest impact on our lives. Packaging protects stored food, enables its efficient distribution, and communicates information about it, besides creating a powerful shelf presence and promotion tool. As consumers typically rely on packaging to give them information about the nutritional value of different food choices, the packaging of food plays an important role in consumers' selection and decisions about food products (Ranjbarian, Mahmoodi, and Shahin 2010). In addition, when empty, packaging makes up a large proportion of household waste (Bech-Larsen 1996). Socio-cultural trends have strengthened the importance of food packaging. As the demand grows for convenient and easy-to-prepare meals that reduce the hassles of modern urban life, so too does the need for convenient and reliable food packaging (Ahmed, Ahmed, and Salman 2005). Aging populations who need packaging that is easier to open, smaller households that require smaller quantities of food, the growth of the healthy food market, and the large number of people eating out or ordering takeaway are all aspects of lifestyle trends that affect the food industry and highlight the importance of food packaging (Rundh 2009).

From a marketing perspective, Hawkes (2010) argues that the power of food packaging as a marketing tool has been increasing, as most food choices today are made at the point of sale, where packaging – with its ability to attract attention through color, shape, and size (Chandon and Ordabayeva 2009; Orth and Malkewitz 2008) – is the most influential factor. Following the growing power and influence of food packaging, elements of packaging design have taken on new importance.

Packaging design

Packaging is so important for product marketing that it can be considered an integral part of the product (Louw and Kimber 2007). The importance of product and package design for marketing is well established (Bloch 2011). For example, the shape of a package was documented to impact perceptions of the volume or quantity of its content (Chandon and Ordabayeva 2009; Garber, Hyatt, and Boya 2008). Such a finding supports the claim of Hawkes (2010) that in the food industry the medium – i.e., the packaging – is the message, and can change attitudes toward a food brand and impact purchase intentions and decisions.

Packaging design is multi-faceted, involving various permutations of color, form, pattern, material, etc. To illustrate our theoretical argument, we chose to focus on a single attribute: specifically, the use of transparent films that permit the contents of the package to be seen from the outside. From the consumer's perspective, transparency has both positive and negative implications, which are discussed later. Importantly for the purposes of our study, both transparent plastic and opaque paper packaging can be recycled in many communities (Durkalski 2000), removing environmental considerations as a strong influence on consumer preferences in this case.

A note on packaging design terminology

Packaging is a multidisciplinary concept with implications for logistics (Rundh 2009), marketing (Littel and Orth 2012), and design (Bloch 2011). This makes the terminology

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used in packaging studies heterogeneous and confusing. In the marketing literature, the language applied to packaging design is diverse, with 'elements' (Kuvykaite, Dovaliene, and Navickiene 2009), 'features' or 'components' (Butkeviciene, Stravinskiene, and Rutelione 2008), 'characteristics' (Littel and Orth 2012), 'attributes' (Silayoi and Speece 2007), and other terms serving to describe similar notions. The same is true for logistics, where terms such as 'elements' (Silayoi and Speece 2004) and 'characteristics' (Bech-Larsen 1996) are frequently used. The formal language of design has some rules for describing packaging design, but even this terminology suffers from some inconsistencies. For instance, Lidwell, Holden, and Butler (2010) refer to 'elements' (basic objective features such as color or size), 'principles' (a design approach, rule, or higher level qualities such as functionality, aesthetics, and symbolism), and 'attributes' (an abstract quality such as transparency or naturalness), but they also use 'characteristics' when they talk about simplicity and other aspects of design, and 'properties' and 'qualities' when discussing aesthetics. Hanna (2002) also refers to basic objective features such as line, shape or form as 'elements,' while Blijlevens, Creusen, and Schoormans (2009) use the term 'physical properties' for the same purpose. Like Lidwell, Holden, and Butler (2010), Blijlevens, Creusen, and Schoormans (2009) use the term 'attributes' for abstract perceived qualities of an object, such as modernity or simplicity, but they refer to functionality, aesthetics, and symbolism as 'motives.' Meanwhile, the term 'dimension' typically refers to spatial dimensions in the design literature (e.g., Hanna 2002) and to perceptual dimensions in marketing (e.g., Rafaeli and Vilnai-Yavetz 2004).

In this paper, in order to represent past research accurately, we retain the original terms used when describing previous studies. As far as possible, we adopt terminology from the design literature in presenting our theoretical framework and new insights. However, since we build on Rafaeli and Vilnai-Yavetz (2004) in our suggestion that instrumentality (i.e., functionality), aesthetics, and symbolism mediate the impact of packaging design on purchase intentions, we adopt the term 'dimension' to describe these mediators, rather than principles (Lidwell, Holden, and Butler 2010) or motives (Blijlevens, Creusen, and Schoormans 2009) (see Table 1 for examples of terms commonly used in packaging studies).

The IAS model as applied to packaging design

Rafaeli and Vilnai-Yavetz (2004) suggest that any physical aspect of the work or consumption environment should be considered along three concurrent and independent dimensions. *Instrumentality* refers to the effects of the object on the performance of related tasks and goals. It is suggested by analyses of usability and human factors engineering, which show that physical objects can support or impair desired activities (Nielsen 1994). *Aesthetics*, or the sensory experience evoked by an object, is suggested by the research and practice of design (Nasar 1997) and environmental psychology (Nasar 1994). Finally, *symbolism* refers to associations elicited by the physical object and reflects a process of cognitive interpretation of the experience with this object (Pondy et al. 1983). The IAS model adds to the well-known discussion of the relationship between an object's form and function (Hoegg and Alba 2011), by arguing that all three dimensions are integral to perceptions and interpretations of any object and any aspect of the physical environment (Rafaeli and Vilnai-Yavetz 2004). This approach has been supported in the context of office design (Elsbach and Bechky 2007), virtual web-stores (Tractinsky and Lowengart 2007), and organizational dress (Vilnai-Yavetz and Rafaeli 2011).

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Table 1. Summary of theoretical models for understanding packaging design.

