Measuring second-hand shopping motives, antecedents and consequences

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ABSTRACT

This article aims at measuring motives toward second-hand shopping, an alternative form of buying that consumers make use of. We first define the concept of second-hand buying and describe the characteristics of the phenomenon that support a motivation-based approach. Then, we develop a measurement scale following the procedure advocated by Churchill (1979) and reexamined by Rossiter (2002). A preliminary qualitative study conducted with 15 buyers of second-hand goods and a two-stage data collection among 708 individuals provide a final, reliable and valid 7-factor scale that can be used separately or combined in two main dimensions – economic and recreational – to predict internal or external outcome variables.

Key words: Second-hand shopping, recreational shopping, economic shopping, alternative forms of consumption, resistance to the marketplace, scale development.

The second-hand market, although of ancient origin, remains little known and underestimated. The informal character of most of the transactions makes it difficult to evaluate, but its recent growth shows that it nonetheless meets other expectations than solely the economic advantages usually cited (Bauhain-Roux and Guiot, 2001; Chantelat and Vignal, 2002). One stream of research thus describes the recreational and experiential benefits offered by certain places of exchange such as flea markets, second-hand markets, swap meets[1] and garage sales[2] (Belk, Sherry and Wallendorf, 1988; Soiffer and Hermann, 1987;

Gregson and Crewe, 1997b; Sherry, 1990a, 1990b). Such outlets, which have an appeal other than that offered by conventional channels, provide opportunities for finding unusual items, often without equivalent in the new goods market (Roux, 2005). Capable of providing a wide range of items through a variety of channels, the second-hand market has increasingly become part of everyday life and is often an alternative to the new goods market for people without any pressing economic need to frequent such outlets (Williams and Windebank, 2000; Gregson and Crewe, 1997a). Yet, despite the clearly growing interest in this form of shopping, there is no tool currently available for precisely explaining the structure of the motives it mobilizes.

Apart from the challenge it presents for conventional producers and distributors, the phenomenon of second-hand shopping also opens up three major perspectives at a theoretical level. First of all, existing models of consumer behavior do not consider any other framework than that of purchasing new goods, and have nothing to say about the second-hand market, which nonetheless is a real, if under-researched, source of supply (Bauhain-Roux and Guiot, 2001). Second, this form of shopping is situated at the intersection of themes linked to channel use and product acquisition, both of which present specific characteristics. Although Filser (1994, p. 398) notes that the interactions between product choice and sales outlet choice are inadequately explained by existing models, addressing the motives of shoppers of second-hand goods enables both these aspects to be studied simultaneously, and is, in this respect, a new contribution.

Finally, the third perspective aims to shed light on the psychological determinants, as well as the consequences, of motives for this form of purchasing. The links observed with behaviors associated with recreational contexts such as browsing and impulse buying, or those linked to economic or ecological concerns, such as recycling, enable us to show the contribution of this concept to the analysis of consumer behavior. The study of this form of alternative supply thus opens the way to the exploration not only of emerging behaviors such as recycling and voluntary simplicity, but also, more broadly, of other possible manifestations of market resistance (Roux, 2007).

We intend, therefore, to offer a measure of motives for second-hand shopping, a form of acquisi-

tion whose scope and significance have considerably widened in recent years. Our objective is not to analyze, on an individual basis, the judgments consumers make when buying a product, nor their processes of deliberation when faced with a specific choice (e.g., either renewing the product, or getting a replacement when the product no longer works, or buying a second such item). Following Arnold and Reynolds (2003), who put forward an overall measure of hedonist motives for shopping, we favor, and justify, an overall measure of the motives (or the absence of motives) for this form of shopping, which the literature identifies as a new phenomenon. The aim of this study is at once to identify the psychological antecedents and the consequences of these motives in terms of product choices, the frequenting of channels, and behaviors, which would be situated outside the direct field of the study. Prior to this, we provide a definition of second-hand shopping and justify the conceptual and theoretical interest of the approach adopted. The development of a measurement tool, which adds an in-depth qualitative stage to inputs from the literature, is put forward, following the procedure advocated by Churchill (1979) and reexamined by Rossiter (2002). We finally discuss the contributions and limitations of this study, and lines of future research it opens, in particular as regards some recent phenomena in consumer behavior.

SECOND-HAND SHOPPING: DEFINITION AND CHOICE OF A MOTIVE-CENTERED APPROACH

Despite its considerable relevance and significance, second-hand shopping has never been studied in its entirety. Moreover, with rare exceptions (Bardhi and Arnould 2005; Roux, 2004), it has been approached in a contextualized manner and often within a distribution-related perspective. Qualitative and ethnographic studies of some channels – second-hand markets, swap meets, private sales, charity stores – show in particular that second-hand buying goes beyond the simple acquisition of a product discounted by the extent of its wear and tear and encompasses a

particular form of shopping that competes with the use of conventional channels (Gregson and Crewe, 1997a; Belk et al., 1988; Sherry, 1990a, 1990b; Stone, Horne and Hibbert, 1996). After providing a summary of existing contributions, we justify the significance of a measure of motives for second-hand buying, beginning with our definition of the phenomenon.

The concept of second-hand shopping: definition and evolution of the field

The French term for second-hand, *d'occasion*, from the Latin *occasio*, designates a stroke of luck, a timely event. By extension, the term also describes a transaction that is advantageous to the buyer, as well as the object of this transaction, whose price is attractive due to the depreciation associated with its use or previous ownership. The so-called second-hand object, the product of "the occasion", is thus distinguished from its new equivalent by the fact that it cannot claim a first-owner status in the life of a buyer. As French law on furniture sales at public auction states,[3] second-hand objects are designated as "goods which, at some stage in their production or distribution, have entered into the possession of a person through an act of trade or through any act against payment or free of charge". Traditionally, second-hand buying was, for a long time, limited to local forms of acquisition of used products, reputed to be less expensive and therefore financially attractive for certain sections of the population (Williams and Windebank, 2000; Williams and Paddock, 2003). Since then, the channels, particularly second-hand stores, second-hand markets and the Internet, have accelerated the spatial spread of these exchanges, thus answering to a growing informal demand from sellers, as well as to new expectations on the part of buyers (Bauhain-Roux and Guiot, 2001). In fact, although having been previously owned by someone else, the second-hand product does not necessarily involve a comparison with an equivalent product on the new goods market, nor an approach based solely on price. Studies on second-hand markets, flea mar-

kets, swap meets and garage sales have led to two new findings: (i) motives for second-hand products are not of an exclusively financial nature; (ii) the channels themselves are sources of direct interest to buyers.