Author/year	Packaging design terminology	Theoretical framework/empirical findings	Similarity to the current research model, which suggests that perceived instrumentality, aesthetics, and symbolism mediate the impact of packaging design on purchase intentions
Butkeviciene, Stravinskiene, and Rutelione (2008)	Nonverbal components (e.g., color, form, and size), verbal components (e.g., brand name and country of origin) and packaging features (e.g., simplicity and innovativeness). Color is an element of packaging	Presents a model that analyzes 17 aspects of packaging (e.g., color, form, ergonomics, brand, and so on) to predict the impact of packaging communication on purchase decisions	The research variable in this study is the buying decision-making process, and not the buying decision or intention itself
Chandon and Ordabayeva (2009)	The three spatial dimensions – height, width, and length	Documented that changes in packaging size appear smaller when packages change in height, width, and length, than when they change in only one dimension	The authors test the impact of spatial dimensions on perceptions of size and preferences. Perceived instrumentality, aesthetics, and symbolism, as well as buying intentions, are not studied
Kuvykaite, Dovaliene, and Navickiene (2009)	Packaging elements are categorized into visual elements (e.g., graphics and material) and verbal elements (e.g., product information and brand name)	Suggested classification of packaging elements into visual and verbal and their relative impact on purchase intentions	Although the visual and verbal types of elements are similar to aesthetics and symbolism, there is no element category that parallels instrumentality
Littel and Orth (2012)	Packaging visual and haptic factors. Visual and haptic package design characteristics	Claims that the visuals and haptics of package design characteristics impact consumers' visual and haptic impressions, which in turn influence semantic congruence that impacts brand impression and bimodal evaluation	This study's dependent variable is brand impression and not buying intentions
Löfgren (2005)		Proposes a process-oriented model where an algorithm involving the stages or 'moments of truth' in the marketing or the service process is claimed to explain the impact of packaging on consumer buying behaviors	This work took a different – logistic and not marketing – perspective for explaining the impact of packaging design on buying behavior

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Orth and Malkewitz (2008)	Holistic designs or holistic key types of package designs (e.g., massive, natural, and delicate). Design factors (e.g., natural, harmony, size, symmetry, and weight). Design elements (e.g., color, images of nature, image resolution, logo contrast, number of labels, label shape, symmetry, and material)	Takes holistic perspective and links packaging to consumer brand impressions. Presents a higher order model, in which package design factors are considered not in terms of their concrete features (e.g., form and color), but as conveying something more abstract, complex and subjective (e.g., harmony and naturalness)	This paper focuses on the development of holistic types of packaging and links them to perceived attributes such as excitement or sophistication. The impact on purchase intentions is not tested
Orth, Campana, and Malkewitz (2010)	Package design generic factors (natural, harmony, and elaborate). Holistic design	Presents a model in which associations of quality and attractiveness mediate the impact of package design on consumer price expectations	Associations of quality equal symbolism and attractiveness equals aesthetics. There is no reference to instrumentality and the dependent variable is price expectations and not buying intentions
Rafaeli and Vilnai-Yavetz (2004)	Dimensions – perceived instrumentality, perceived aesthetics, and symbolism. Physical artifact – any physical object (e.g., a bus) or element of an object (e.g., the color of a bus)	Presents a model in which any physical artifact can be and should be analyzed on three concurrent dimensions: perceived instrumentality, perceived aesthetics, and symbolism	The authors did not study specifically packaging design, but offered a conceptual model that can be used for any design context
Ranjbarian, Mahmoodi, and Shahin (2010)	Elements of packaging graphics (e.g., color), structure (e.g., size and ease of use) and information (e.g., information and images)	Documents three types of packaging elements (graphics, structure, and information) as influencing consumer choices	The authors study more concrete elements of packaging – i.e., graphics, structure, and information – and not the more abstract perceptions of instrumentality, aesthetics, and symbolism in the impact on buying decisions
Rundh (2005)	The multi-faceted dimension of packaging	Concludes that the main functions of packaging are protection of the contents (logistics) and promotion of the product on the shelf by attracting consumers, using colors, shapes, images, etc. (marketing)	This is a qualitative study incorporating five case studies for analyzing the role of packaging in the broad context of marketing

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Table 1. (*Continued*)

Author/year	Packaging design terminology	Theoretical framework/empirical findings	Similarity to the current research model, which suggests that perceived instrumentality, aesthetics, and symbolism mediate the impact of packaging design on purchase intentions
Rundh (2009)		Proposes process-oriented model in which an algorithm involving the sequence of actors and actions in the supply chain or the service process is claimed to explain the impact of packaging on consumer buying behaviors	This work takes a logistic and not marketing perspective toward explaining the impact of packaging design on buying behavior
Silayoi and Speece (2004)	Two categories of marketing elements: visual elements (e.g., shape, size, and color), and informational elements (e.g., nutrition labels and brand information)	Studies how packaging logistic and marketing elements can affect buying decisions.	The predictions of this study were tested through qualitative (focus group) research
Silayoi and Speece (2007)	Packaging attributes (shape, color, graphics, product information, and technology image-convenience), verbal and visual elements	Examines the relative importance of packaging elements that enhance consumer perceptions and purchase decisions	The authors study individual packaging elements and their relative weight, and not perceived instrumentality, aesthetics, and symbolism of these elements
Venter et al. (2010)	Functional and physical attributes, where the latter are divided into an aesthetic perspective and a symbolic perspective	Studies consumer perceptions of food packaging and the impact on purchasing decisions	The relationships between variables were studied here through qualitative and exploratory research, using in-depth interviews

In the context of packaging, Rundh (2005) concluded that the main functions of packaging are protection of the contents and promotion of the product on the shelf by attracting consumers, using colors, shapes, images, etc. For packaging to be perceived as effective, it should, we suggest, be seen as instrumental (meaning that it protects the contents), aesthetic (meaning that it has an attractive appearance), and symbolic (meaning that it communicates the desired message).

The IAS framework of Rafaeli and Vilnai-Yavetz (2004) finds support in various models presented by other researchers. For instance, Butkeviciene, Stravinskiene, and Rutelione (2008) model of package communication has three components that can be regarded as equivalent to the IAS model. Specifically, their 'nonverbal' component (color, form, size, graphics, smell, and so on) parallels aesthetics in Rafaeli and Vilnai-Yavetz's model; their 'verbal' component (brand, country of origin, special offers, and other verbal messages) parallels symbolism in that model; and their 'package features' component refers to functional aspects of packaging (e.g., simplicity, ergonomics, and so on) and thus can be equated with instrumentality. Ranjbarian, Mahmoodi, and Shahin (2010) documented three elements of packaging as influencing consumer choices: graphics, structure, and information (equivalent to aesthetics, instrumentality, and symbolism, respectively). Venter et al. (2010), studying consumer perceptions of food packaging, conceptualized packaging in terms of functional and physical attributes, dividing the latter into an aesthetic perspective (the attractiveness of the packaging) and a symbolic perspective (associations of quality). Similarly, Silayoi and Speece (2004) divided packaging elements into logistic (i.e., functional) elements and marketing elements, which are symbolic and aesthetic. Within the marketing elements, they highlighted two categories that may impact consumer purchase decisions: namely, visual elements (shape, size, color, etc.) and informational elements (nutrition information labels, brand image information, etc.). Kuvykaite, Dovaliene, and Navickiene (2009) suggested a similar model, in which packaging elements are categorized into visual aspects (e.g., graphics and material) and verbal aspects (e.g., product information and brand name). Finally, Orth, Campana, and Malkewitz (2010) presented a model in which associations of quality (symbolism in terms of the IAS model) and attractiveness (aesthetics in these terms) mediate the impact of a package design on consumer price expectations. They perceived packaging functionality as another important factor, but chose to leave it out of their model.

Although supportive, the reviewed models differ from the IAS model in their basic assumption that each element of the packaging (e.g., shape, color, brand image information, and so on) can be categorized into one of several categories (e.g., visual aspects or verbal aspects, visual elements or informational elements, and so on). Rafaeli and Vilnai-Yavetz (2004), in contrast, suggested that any packaging element should be considered along all three concurrent dimensions. For example, color is not only a visual (or aesthetic) element of the packaging, but has instrumental, aesthetic, and symbolic aspects that impact the consumer.

Orth and Malkewitz (2008), taking a more holistic approach, identified key types of package designs (massive, natural, etc.) and linked them to consumer brand impressions. Although selecting a package design can be simplified with the use of these holistic types, the IAS model (Rafaeli and Vilnai-Yavetz 2004) does not contradict this holistic approach (Orth and Malkewitz 2008) but adds to it to allow an understanding of the psychological dynamics that underlie the impact of packaging on purchase intentions. Table 1 summarizes the models reviewed.

We suggest that instrumentality, aesthetics, and symbolism (Rafaeli and Vilnai-Yavetz 2004) offer the clearest and most parsimonious framework within which to examine

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packaging as a physical aspect of the consumption environment. In this study, we build on Orth, Campana, and Malkewitz (2010) but refer to purchase intentions instead of price expectations, and expand their model to include all three perceptual dimensions – perceived instrumentality, aesthetics, and symbolism (i.e., perceived quality) – as mediators in the influence of packaging design on consumer reactions. To do this, we focus on the use of one packaging attribute, comparing packaging with and without a transparent cover (i.e., transparent vs opaque packaging). Our research model is presented in Figure 1.

Research hypotheses

Type of packaging (transparent vs opaque) and perceived instrumentality, aesthetics, and symbolism

We suggest that as with any other physical element or attribute, consumers unconsciously analyze and interpret transparency in packaging along the three dimensions of instrumentality, aesthetics, and symbolism (Rafaeli and Vilnai-Yavetz 2004), and their perceptions along these dimensions, in turn, impact their intentions to purchase the product (see Figure 1). We first suggest that consumers will perceive transparent packaging as more functional than opaque packaging. One reason for this is that using packaging with a transparent window or cover allows consumers to evaluate the product by its appearance and reduces uncertainty regarding product quality (Sogn-Grundvag and Østli 2009). The evaluation in this case is claimed to be functional and not symbolic, as it is based on the actual appearance and texture of the product (are they appealing or not) and not on associations elicited by graphical elements on the packaging aimed at creating a desired image.

Packaging also has other features that might make it more or less functional for the consumer and that relate to the ease with which the packaging allows the consumer to access and prepare the food (e.g., Yoxall et al. 2010). For instance, packages that allow the consumer to easily prepare and serve the product without the need for intermediate steps are likely to be perceived as more instrumental than packages that are meant for storing the product but cannot be used in preparing it. Questions such as 'is the package easy to open' and 'can it be used as a tray' tap this aspect of instrumentality. Another aspect is whether the package is easy to spot in a crowded supermarket shelf, should the customer wish to buy the same product again.

We suggest that in a situation where the customer evaluates the instrumentality of the packaging based only on a quick first impression (as is the situation in a supermarket

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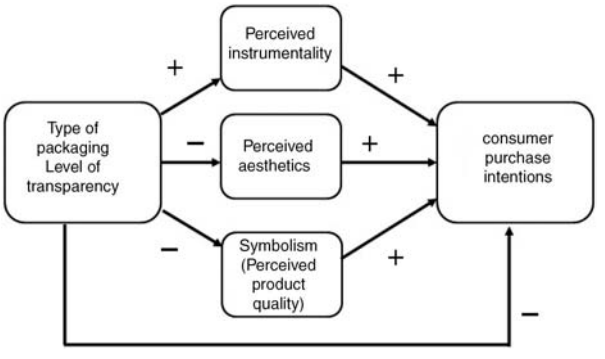

Figure 1. Theoretical model of the impact of type of packaging on perceived instrumentality, aesthetics, symbolism, and purchase intentions.

shopping trip), the customer's judgment of the packaging's instrumentality will be dominated by the unmediated view of the product provided by the transparent window. This judgment, in turn, will affect the customer's overall perceptions of the packaging's instrumentality. Hence, our first hypothesis:

H1: Transparent packaging will be perceived as more instrumental than opaque packaging.

On the other hand, the aesthetics of transparent packaging are questionable. Is transparent packaging, which reveals the actual food inside, more aesthetic than opaque packaging, which shows a polished photo of the food? Opaque packaging offers more room for images (whether photos, drawings, cartoon characters, or abstract decorations) and creative use of colors compared to transparent packaging; and colors and graphics have been shown to make packaging more appealing (Durkalski 2000). Thus, our second hypothesis is:

H2: Opaque packaging will be perceived as more aesthetic than transparent packaging.

Regarding symbolism, both types of packaging communicate a message (Dano 1996), but the relevant question is which of the two options better communicate a desired message of quality – a transparent cover or opaque packaging and a perfect photo? When a food product is concealed from view due to, for example, preservation and light protection demands, a drawing or photo on the package can describe the product and communicate its attributes to the consumer (Rundh 2005). Deng and Kahn (2009), for instance, showed that the location of the product picture on a package facade influenced associations of product heaviness. Ahmed, Ahmed, and Salman (2005), in a review of packaging studies, found that presenting a picture on an opaque package encouraged consumers to imagine aspects of the product, such as taste and smell, in a desired way. Rundh (2005) further found that a drawing or photo on the package creates a desired product image that sells the product to the consumers. Based on these findings, we suggest that transparent packaging is less symbolically effective than opaque packaging, as it shows the product in a straightforward manner and is less able to manipulate perceptions and produce desired associations which are not explicitly evoked by the product's appearance. Hence, our third hypothesis:

H3: Opaque packaging will be perceived as symbolizing higher product quality than transparent packaging.