In regard to the first point (i), research shows that a second-hand object may be sought for its cachet, its rarity, or its geographical or biographical origins (Kopytoff, 1986), even if it is not defined as an antique, work of art or collector's item, as specified in Table 1. Owing to the affective dimensions associated with this type of purchase, comparison with a new product, even in an equivalent category, often makes no sense for the buyer. When, for example, he comes back from a second-hand market in the French provinces with an old plane or an ancient tablecloth, it is less a matter of comparing their prices with what he could find in a hypermarket, than of appropriating their history and often of the relationship formed with the seller during their acquisition.

The second point (ii) probably provides an even greater conceptual enlargement of the geometry traditionally attached to second-hand buying. Indeed, studies show that access to used products can be gained through a variety of channels, some of them direct and informal, such as transactions between private individuals – through word of mouth between neighbors or family members – and others which interpose relational, operational or qualified mediation between buyers and sellers (Bauhain-Roux and Guiot, 2001; Williams and Windebank, 2000). In the 1980s, the research emphasis was more on the economic advantages arising from shopping in charity stores and second-hand stores, the growth of which was attributed to the reduced purchasing power of the middle classes (Yavas and Riecken, 1981; Razzouk and Gourley, 1982; Horne, 1998; Gregson and Crewe, 2005). Other studies carried out in the specific context of second-hand markets, swap meets, flea markets and garage sales have since downplayed the importance of financial motives, showing that the socio-economic profile of buyers does not reveal an over-representation of the disadvantaged classes (Gregson and Crewe, 1997a). These outlets are frequented, above all, for their capacity to satisfy, more so than traditional distribution channels, a varied range of motives: strolling around outside, rummaging through the products on sale, letting oneself be surprised, hunting for items unavailable in traditional

3. Law no. 2000-642 of 10 July 2000 published in the *Journal Officiel* n° 159 of 11 July 2000, concerning the regulation of voluntary furniture sales at public auctions.

Table 1. – Definition and distinction of works of art, antiques, collectors' items and second-hand objects[4]

Categories	Definition	Comments
Works of art	Original plastic arts creations in the form of unique or at least limited examples, produced by the artist's own hand.	*In general, a maximum of eight examples, supervised or signed by the artist, can have been produced.*
Antiques	Objects at least a hundred years old, other than works of art or collectors' items.	
Collectors' items	Specimens or collections that have particular historical, archeological, paleontological, ethnographic or numismatic interest.	*Although the term has a limited meaning in the context of this schema, we should nevertheless point out that the second-hand market is full of small items collected for sentimental, social or passionate reasons that have no real market value or official price. We deliberately include such "objects collected" in the spectrum of second-hand products – which we distinguish from "collectors' items" as described by the EU Directive – because they are second-hand objects in the sense defined above and form part of the offering of second-hand channels that buyers look for.*
Second-hand objects	Objects defined by their exclusion from the preceding categories, such as household goods capable of being reused, in good condition or repairable, other than works of art, collectors' items or antiques and other than precious metals or precious stones as defined by the Member States.	*It is nonetheless the case that due to its great informality, the second-hand market does not always make the distinction between these different categories. As Stone, Horne and Hibbert (1996) recount, although it happens very rarely, the antique hunter can sometimes discover, without the possibly inexperienced seller knowing what it is, a work of art or antique buried amidst worthless bric-à-brac.*

channels, engaging in discussion with the sellers, bargaining, and so on (Hermann, 1996; Gregson and Crewe, 1997a, 1997b; Belk et al., 1988; Sherry, 1990a, 1990b; Stone et al., 1996; Roux, 2005). All these studies, both on the channels and, more recently, on second-hand buyers' motives (Stone et al., 1996; Roux, 2004; Bardhi and Arnould 2005), converge on the idea that this mode of purchasing often becomes an alternative or parallel to shopping for new goods, and replaces such traditional outlets as the preferred choice when they consider going shopping or simply browsing (Roux, 2004). Thus, buying second-hand consists both of not buying new (a dimension linked to the product) and also of resorting to modes of exchange with distinctive characteristics (a dimension linked to the sale channel). Within this perspective, we will define second-hand buying as *the acquisition of used objects through often specific modes and places of exchange.*

The relevance of an approach focused on motives for buying second-hand

Analysis of the literature shows second-hand shopping to be a new, but growing, phenomenon. Apart from occasional purchases usually made for

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4. According to the Directive 94/5/CE of the EU Council of 14 February 1994 complementing the common value added tax system and modifying the Directive 77/388/CEE as to the regulations applying in the area of second-hand goods, works of art, collectors' items and antiques.

economic reasons, it testifies to a favorable orientation toward a *combination* of economic *and* recreational benefits found through this form of acquisition (Bardhi and Arnould, 2005; Stone et al., 1996). Consequently, it seems relevant to focus on the motives underlying the interest revealed by these studies. In view of Mucchielli's (1992, p. 29) idea that motivations are "the totality of irrational determinants of human conduct" that "impel the individual to act" and "direct his behaviors", the concept of motivation appears to be particularly pertinent. Despite the absence of an integrative framework for the various theoretical approaches to motivation (Filser, 1994), it has the advantage of being a far-reaching tool for studying the motives underlying behaviors, both as regards products (Haire, 1950; Webster and von Pechman, 1970) and distribution channels (Tauber, 1972). Just as Westbrook and Black (1985) suggest that motives for shopping in general comprise three dimensions – acquiring a product, satisfying needs not linked to the product, and attaining certain goals independent of the acquisition itself – it seems to us that the motives for second-hand shopping are precisely inscribed within this combination of motives that impel consumers to look for less expensive products and also to prefer the informal, ludic world of certain places of exchange. This last point, which has been particularly well elaborated in qualitative terms (Soiffer and Hermann, 1987; Gregson and Crewe, 1997a, 1997b; Belk et al., 1988; Sherry, 1990a, 1990b), has nevertheless resulted in contextualizing the exploration of motives in relation to such places, of which only Stone et al. (1996) have attempted to provide a measure. In that study, five dimensions thus characterize shoppers' motives, which in fact turn out to be closely linked to the second-hand markets themselves: non-planned and impulsive purchases, exploration and treasure-hunting, the atmosphere of the location, social interaction, and the search for quality products. This last dimension comprises only one item, and little or no confirmatory analysis is provided to validate the factor structure presented.

More recently, Bardhi and Arnould (2005) have carried out a qualitative study of the objectives sought in second-hand shopping in general. Their conclusions underline the interweaving of economic and hedonic motives that push people toward this form of acquisition and the dual product/channel dimension that underlies it. From the economic standpoint, six dimensions are identified, not all of which are motives, but include antecedents and consequences of this kind of shopping: carefully planning one's purchases, limiting one's expenditure, bargain hunting, extending product life-times, minimizing the use of new product channels, and recycling used products. As well as this economic aspect, there was a hedonic dimension linked, on the one hand, to designer or luxury products that were sought in these channels, and on the other to a form of serendipity[5] ensuing from the unexpected encounter with certain objects. The authors show that these motives enable purchasers to rationalize and ethically justify their wishes and to vindicate often paradoxical and impulsive behavior. The study's key contribution is to emphasize the complexity and interdependence – rather than the opposition – of the economic and hedonic motives that guide behavior. However, the approach remains exploratory and has not been validated. Our objective is therefore to provide a measurement model of motives for second-hand shopping, as a specific form of acquisition involving two aspects: one linked to the purchase of second-hand products, the other to the frequenting of the channels offering such products. The development of a scale should allow us to identify the different dimensions and also to measure their links with specific explanatory and predictive variables.

CREATION OF A MEASUREMENT SCALE OF MOTIVES FOR SECOND-HAND SHOPPPING

The development of measurement scales has involved varied construction procedures (Churchill, 1979; Peter, 1979; Anderson and Gerbing, 1988), which we take into account by incorporating recent work concerned with problems of their reliability and validity (Roehrich, 1993; Crié, 2005; Rossiter, 2002). Seven stages, from the specification of the construct

5. According to Merton (1949/1997, pp. 43-44) "serendipity" designates discovering by chance or by shrewdness something one was not looking for.

through to the predictive validity of the scale, were carried out. These are described in Figure 1.

First stage: Specification of the construct and implementation of an exploratory study

The literature review given in the first part enabled us to position and specify the domain of the construct. Current thinking, reinforced by a qualitative study which we present in the next paragraph, leads us to formulate the following definition: *motivation toward second-hand shopping refers to the psychological and material motives that in general orient people toward second-hand products and/or distribution channels.* Since previous studies were conducted in relation to specific channels and in an Anglo-Saxon context, we needed to explore the motives of French purchasers by means of a preliminary qualitative study. This was carried out in two

stages: a group meeting, followed by semi-directive, in-depth interviews conducted with fifteen shoppers of second-hand goods. The recorded and re-transcribed interviews were conducted in accordance with an information saturation principle (Glaser and Strauss 1967). Their coding was carried out sequentially and the emergence of themes guided our choice of subsequent respondents by varying the profile until such time as saturation of the themes was obtained, i.e., from the fifteenth interview (Glaser and Strauss, 1967; Strauss and Corbin, 1990; Goulding, 2000). During the interviews, the informants were invited to describe what they bought (and what they didn't buy) second-hand and in which channels, then to elaborate on the motives guiding their choice. An extension aimed, in conclusion, at establishing how they originally came into contact with this form of shopping and how their experience of it subsequently developed.

The findings revealed highly varied practices in terms of frequency of buying, and the types and
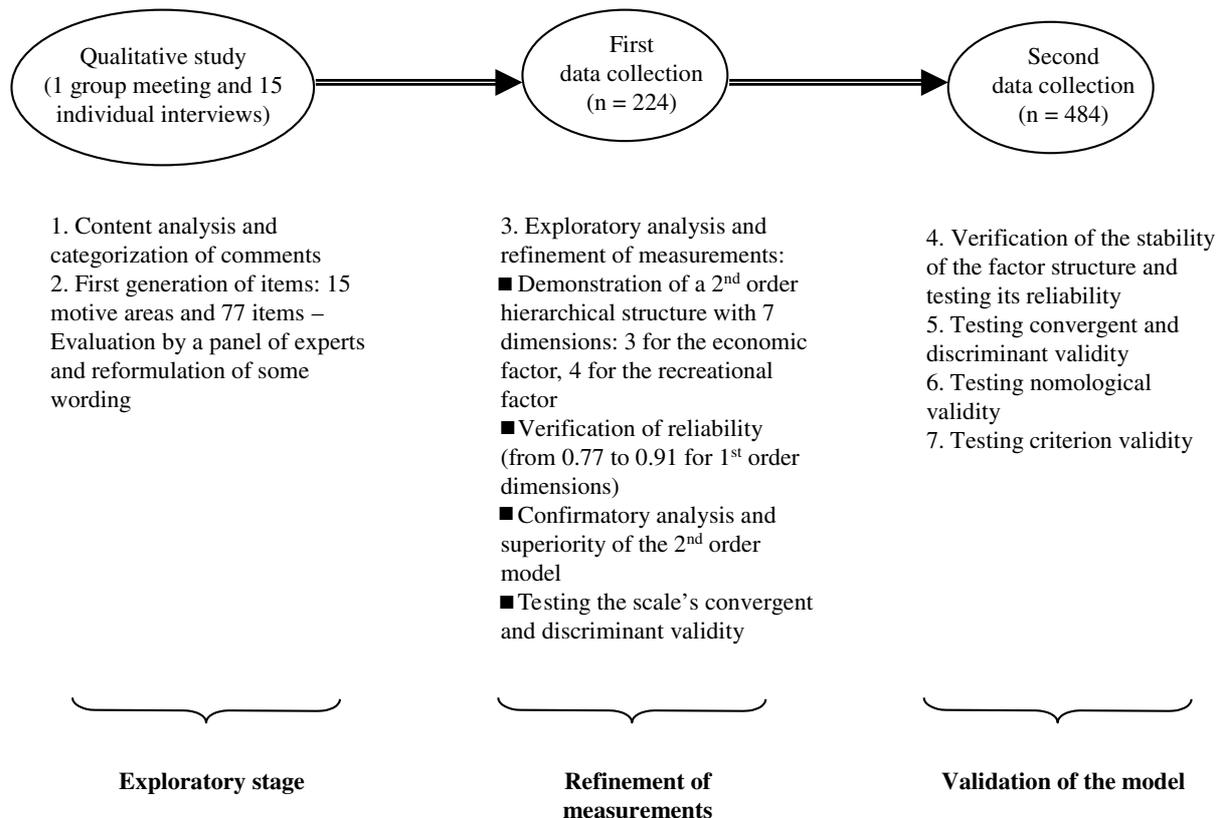