Perceived instrumentality, aesthetics, and symbolism as mediators of the relationship between the type of packaging and purchase intentions

Transparency was found by Sehrawet and Kundu (2007) to be a preferred attribute of packaging which is linked to buying behavior. However, their study was based on the responses of participants to questions about their packaging preferences, and not on responses to real product packaging. Lee, Gao, and Brown (2010) compared the responses of actual consumers to two different designs for Tropicana orange juice packaging. This study used this approach, studying real shoppers' responses to real products packaged in one of two different ways – with a transparent cover and with an opaque cover (i.e., with and without the attribute of transparency).

The above review suggests that transparent packaging is more instrumental, as it allows direct presentation of the product, but it might be considered less aesthetic and less

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symbolic of product quality, as it precludes extensive use of colors and images. Opaque packaging, in turn, is less instrumental, yet is likely to be perceived as more aesthetic and as more indicative of product quality.

From a marketing perspective, the most important function of packaging is its ability to cut through the clutter and catch consumers' attention (Louw and Kimber 2007). If consumers are not attracted to the package, purchase intentions are depressed and the packaging's other functions become useless. Supporting this reasoning, Clement (2007) argues that the customer's sensory experience is more influential than the product's attributes in determining the consumer behavior. He emphasizes the importance of visual attention in the in-store buying process and suggests that visual elements of packaging such as shape, color, and contrast will attract attention and impact buying behavior regardless of the product's specific features. Silayoi and Speece (2004) further support this argument, concluding that because packaged food products are low involvement in nature (Antil 1984), consumers typically make purchase decisions for such products based on a quick reaction to the appearance of the packaging rather than careful examination of product information (Petty, Cacioppo, and Schumann 1983). Based on this assumption, opaque packaging can be predicted as having more power to attract consumers' attention, due to its higher aesthetics and symbolism and despite its lower instrumentality, which is considered to be less influential here. Hence, our two final hypotheses:

H4: *Opaque packaging will evoke higher purchase intentions than transparent packaging.*

H5: *Perceived instrumentality, aesthetics, and symbolism will mediate the impact of packaging type on purchase intentions.*

Method

Research context

'Golden Meal' (pseudonym) 'home-cooked food' company is a large food company with about 300 employees. It provides thousands of meals on a daily basis to factories and other firms, and caters holiday meals for families and hotels. In addition, the company produces a selection of chilled ready-to-eat and frozen meals distributed in supermarkets. 'Golden Meal' targets its chilled ready-to-eat meals toward the 'younger generation' – singles, young couples, and young families – on the assumption that people in this population segment have less time for cooking and frequently eat out or bring in ready-made food.

Prior to the start of our study, the company hired an in-house designer to plan and design the packaging for its ready-to-eat meals. The company's most important considerations vis-à-vis the packaging were communication of the symbolic messages that the firm wanted to convey and the packaging's impact on sales volume and production costs. With these two sometimes contradictory objectives in mind, a colorful, young-looking (and rather expensive) package was designed. The image on the package and its bright colors were aimed at attracting young shoppers' attention to these items on the supermarket's refrigerator shelves. The packaging was designed to be perceived as young and to communicate the message that the meals were innovative, natural, and with no preservatives.

The company recently offered several chilled ready meals that were sold in two different types of packages. While the meals were identical in content, taste, nutritional value, size, and price (approx $6.70 per package), some were offered in a colorful opaque cardboard wrapper, on which a photo of the meal appeared, while others were sold in packages with a large transparent plastic cover, through which the actual meal could be

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seen. All information on the packaging (nutritional information, quality assessment information, company contact details, brand name, and logo) was similarly designed on both types of packaging. The firm was surprised to discover that when identical meals were distributed using both types of packaging, sales for the meals with the transparent cover were 30% lower than for the same meals packaged in the opaque wrapper. As their inventory costs were so high, the management decided to continue to use both types of packaging until the stock was depleted. Independently of the company, we used the two types of packaging in the current experimental study.

Experimental procedure and data collection

An experimental study was conducted, using a between-subjects design. Supermarket shoppers showing an interest in the frozen and chilled meals refrigerator were shown packages of a mixed boiled vegetables meal. Each consumer was randomly shown one of the two packages mentioned above, with either the opaque packaging or the transparent plastic cover. The only difference between the products involved the design of the package. Shoppers could look at the package as long as they wished; typically, respondents looked at the package for between 1 and 2 minutes.

Although those products were already on the market, they were not distributed nationally but only in specific areas. The chosen supermarket offered a variety of chilled meals made by other companies, but not by the 'Golden meal' company. The respondents were recruited by two research assistants who stopped them near the frozen and chilled foods refrigerator in the supermarket, and asked them to participate in the study. Participants were told that they would be taking part in a study on consumer preferences vis-à-vis chilled ready meals. Following brief instructions, participants viewed a randomly selected package of the boiled vegetables product in either the opaque or the transparent packaging. The interviewers presented the packages as a new product that would soon be introduced to the market. They then invited the shoppers to complete the study questionnaire, which comprised a set of structured questions designed to measure the research variables as well as demographic information. The data were collected during March and April 2010. Participants filled out the questionnaires anonymously on a voluntary basis.

The study thus used real identical products differentiated only by their packaging design in a real field (supermarket) situation with consumers who intended to buy this category of products. The current experimental design therefore allowed for maintaining experimental accuracy while ensuring high validity, capturing the situation from the consumer's point of view.

Participants

Data were collected from 100 randomly sampled adults who entered the supermarket and showed interest in frozen or chilled ready meals. Respondents were divided almost evenly between men and women, with men (53%) slightly outnumbering women (47%). Most respondents were married (56%), 40% were never-married singles, and the rest were widowed or divorced. About 80% had at least some higher education, and they ranged in age from 18 to over 65 years (with 30 years as a median).

Independent variable

The independent variable was the type of packaging. One version of the product was packaged in opaque cardboard showing a photograph of the food inside. The second package had a large transparent plastic cover through which the food could be seen.

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Mediating variables

Perceived instrumentality, perceived aesthetics, and perceived symbolism were measured using three indices adapted from Vilnai-Yavetz, Rafaeli, and Schneider-Yaacov (2005), in which all questionnaire items were measured via a five-point Likert scale with 1 = 'strongly disagree' and 5 = 'strongly agree.' The perceived instrumentality index included four items, which can be seen in Table 2 factor 1 (Cronbach's alpha [α] = 0.809). It should be noted that the functionality captured in the unmediated view of the product provided by the transparent window is not open to question, as the packaging either provides this unmediated view (the package with the transparent window) or does not (the opaque package). Therefore, this question was not included in the survey.