Figure 1. – Research design

numbers of products looked for and/or channels visited. For some people, these were very occasional and limited – a few books or a used car – while for others they were regular and intensive – involving many different product categories and channels. The qualitative exploration confirmed that this form of buying was nevertheless familiar to all the respondents, thereby giving the elaboration of a measurement tool more general scope. Although second-hand shopping could be described as an occasional way of drawing comparisons with new products within the perspective of a particular purchase, the interviews very much brought out the dimensions of an overall interest, in varying degrees, in this form of acquisition. By referring to their experiences, they provided a range of motives, which seem to be less linked to product categories taken in isolation than in relation to a system viewed as a whole, in which the products, but also the channels, are in competition with one another to produce specific advantages. This interdependence of motives toward a system of acquisition considered in itself, and for its own characteristics, supports the principle of an approach by motivation rather than by the benefits sought (Haley, 1968). This finding is also supported by two conclusions from the literature: on the one hand, people who frequent certain channels – second-hand markets, swap meets – tend to consider them as "worthwhile places in themselves just for strolling around", where impulse buys are often made (Roux, 2004) and which are defined not by a notion of comparison with or assessment in relation to new products, but by a preference for these very channels. On the other hand, from the angle of a comparison with new products, the expertise obtained by certain respondents and the control of risk that they progressively acquire (Roux, 2004) reveal a strengthening of their overall preference for this form of acquisition, over and beyond the occasional second-hand shopping expedition. In fact, our approach favors, through this first proposal for measurement, the study of individual motives in regard to this form of shopping, rather than of processes in precise buying situations.

Second stage: Generation of a sample of terms

The results of coding the interviews allowed us to generate terms with a view to elaborating a measurement tool. Rossiter's (2002) work led us to clarify the nature of the construct studied according to the C-OAR-SE procedure, by specifying the type of attributes grasped. The spectrum of mental representations collected from the respondents in the qualitative stage turns these motives into an abstract attribute requiring several measurement indicators. As the literature review and the interviews suggest, a causal relation seems to be established from "motivation toward second-hand shopping" to the declared motives that reflect them (Crié, 2005). Motivations, the determinations of human conduct, are expressed in the form of general motives – economic and recreational – which are also reflected in the specific dimensions that constitute more discriminating expressions of them. The construct of motives for second-hand shopping is therefore viewed here as an abstract, reflective-type attribute.

The interviews enabled us to reconstruct the two main areas of motivation – economic and recreational – referred to in the literature on second-hand distribution channels (Gregson and Crewe, 1997b; Stone et al., 1996; Bardhi and Arnould, 2005). The economic dimension (I) is reflected by four factors: the search for a fair price (1), bargain hunting (2), the wish to pay less (3), and the allocative aspect of the price (4). The recreational dimension can itself be broken down into two sub-dimensions. One of these is linked to the second-hand product offering (II) and includes four factors: the originality of the products (5), nostalgia for items from the past (6), self-expression (7), and congruence sought with the items purchased (8). The other is linked to the characteristics of certain shopping outlets (III), already identified by Stone et al. (1996): social contact (9), stimulation (10), and treasure hunting (11).

As well as these two major categories existing in the literature, the interviewees' discourse also revealed three other kinds of motive:

• a *power motive* (IV) obtained through controlling the power of sellers by means of bargaining (12), and through a wish to escape from conventional channels (13). This notion, which comes close to Mano and Elliott's (1997) *smart shopping*, expresses the desire to by-pass the conventional market system and to take advantage, at little cost, of products that other people no longer want. Far from being too shameful to mention, this motive emerges as a form of self-gratification

and gives shoppers a sense of belonging to a clan of experts sharing knowledge of an alternative acquisition practice (Mano and Elliott, 1997; Roux, 2004).

- an *ethical and ecological* motive (V), through which the interviewees reveal their concerns in regard to recycling and avoidance of waste (14). They emphasize the arguments put forward by practitioners of voluntary simplicity, such as the wish to re-use functioning products and to limit the depletion of resources and the proliferation of unnecessary products (Dosbcha and Ozanne, 2001).

- an "*anti-ostentation*" motive (VI), that demonstrates for some respondents the conscious and voluntary rejection of everything associated with fashion and mass consumption (15). The reverse of the Veblen effect, second-hand shopping allows its practitioners to express their indifference to the social codes propagated by fashion and the market system which, from a Bourdieusian angle (Bourdieu, 1979), constitutes a way of distinguishing themselves from mass taste.

These various elements therefore enabled us to identify six main areas of motivation – economic, in relation to the nature of the offering, in relation to the characteristics of the channels, ethical and ecological, power, and anti-ostentation – broken down into 15 sub-dimensions and 77 items drawn up from the interviewees' comments in the exploratory stage (*cf.* Table 2). The formulation of these utterances was then submitted to four experts in consumer behavior in order to evaluate their expressive and content validity. Some wording was reviewed when its formulation presented ambiguities or did not well match the motive area it was supposed to correspond to.

Third stage: First data collection and refinement of measures

The first data collection, carried out by marketing students, produced 224 useable questionnaires taken from a sample whose proportions in terms of age, gender and declared frequency of buying second-

hand was controlled.[6] The 77 items obtained from the previous stage, formulated on a 5-point Likert scale, were inserted into a self-administered questionnaire which, as well as social-demographic variables – age, gender, income level, educational level – included reported measurements in regard to products purchased, channels used and recycling behavior.

The items were first subjected to a purification process. We carried out factor analyses into principal components with oblique rotation owing to the assumed correlations among the construct's dimensions. Some items were consequently deleted, either because of low loadings or communalities (less than 0.40 and 0.30, respectively), or because of high loadings over several factors (Hair et al., 1998). As a result, there was a loss of information on several dimensions identified in the qualitative stage. Thus, the wish to "pay less and spend less" (ECO1), the "allocative role of price" (ECO3), "bargain hunting" (ECO4), "the search for "congruence with the objects" (OFF3) and the "anti-ostentation" dimension (15ANT) show no significant convergence. Two reasons for this can be put forward: although they were constructed on the basis of what was said in the exploratory study, the formulation of items may not correctly reproduce certain assumed forms of motivation; and these motives are not necessarily homogeneous constructs such as those we detected in the qualitative stage. For example, although certain respondents told us about the budgetary calculations associated with second-hand shopping (obtaining more for the same budget, getting more things by buying them second-hand), the "allocative role of price" that we aimed to capture is perhaps a peripheral dimension to their liking for this form of shopping or called for an overly complicated response for a questionnaire. Similarly, the "congruence" dimension, which aimed at measuring the match between the second-hand product and the respondent's self, possibly does not sufficiently distinguish, on this point,

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6. In the absence of known quotas on the second-hand buyer population, we took care to gather an almost equivalent proportion of respondents on the basis of these three criteria. Stated purchase frequency, which consists of the respondent's own estimation, seems to us to be more relevant than using a real purchase frequency indicator, which necessarily varies according to needs and product categories.

Table 2. – Items retained in the exploratory stage in 15 areas of motivation toward second-hand shopping

I – Economic dimensions
1. ECO1 – Buying cheaper, spending less (anxiety expressed in regard to expenditure)
I feel I spend less by buying second-hand* I shop second-hand because I don't want to spend a lot of money* With second-hand shopping, you're happy to buy things less expensively and to spend less* By shopping second-hand, I can get something without ruining myself * I like shopping second-hand because I feel I'm paying less *
2. ECO2 – Paying fair prices
By shopping second-hand, I feel I'm paying the right price for things I don't want to pay more for something just because it's new It's often not worth paying more to get something new* Buying second-hand, I can get the same thing at a decent price* Shopping second-hand allows you to get products that are often sold new at exorbitant prices*
3. ECO3 – Allocative role of price (what is obtained for a particular budget)
By shopping second-hand, I can have more for the same budget* Second-hand shopping enables you to get fully equipped on a modest budget* I can treat myself to more things since I pay less second-hand* I sometimes feel I can buy myself everything by shopping second-hand* By buying second-hand, you can more easily change and renew what you own* By buying second-hand, one feels one has lots of things for very little money* It's easier to make the choice between two items if one can find them second-hand*
4. ECO4 – Bargain hunting
What I like about shopping second-hand is obtaining the lowest price whatever the item* If I feel I'm getting a bargain, I buy it even if I don't have too clear an idea what I'm going to do with it* If I come across a bargain, I take it* When a price seems really attractive, I buy on the principle of not missing out on a bargain* There are some products I buy mainly because of their unbeatable price*
II – Dimensions relating to the nature of the offering
5. OFF1 – Originality
What interests me about buying second-hand is finding things you don't see everywhere* I love finding original objects you don't see in the shops I get pleasure from buying a surprising or unique second-hand object* What I like about shopping second-hand is finding articles I won't see elsewhere* I hope to find second-hand objects that not everyone will have
6. OFF2 – Nostalgia
I like buying second-hand mainly for old objects* I'm much more attracted by old things than by new things I like buying second-hand objects because I find them authentic I love buying second-hand objects because they evoke the past Above all, I buy second-hand articles because they're old and have a history
7. OFF3 – Congruence
For me, second-hand shopping is the pleasure of coming across something that I'll like* I mainly find objects that really suit me in second-hand channels* What I like about second-hand shopping is finding an unexpected article that appeals to me* Second-hand outlets, above all, allow me to look for the items I collect for pleasure* I shop second-hand for products that I'll really fall in love with*
8. OFF4 – Self-expression
I look for items I'll be able to tinker around with as I please* I like to create something personal by playing around with some of the second-hand things I buy* I occasionally buy second-hand objects to alter them and make something else from them* I sometimes buy second-hand stuff that I personalize in my own way* I like buying certain second-hand items for the pleasure of fixing them and making them work*

* Items deleted according to low factorial contributions or low communalities or high saturations on several factors (Hair et al., 1998).