The perceived aesthetics index included three items, which can be seen in Table 2 factor 2 ($\alpha = 0.864$). The symbolism – i.e., the packaging's association with product quality – was measured by an index of five items, which can be seen in Table 2 factor 3 ($\alpha = 0.827$).

All three indices were aimed at measuring consumers' perceptions of the packaging and its impact. The items measuring perceived instrumentality and perceived aesthetics referred directly to the packaging, with items such as 'The package looks easy to open' (instrumentality) and 'The design of the package is beautiful' (aesthetics). For symbolism, we followed Rafaeli and Vilnai-Yavetz (2004) who argue that a physical artifact may communicate messages about any aspect of the object or the organization to which the object belongs. Thus, when measuring symbolism, it is crucial to begin with a clear idea of the particular message of interest and to phrase survey items carefully so as to measure symbolic communication of that message. In our case, the packaging being studied might communicate messages about the specific product, about chilled packaged meals in general, and about the 'Golden Meal' firm, among other possibilities. As the main objective of packaging is to 'cut through the clutter' to draw

Table 2. CFA results for perceived instrumentality, aesthetics, and symbolism (mediators).

	CFA loadings	
Survey items	Loadings	*t*-value[a]
Factor 1 – Perceived instrumentality		
The package looks easy to open	0.654	5.31
The package can be used as a tray	0.675	5.42
It is likely that heating and serving the product will be quick	0.767	5.89
It will be easy to find this product in the supermarket refrigerated section	0.782	5.94
Factor 2 – Perceived aesthetics		
The design of the package is beautiful	0.944	13.22
This package is ugly (reverse coded)	0.881	12.04
The packaging is attractive	0.680	8.03
Factor 3 – Symbolism (product quality)		
The product appears to be of high quality	0.824	8.76
It seems that after heating the product will become tasteless (reverse coded)	0.803	8.45
The product looks as if a professional chef cooked it	0.704	7.25
It seems that after heating the product will remain fresh	0.586	5.85
This product reminds me of a home-made meal	0.606	6.08

Notes: Goodness-of-fit statistics: $\chi^2 = 67.1$; DF = 53; $p > 0.05$; CFI = 0.97; GFI = 0.90; RMR = 0.07; RMSEA = 0.05; NNFI = 0.97. CFI, comparative fit index; GFI, goodness-of-fit index; RMR, root mean residual; RMSEA, root mean square error of approximation; NNFI, non-normed fit index.

[a] Based on one-tailed tests, all *t*-values are significant at $p < 0.001$.

consumers' attention to the product (Louw and Kimber 2007), we phrased our symbolism index items so as to focus attention on the product quality communicated by the packaging.

Dependent variable

Purchase intentions were measured by four items ('I believe that most people would like to buy this product'; 'I would be glad to try the food in this package'; 'I would recommend this product to my friends'; and 'I would purchase this product'), answered on a five-point Likert scale with 1 = 'strongly disagree' and 5 = 'strongly agree' ($\alpha = 0.84$). Exploratory factor analysis revealed that this variable converged into one factor – the purchase intentions factor. The strong loadings of the items on this factor (0.69–0.91; rotation method: varimax; eigenvalues > 1.0; total variance extracted by the factor = 68.4%) support the validity of the dependent variable.

Background data

Background data comprised four items: gender, age (in years), marital status, and education.

Construct validity of study variables

Confirmatory factor analysis (CFA) established the construct validity of our variables. The 12 items aimed at measuring perceptions of the packaging and the product; i.e., the mediating variables were loaded on three factors, with factor 1 representing perceived instrumentality, factor 2 representing perceived aesthetics, and factor 3 corresponding to perceived symbolism (see Table 2). The strong loadings of the items on their corresponding factors support the validity of the variables. The various fit measures for the CFA were largely satisfactory; the test of the theoretical model produced a good fit: $\chi 2$ $(53, \ N = 100) = 67.1, \ p > 0.05, \ \text{NNFI} = 0.97, \ \text{CFI} = 0.97, \ \text{RMSEA} = 0.05,$ $\text{RMR} = 0.07$. According to Finch and West (1997), CFI functions better with small-scale samples of between 100 and 200 respondents. As the current sample size included 100 respondents, this fit measure was appropriate. Thus, CFA supported the theoretical structure of the research variables.

Data analysis for hypothesis testing

Hypotheses 1–4 predict differences between the two types of packaging in the level of perceived instrumentality (H1), aesthetics (H2), symbolism (H3), and purchase intentions (H4). As the independent variable (packaging design) was a categorical (dichotomous) variable and each of the four variables that served as dependent variables in these hypotheses was an index variable calculated as an average of three to five items, and because calculating an index of three, four, or five items creates a continuous scale, we used *T*-test analyses to test hypotheses 1–4.

Hypothesis 5, suggested perceived instrumentality, aesthetics, and symbolism as mediators between package type and purchase intentions. As summarized in Table 3, we first followed Baron and Kenny's (1986) three-stage recommendation to test the mediation predictions. In Stage 1, we used a series of independent *T*-tests to verify that the mediators were predicted by the independent variable. In Stage 2, we used a further *T*-test to explore whether the dependent variable was predicted by the independent variable. Then in Stage 3, we ran a general linear model (GLM) to examine what happened when the predicted

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mediators and the independent variable were entered together as predictors of the dependent variable. Baron and Kenny (1986) argued that full mediation requires a significant relationship between the independent variable and the mediators and between the independent variable and the dependent variable. In Stage 3, the relationship between the mediators and the dependent variable should be significant, while the relationship between the independent variable and the dependent variable becomes non-significant.

As a final step, to further support the mediation hypothesis, a bootstrap analysis (Preacher and Hayes 2008) was used. While Baron and Kenny's (1986) three-stage analysis tested the mediation prediction on one sample, the bootstrap analysis assumes mediation testing on multiple samples. Thus, if the bootstrap analysis supports the mediation test results, it validates the results for the mediation hypothesis. To run the bootstrap analysis, the nominal independent variable was transformed into a dummy variable representing the level of transparency, where 1 = transparent packaging and 0 = opaque packaging. This dummy variable was used in the mediation regression analyzed by employing Preacher and Haeys's (2008) bootstrap analysis SPSS macro.

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Results

The type of packaging and perceived instrumentality, aesthetics, and symbolism

The hypotheses testing supported most of the research hypotheses. In support of Hypothesis 1, transparent packaging was found to evoke higher perceived instrumentality than opaque packaging. Respondents' perceptions of instrumentality were greater in response to the transparent (4.24) than to the opaque package (3.87), $T(98) = 2.94$, $p < 0.01$. Supporting Hypothesis 2, the opaque packaging evoked greater perceived aesthetics (3.67) than the transparent packaging (2.87), $T(98) = -4.10$, $p < 0.001$. Likewise, in support of Hypothesis 3, perceived symbolism was influenced by the type of packaging, such that the opaque packaging evoked greater perceived symbolism (2.93) than the transparent packaging (2.63), $T(98) = -1.86$, $p < 0.05$.

The type of packaging and purchase intentions

Hypothesis 4, predicting that opaque packaging would produce higher purchase intentions than transparent packaging, was supported. The type of packaging was found to influence respondents' purchase intentions, with buying intentions higher in response to the opaque packaging (2.93) than to the transparent type (2.65), ($T(98) = -1.67$, $p < 0.05$).

Perceived instrumentality, aesthetics, and symbolism as mediators of the relationship between the type of packaging and purchase intentions

This hypothesis was almost fully confirmed. To test the hypothesis, we first verified that the mediators (perceived instrumentality, aesthetics, and symbolism) were predicted by the independent variable (packaging type) – Stage 1 in Table 3. Second, we explored whether the dependent variable (purchase intentions) was predicted by the independent variable (Stage 2 in Table 3). Third, we examined what happened when the predicted mediators (perceived instrumentality, aesthetics, and symbolism) were added to the independent variable (packaging type) and both were entered as predictors of the dependent variable (purchase intentions) –Stage 3 in Table 3.

These analyses confirmed that, as predicted, perceived aesthetics and symbolism fully mediated the relationship between the packaging type and purchase intentions.

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Table 3. *T*-test and GLM analyses of perceived instrumentality, aesthetics, and symbolism as mediators of the relationship between packaging type and purchase intentions.[a]

	T-values				*F*-values
Variables entered	Stage 1: DV = perceived instrumentality	Stage 1: DV = perceived aesthetics	Stage 1: DV = symbolism (product quality)	Stage 2: DV = purchase intentions	Stage 3: DV = purchase intentions[b]
Predictors					
Type of packaging	2.94**	−4.10***	−1.86*	−1.67*	0.05
Covariates (mediators):					
Instrumentality					3.76
Aesthetics					84.30***
Symbolism					3.80*
					$R^2 = 0.67$
					Adjusted $R^2 = 0.66$

*$p \leq 0.05$, **$p \leq 0.01$, and ***$p \leq 0.001$.
[a] $N = 100$.
[b] Perceived instrumentality, aesthetics, and symbolism (the mediators) were entered as covariates, while type of packaging served as a predictor.

A significant relationship was found between the packaging type and perceived aesthetics and symbolism in Stage 1 ($T(98) = -4.10$, $p < 0.001$; $T(98) = -1.86$, $p < 0.05$, respectively). In addition, the relationship between the packaging type and purchase intentions was significant in Stage 2 ($T(98) = -1.67$, $p < 0.05$), but became non-significant in Stage 3 (when perceived aesthetics and symbolism were included in the analysis), where the effects of perceived aesthetics and symbolism were significant ($F = 84.3$, $p < 0.001$; $F = 3.75$, $p < 0.05$, respectively). The mediation is evident in Table 3.

However, as noted above, Hypothesis 5 was not fully supported. Perceived instrumentality was not found to mediate the relationship between the packaging type and purchase intentions. Although a significant relationship was found between the packaging type and the perceived instrumentality in Stage 1 ($T(98) = 2.94$, $p < 0.01$) and the relationship between the packaging type and purchase intentions was significant in Stage 2 ($T(98) = -1.67$, $p < 0.05$), the relationship between perceived instrumentality and purchase intentions was non-significant in Stage 3. Thus, no mediation was evident with regard to instrumentality (see Table 3).

To further support the mediation hypothesis, a bootstrap analysis was used. Using Preacher and Hayes's (2008) SPSS macro, a bootstrap analysis confirmed the mediation results presented above. Specifically, the indirect effect from the type of packaging to purchase intentions through all mediators was different from zero, supporting a mediation model, but the same indirect effect through each mediator separately was different from zero only for aesthetics and symbolism. Thus, the mediation hypothesis was partially supported (see Table 4 and Figure 2).

No statistical interactions were found between the independent variable (packaging type) and the socio-demographic variables with regard to the influence on the dependent variable (purchase intentions). This means that the study results are relevant to all socio-demographic categories studied and not only to specific groups or populations.

Discussion

This study had two aims: to further our theoretical understanding of the impact of packaging in marketing and to provide empirical findings reflecting the importance of perceived instrumentality, aesthetics, and symbolism in this process. In support of the first three research hypotheses, transparent packaging was found to evoke higher perceived instrumentality and lower perceived aesthetics and symbolic associations of product quality than opaque packaging. Packaging with a transparent window allows consumers to see and evaluate the product, and thus reduces uncertainty (Sogn-Grundvag and Østli 2009). In accordance with our findings, this makes transparent packaging more instrumental than opaque versions. On the other hand, transparent packaging has less space for the presentation of various images and for the effective use of colors and graphics. This affects the perceived aesthetics and symbolism of a packaging and a product, as consumers are highly influenced and attracted by images, graphics, and colors in packaging (Ahmed, Ahmed, and Salman 2005; Durkalski 2000; Rundh 2005).

Our predictions that opaque packaging would produce greater purchase intentions than transparent packaging and that perceived instrumentality, aesthetics, and symbolism would be found to mediate the relationship between the packaging type and purchase intentions were almost fully confirmed. These predictions followed previous arguments that an ability to catch the attention of consumers is the most important attribute of packaging (Clement 2007; Louw and Kimber 2007). As packaged food products are low

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Table 4. Bootstrap results for indirect effects - Perceived instrumentality, aesthetics, and symbolism as mediators in the relationship between packaging type (level of transparency) and purchase intentions.[a]

	Bias corrected and accelerated confidence intervals		
	Lower limit	Upper limit	
Total effect	−0.621	−0.054	Indirect effect from the type of packaging to purchase intentions through all mediators was different from zero. A significant mediation model
Instrumentality	−0.400	0.003	Indirect effect from the type of packaging to purchase intentions through instrumentality included zero. Instrumentality was not supported as a mediator
Aesthetics	−0.358	−0.069	Indirect effect from the type of packaging to purchase intentions through aesthetics was different from zero. Aesthetics was supported as a mediator
Symbolism	−0.133	−0.005	Indirect effect from the type of packaging to purchase intentions through symbolism was different from zero. Symbolism was supported as a mediator

[a] $N = 100$; Bootstrap resamples size = 2000. 95% confidence interval.