Table 2. – Items retained in the exploratory stage in 15 areas of motivation toward second-hand shopping
(continued)

III – **Dimensions relating to the recreational aspects of second-hand channels**
9. CIR1 – Social contact
I like visiting second-hand channels[7] where I can meet and talk to people I'm conscious of the friendliness one senses in some of these places What I like a lot about some second-hand outlets is the pleasure of talking to people I find it pleasant to enter into discussion with people without necessarily buying anything I like the contact with people, which you no longer find in traditional shops*
10. CIR2 – Stimulation
Going to second-hand outlets is a real recreational activity for me* I like strolling around these second-hand places just for the pleasure of looking* What I like doing is looking at what's on sale, like in an exhibition* For me, going to these places is an outing, I wander around* It's entertaining to look at the all the merchandise on display in some of these places*
11. CIR3 – Treasure hunting
I go to them to nose around and see what I can find I like strolling around these second-hand channels because I always hope to come across a find What's on sale is never repetitive, and that's what I like* In some of these second-hand channels I feel a bit like I'm treasure hunting I go to such places to ferret around and discover something Second-hand shopping enables me track down things for my family, since I know their needs*
IV – **Power dimensions**
12. PUIS1 – Smart shopping
Shopping second-hand allows me to distance myself from the consumer society Shopping second-hand is for me a revenge on the consumption system When I shop second-hand, I rather feel I'm escaping the system (of consumption) There are some people who buy new, and that then allows me to take advantage of it* Shopping second-hand is for smart people who retrieve what other people no longer want*
13. PUIS2 – Power over the seller
What I like about shopping second-hand is being able to bargain* Unlike the traditional channels, I like the fact of being able to discuss the prices* If I like something, I often try to enter into discussion with the seller and get the price reduced* I often try and get the price I have in mind for a second-hand item by negotiating* I count on the seller's wish to get rid of products to obtain a good price*
V – **14. ETH – Ethical and ecological dimension**
By shopping second-hand, I feel in a small way I'm fighting against waste As well as buying items second-hand, I sometimes recover objects that have been thrown out* Second-hand shopping is a way of recycling things, which I believe in* Re-using things that are still usable, even if they're old, conforms to my principles* I like shopping second-hand because I don't like seeing things thrown away that can still be of use
VI – **15 ANT-OST – Anti-ostentation dimension**
By shopping second-hand, I distance myself from fashion and the consumer society* I'm more interested in what I can do with an item bought second-hand than in the image I can give myself through it* I buy second-hand things for what I consider to be their intrinsic worth* I laugh at the idea that other people might think I'm odd because I buy things second-hand* Replacing a product just to be in the latest fashion seems ridiculous to me*

10. The notion of channels was explained in a note to respondents, specifying that these were "types of retail outlets or places of sale", which they had previously ticked in a question about their earlier purchases of second-hand goods.
* *Items deleted according to low factorial contributions or low communalities or high saturations on several factors (Hair et al., 1998).*

buying second-hand from buying new. For the most part, the items conform correctly to their motivation area, except in the "smart shopping" and "anti-ostentation" dimensions which overlap. The final 3-item dimension, representing more the idea of a means of escape from the consumer society, was renamed "distance from the system".

On the other hand, in conformity with the conclusions of the literature, the analysis reveals a hierarchical structure characterized by two second-order factors.[8] The first factor corresponds to recreational motives, simultaneously linked to products and channels, and the second to motives that we shall describe as economic, but which are more precisely related to the *functioning of the economic system*. Indeed, this factor well captures the "fair price" dimension logically expected in this context, as well as the "distance from the system" and "ethics and ecology" dimensions, which both reflect critical attitudes toward the marketplace and forms of resistance toward accelerated renewal of products and waste of resources.

Confirmatory analysis

With the aim of evaluating the scale's congeneric measurement properties, the conceptualization of second-hand buying motives led us to test the hypothesis of a hierarchical structure composed of two second-order factors and seven first-order dimensions (Figure 2). The results are shown in Table 4. The indices show a good fit to the data, despite GFI and AGFI values (0.87 and 0.83, respectively) slightly lower than usually recommended by the literature on first-order constructs. They can be considered acceptable because of the sensitivity of the indices to the sample size and the complexity of a second-order model (Gerbing, Hamilton and Freeman 1994; Mulaik and Quartetti, 1997). The results of an alternative model consisting only of mutually correlated first-order dimensions are shown in Appendix 1. Although this configuration is more parsimonious, the absolute and incremental goodness-of-fit indices

are equivalent to those of the hierarchical model (Raykov and Marcoulides, 1999; Jolibert and Jourdan, 2006). From a conceptual standpoint, it seems to us preferable to retain the latter, since it reproduces the two principal factors referred to in the literature. At an empirical level, having a sufficiently large sample to compare the results, the lower value of CAIC confirms the superiority of the second-order model, whose final structure was obtained after having controlled for the representative character of the construct domain (Nunally and Bernstein, 1994).

Convergent and discriminatory validities

The scale shows good convergent validity. Its evaluation is based on the observation of all confirmatory factor loadings higher than 0.67 (in the first data collection), which indicates that the variance of the construct is explained more by its measurements than by error (Fornell and Larcker, 1981). Moreover, the discriminant validity condition (intra-construct) is successfully met when it has a greater correlation with its measurements (manifest variables) than with other constructs (latent variables). The correlation between the two second-order factors did not exceed 0.59 and remains well below the ROOT AVE indices (square roots of extracted variances) of these two types of orientation, standing at 0.71 and 0.81, respectively (*cf.* Table 5).

Fourth stage: Second data collection

The process of designing the scale required the reproduction of a confirmatory model corresponding to the structure obtained (*cf.* Figure 2). The data collection method conformed to the same survey conditions as the validation sample of 484 individuals with similar characteristics to those of the sample in the first collection (*cf.* Appendix 2).

A measurement model using the 21 items developed during the calibration stage provided a satisfactory goodness-of-fit to the data, with indices corresponding to the thresholds recommended by the literature. The stability of the factor structure was established with the help of a configural invariance text, as recommended by Steenkamp and Baumgartner (1998). This multi-group analysis confirmed the exis-

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8. Kaiser's criterion and Cattell's scree test led us to retain three and four dimensions, respectively, for the two types of motive (*cf.* Table 3). The reliability of each of these first-order factors proved to be satisfactory with Cronbach *alphas* ranging from 0.698 to 0.875.