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involvement in nature, purchase decisions are based less on careful examination of functional (instrumental) aspects of the product and more on the appearance of the packaging. Our results supported our prediction that transparent packaging would be less successful at raising consumers' purchase intentions. However, perceived instrumentality was not found to be a weaker mediator in this process, but rather was not confirmed as a mediator at all. This finding further strengthens the claim of Hawkes (2010) and Rundh (2009) that the visual appearance of and messages communicated by packaging are central to making products look attractive.

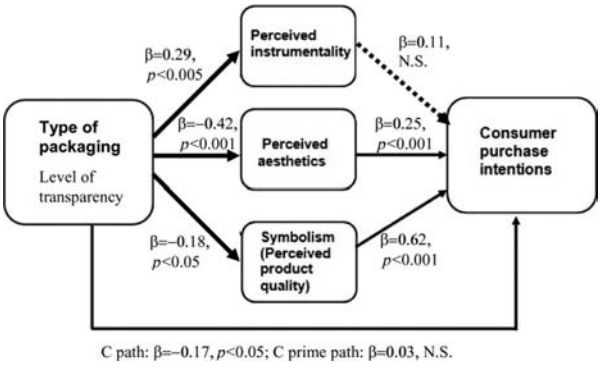

Figure 2. Mediation analysis results: the impact of type of packaging on perceived instrumentality, aesthetics, symbolism, and purchase intentions (numbers represent the regression coeficients and significance level of results).

The role of packaging in marketing

Packaging is one of the most powerful tools available to marketers, offering a means by which a product can stand apart, attract consumers' attention, and create a competitive advantage (Ampuero and Vila 2006; Clement 2007; Hawkes 2010; Löfgren 2005; Louw and Kimber 2007; Rundh 2005, 2009). This study contributes to the literature by documenting the role of packaging design in influencing purchase intentions. Importantly, our findings accord with the data gathered by the company with regard to the actual sales of the product we studied in its two packaging variations. As reported by the 'Golden Meal' marketing manager, sales of the product in the transparent packaging were lower by 30% compared with the product in the opaque wrapper for the time period of our study. The transparent packaging was less attractive to consumers, and this found expression in a significantly smaller sales volume.

These findings are in accordance with the claim that food packaging is important primarily as a marketing tool (Hawkes 2010; Löfgren 2005; Rundh 2009), and that its logistic functions (containing, protecting, preserving, and delivering the food) are secondary (Rundh 2005; Silayoi and Speece 2004). They also support the suggestions of Louw and Kimber (2007) that relatively low investment in packaging can increase brand sales more than high-cost advertising.

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Supporting the IAS model for analyzing packaging

The findings of this study encourage consideration of three dimensions when analyzing packaging elements – namely, instrumentality, aesthetics, and symbolism (Rafaeli and Vilnai-Yavetz 2004). It is suggested that these three dimensions underlie the psychological mechanism by which packaging influences consumers and that analyzing packaging along these three dimensions can help marketers predict the impact of packaging on consumer reactions. We found a relationship between one attribute of packaging (specifically, transparency) and intentions to buy the product. We further found that this relationship can be attributed to the aesthetics and symbolism conveyed by opaque packaging. Greater aesthetics is usually expected to elicit more positive reactions in consumers (Nasar 1997). The same is true for the symbolic associations of product quality elicited by opaque packaging.

Instrumentality, aesthetics, and symbolism of packaging have been mentioned by various researchers. Instrumentality of packaging was discussed with regard to protection and preservation of the contents, simplicity, ergonomics, and delivery (Bech-Larsen 1996; Butkeviciene, Stravinskiene, and Rutelione 2008; Duizer, Robertson, and Han 2009; Rundh 2005; Silayoi and Speece 2004; Venter et al. 2010; Yoxall et al. 2010). Aesthetics refers to the use of packaging to affect the senses and attract consumers, using graphics, colors, shapes, and other elements (Butkeviciene, Stravinskiene, and Rutelione 2008; Kuvykaite, Dovaliene, and Navickiene 2009; Louw and Kimber 2007; Orth, Campana, and Malkewitz 2010; Ranjbarian, Mahmoodi, and Shahin 2010; Silayoi and Speece 2004). Finally, symbolism is related to the communication of messages promoting the product, eliciting desired associations, and providing information aimed at creating a brand image (Butkeviciene, Stravinskiene, and Rutelione 2008; Dano 1996; Kuvykaite, Dovaliene, and Navickiene 2009; Louw and Kimber 2007; Orth, Campana, and Malkewitz 2010; Ranjbarian, Mahmoodi, and Shahin 2010; Rundh 2005; Silayoi and Speece 2004).

Orth, Campana, and Malkewitz (2010) suggested aesthetics and the symbolism of perceived quality as mediators in the influence of packaging design on consumer reactions. Our hypotheses were partially supported in a way that confirms Orth, Campana, and

Malkewitz (2010) argument and elaborates it to consumers' purchase intentions. Perceived aesthetics and symbolism of food packaging, but not perceived instrumentality, were documented as mediators in this process. Perceived instrumentality was, however, found to be affected by packaging design, and as predicted, in the opposite direction compared with perceived aesthetics and symbolism.

Regarding the relative importance of each of the three dimensions, it is clear that the answer depends on the specific context. When planning and designing packaging for elderly consumers, for instance, instrumentality becomes the main issue. For example, Yoxall et al. (2010) and Duizer, Robertson, and Han (2009) discuss the ease with which a package can be opened, and other functional requirements for packaging, as the most important aspects of packaging from the perspective of an aging consumer. In this study, we focused on a relatively young and wealthy population who has insufficient time to cook at home and can afford to eat in restaurants and buy ready-made food. In this context, it was documented that the most influential dimensions with regard to purchase intentions were aesthetics and symbolism, which were documented to mediate the impact of package design on purchase intentions. For this population, the most critical attribute of package design is, in accordance with Butkeviciene, Stravinskiene, and Rutelione (2008), Clement (2007), and Hawkes (2010), its ability to attract attention and to create an image.