Table 3. – 1ˢᵗ order factor structures (1ˢᵗ data collection)

		Variance (%)	DIM1	DIM2	DIM3	
ECONOMIC MOTIVES		**79.12**	52.32	14.63	12.17	
Distance from the system						
When I shop second-hand, I rather feel I'm escaping the system (of consumption)	PUIS13		**0.946**			
Shopping second-hand is for me a revenge on the consumption system	PUIS11		**0.912**			
Shopping second-hand allows me to distance myself from the consumer society	ANT11		**0.749**			
Cronbach's alpha			*0.868*			
Fair price						
I don't want to pay more for something just because it's new	ECO22			**0.927**		
By shopping second-hand, I feel I'm paying the right price for things	ECO21			**0.813**		
Cronbach's alpha				*0.698*		
Ethics and ecology						
I like shopping second-hand because I don't like seeing things thrown away that can still be of use	ECTH15				**0.933**	
By shopping second-hand, I feel in a small way I'm fighting against waste	ETH11				**0.843**	
Cronbach's alpha					*0.751*	
		Variance (in %)	DIM1	DIM2	DIM3	DIM4
RECREATIONAL MOTIVES		**69.92**	41.28	13.24	8.78	6.62
Treasure hunting						
I like strolling around these second-hand channels because I always hope to come across a find	CIRC32		**0.810**			
I go to such places to ferret around and discover something	CIRC31		**0.801**			
I'm often on the look-out for a find when going to some second-hand channels	CIRC34		**0.644**			
In some of these second-hand channels, I feel a bit like I'm treasure hunting	CIRC35		**0.492**			
Cronbach's alpha			*0.799*			
Originality						
I hope to find second-hand objects that not everyone will have	OFF15			**0.838**		
I love finding original objects you don't see in the shops	OFF12			**0.698**		
Cronbach's alpha				*0.770*		
Social contact						
What I like a lot about some second-hand outlets is the pleasure of talking to people	CIRC13				**0.920**	
I find it pleasant to enter into discussion with people without necessarily buying anything	CIRC14				**0.913**	
I like visiting second-hand channels where I can meet and talk to people	CIRC11				**0.800**	
I'm conscious of the friendliness one senses in some of these places	CIRC12				**0.619**	
Cronbach's alpha					*0.875*	
Nostalgia						
I'm much more attracted by old things than by new things	OFF22					**0.833**
Above all, I buy second-hand articles because they're old and have a history	OFF25					**0.661**
I love buying second-hand objects because they evoke the past	OFF24					**0.580**
I like buying second-hand objects because I find them authentic	OFF23					**0.814**
Cronbach's alpha						*0.774*
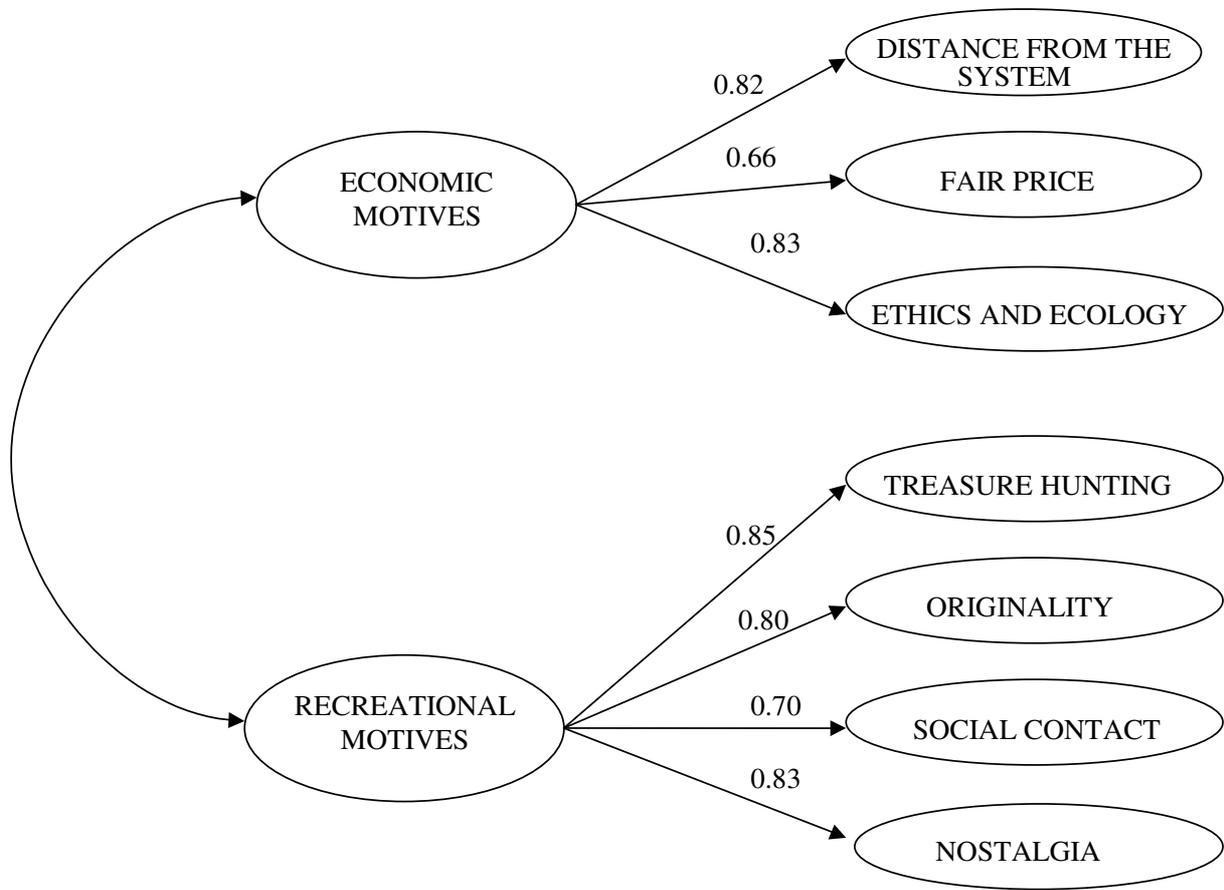
Figure 2. – Hierarchical model of motives for second-hand shopping –
Second and first order factors (final data)