Another important potential moderator is suggested by the specific food product used in this study – a chilled meal containing boiled vegetables. Unlike products such as bread, cakes, or fruits, a chilled meal must be heated, and so is not in its final form when it is sold. Such a product therefore involves high levels of uncertainty and perceived risk, which can have negative effects on purchase behaviors (Gao, Sirgy, and Bird 2005). Under conditions of uncertainty about product attributes, consumers use external cues to establish their expectations of the product and thereby reduce risk (Erdem and Keane 1996). In general, for foods such as bread and cakes, packaging with a transparent window allows consumers to see and evaluate the product, and thus reduces uncertainty (Sogn-Grundvag and Østli 2009). However, when a consumer sees a frozen tray of meat, gravy, and vegetables, it may be difficult to visualize the final product, and so uncertainty may actually be reduced more by providing a photo of the product in its final state than by using a transparent window. Thus, a product's 'readiness to eat' may be an important consideration as marketers choose the type of packaging most likely to reduce consumers' perceived risk.

In sum, this study focused on one attribute of packaging design – transparency. Transparency was shown to be an interesting attribute of packaging, which has functional (Sogn-Grundvag and Østli 2009), aesthetic (Durkalski 2000), and symbolic (Ahmed, Ahmed, and Salman 2005; Rundh 2005) considerations. It is important to note, however, that transparency is but one example that illustrates how any aspect of packaging can be analyzed based on the IAS model (Rafaeli and Vilnai-Yavetz 2004).

Managerial implications

The present findings demonstrate the importance of packaging in marketing. In the experimental study, packaging was found to be an important predictor of customers' perceptions (perceived instrumentality, aesthetics, and symbolism) and purchase intentions. The sales data we obtained from the company independently showed that packaging impacts not only perceptions and intentions but also actual sales volume. Packaging design thus proves to be a powerful means of shaping consumers' reactions and behaviors.

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Our findings show that the IAS model of Rafaeli and Vilnai-Yavetz (2004) can help planners and designers produce more effective packaging for various products and contexts. Similarly to Orth and Malkewitz (2008), one important implication of our findings is that designers should be aware of possible trade-offs in design decisions. In our study, packaging designed around a transparent cover favored instrumentality over aesthetics and symbolism. This turned out to be a poor choice in terms of attracting the product's targeted demographic (young, relatively well-off people). It may be that the same element (i.e., the transparent cover) would have increased purchase intentions and actual sales for a different product targeted at a different demographic. Designers must consider the balance between instrumentality, aesthetics, and symbolism case by case, based on their target market and other factors, in order to achieve the desired responses.

These conclusions and implications are especially relevant for new and innovative products, which are still unknown to consumers. Such products require broad exposure to achieve satisfactory levels of consumer awareness, positive attitudes, and intentions to buy. Considering the instrumentality, aesthetics, and symbolic associations of the packaging designed for such products, both as a whole, and in terms of its specific elements, may significantly increase the potential for success in the introduction of new products to the market.

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Limitations and future research

Several limitations of this study must be noted. First, the current research is based on an experimental study conducted in a supermarket. Therefore, our conclusions are relevant only to the first moment of truth – attracting the consumer at the point of sale (Löfgren 2005) – but not to the consumer's use of the product at home. Future research is needed to validate the present findings in the context of home use.

Second, in this study, we focused on those supermarket shoppers who showed interest in the relevant food category and were thus relatively young, well-off, and with insufficient time to cook at home. Study respondents ranged in age from 18 to over 65 years, but with a relatively low median of 30 years. This means that although our results were found to be relevant to all socio-demographic categories studied, there are still population segments – such as elderly people – that are not equally represented in this study and might be worth additional research.

Third, the impact of food packaging on purchase intentions has been tested elsewhere (e.g., Butkeviciene, Stravinskiene, and Rutelione 2008; Clement 2007; Kuvykaite, Dovaliene, and Navickiene 2009; Lee, Gao, and Brown 2010; Silayoi and Speece 2004). However, the factors that mediate the effect of food packaging on purchase intentions have remained unclear. This study supports the mediating effect of perceived aesthetics and symbolism, but not instrumentality, on purchase intentions. Further research is required to more fully elucidate the role of each of the three dimensions in the psychological dynamics by which food packaging influences consumers' responses.

Fourth, instrumentality in this study was measured based on judgments that were not necessarily directly linked to transparency, but were predicted to involve instrumentality perceptions as a whole. Future research should word questionnaire items more specifically so as to better capture the link between instrumentality and transparency.

Fifth, this study tested only one type of food product – a boiled vegetables dish. Yet, food producers might use different types of packaging for different products. For example, foods that look fresh even after heating and chilling (e.g., burgers) might sell well when wrapped in packaging with a transparent window. Foods such as soups, in contrast, might

be better wrapped in opaque packaging, as in most cases these foods look less fresh and less aesthetic after heating and chilling. Future studies should explore how the match between specific foods and specific package types affects purchase intentions to identify the most effective packaging for each product from a marketing perspective.

In addition, this study tested only two types of packaging: opaque packaging with a photo of the meal and packaging with a large transparent plastic cover. Future research might consider different means of employing transparency in packaging. For instance, studies could compare opaque packaging, packaging with a fully transparent cover, and opaque cardboard packaging with a small transparent window. Would consumers still prefer the fully opaque packaging over the third option? How would this influence the mediating variables? Such questions remain to be answered.

Finally, our study focuses on one attribute (transparency) while excluding such elements as the size, color, and shape of packaging or attributes such as massiveness or naturalness. Research has shown that such elements and attributes influence consumer responses (Butkeviciene, Stravinskiene, and Rutelione 2008; Chandon and Ordabayeva 2009; Kuvykaite, Dovaliene, and Navickiene 2009; Littel and Orth 2012; Orth and Malkewitz 2008). Future research is needed to test the integrated effect of transparency and other design factors on consumers' responses.

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Conclusions

This study supports (a) the influence of package design (specifically transparency) on purchase intentions; (b) the validity of perceived instrumentality, aesthetics, and symbolism for analyzing and interpreting package design; (c) the mediating effect of aesthetics and symbolism, but not instrumentality, on how packaging influences intention to purchase; and (d) the importance of handling packaging as a critical marketing tool, and not as a mere logistic tool. This research offers theoretical insights regarding the potential psychological dynamics involved in the impact of packaging for scholars as well as for designers and marketing practitioners.

Acknowledgements

The authors wish to thank Eran Ben Simon for his contribution to this research project, to the marketing manager of the home-cooked food company for his collaboration, and to two anonymous reviewers for their valuable suggestions and comments.

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