Table 4. – Results of CFA - 1st and 2nd data collections

Confirmatory analyses	Goodness-of-fit indices		Goodness-of-fit indices
	1st data collection	2nd data collection	Configural invariance test
Chi square	383.37	400.93	783.30
Chi square/ddl	2.12	2.21	2.17
p-value	0.0000	0.0003	0.0000
RMSEA	0.07	0.05	0.04
GFI	0.87	0.92	0.90
AGFI	0.83	0.90	0.88
TLI	0.90	0.96	0.94
CFI	0.94	0.97	0.95
CAIC	702.37	760.03	NP*

* Not provided

Table 5. – Exploratory factor structure and convergent and discriminant validity confirmatory indices
(1st data collection)

Exploratory analysis	DIM1	DIM2
% of VARIANCE EXPLAINED	*44.82*	*18.05*
SUPER FACTOR 1 – ECONOMIC		
Distance from the system	0.651	
Fair price	0.831	
Ethic and ecology	0.791	
Confirmatory analysis		
Convergent validity **rho**	*0.501*	
AVE root index	*0.710*	
SUPER FACTOR 2 – RECREATIONAL		
Treasure hunting		0.803
Originality		0.841
Social contact		0.715
Nostalgia		0.824
Confirmatory analysis		
Convergent validity **rho**		*0.660*
AVE root index		*0.810*

tence of an equivalent model structure across the two data collections (*cf*. Table 4). Reliability was controlled by calculating the Jöreskog's (1971) fit indices. All higher than 0.7, these indicated good internal consistency for all the factors making up the hierarchical structure, as Table 6 shows.

Fifth stage: Examination of convergent and discriminant validity

Convergent validity was verified from observing the factor contributions, all of which were significant and higher than 0.669. It was also verified by the fact that the latent variable shares more than 50% of its variance with its manifest variables, which show the convergent validity *rhos*, all of them higher than 0.551 (*cf*. Table 6). Discriminant validity was established for its part from the fact that the mean correlations of the latent variable with its manifest variables was considerably higher than the variance shared with the other constructs, as shown in Table 7 (Fornell and Larcker, 1981). Moreover, the comparison of nested models, presented in Appendix 3, confirms that when the two motivation factors – economic and recreational – are considered as perfectly linked, the

constrained model displays a deterioration compared to the free model (chi square = 65.704). The reliability and internal validity conditions are therefore both fully met.

Sixth stage: Examination of nomological validity

Nomological validity is confirmed if the motives for shopping second-hand are related to the behaviors relating to the field of the construct (Csikszentmihalyi, 1990; Jolibert and Jourdan, 2006). We therefore tested the capacity of the scale to explain the choice of products and the use of second-hand channels, the relative frequencies of which are shown in Appendix 4. The relation between motives and these behaviors were tested by logistic regression while controlling for the effects of age, income and educational level, as described in Appendix 5.

Analysis of the correlations of these socio-demographic variables with motives leads to a number of conclusions. Unlike age and income, educational level does not seem to be linked to the different motives, except negatively with the "fair price" dimension: in other words, the motive to find cheaper goods increases when the educational level is lower

Table 6. – Results of CFA – 1st order factorial structure and reliability and convergent validity indices
(2nd data collection)

ECONOMIC SUPER FACTOR	Item	Loading
Distance from the system		
When I shop second-hand, I rather feel I'm escaping the system (of consumption)	PUIS13	0.837
Shopping second-hand is for me a revenge on the consumption system	PUIS11	0.834
Shopping second-hand allows me to distance myself from the consumer society	ANT11	0.817
Jöreskog's **rho**		*0.869*
Convergent validity **rho**		*0.688*
Fair price		
I don't want to pay more for something just because it's new	ECO22	0.669
By shopping second-hand, I feel I'm paying the right price for things	ECO21	0.809
Jöreskog's **rho**		*0.709*
Convergent validity **rho**		*0.551*
Ethics and ecology		
I like shopping second-hand because I don't like seeing things thrown away that can still be of use	ECTH15	0.774
By shopping second-hand, I feel in a small way I'm fighting against waste	ETH11	0.777
Jöreskog's **rho**		*0.751*
Convergent validity **rho**		*0.601*
RECREATIONAL SUPER FACTOR	Items	*Loading*
Treasure hunting		
I like strolling around these second-hand channels* because I always hope to come across a find	CIRC32	0.885
I go to such places to ferret around and discover something	CIRC31	0.846
I'm often on the look-out for a find when going to some second-hand channels	CIRC34	0.798
In some of these second-hand channels, I feel a bit like I'm treasure hunting	CIRC35	0.761
Jöreskog's **rho**		*0.894*
Convergent validity **rho**		*0.679*
Originality		
I hope to find second-hand objects that not everyone will have	OFF15	0.877
I love finding original objects you don't see in the shops	OFF12	0.859
Jöreskog's **rho**		*0.859*
Convergent validity **rho**		*0.754*
Social contact		
What I like a lot about some second-hand outlets is the pleasure of talking to people	CIRC13	0.857
I find it pleasant to enter into discussion with people without necessarily buying anything	CIRC14	0.876
I like visiting second-hand channels where I can meet and talk to people	CIRC11	0.801
I'm conscious of the friendliness one senses in some of these places	CIRC12	0.750
Jöreskog's **rho**		*0.893*
Convergent validity **rho**		*0.676*
Nostalgia		
I'm much more attracted by old things than by new things	OFF22	0.776
Above all, I buy second-hand articles because they're old and have a history	OFF25	0.887
I love buying second-hand objects because they evoke the past	OFF24	0.903
I like buying second-hand objects because I find them authentic	OFF23	0.813
Jöreskog's **rho**		*0.910*
Convergent validity **rho**		*0.716*

Tableau 7. – Discriminant validity: correlation matrix of determinants of motives for buying second-hand products (2nd collection)

	Frugality	Price sensitivity	Need for uniqueness	Materialism	Predisposition to nostalgia	Distance from the system	Fair price	Ethics and ecology	Treasure hunting	Nostalgia	Originality	Social contact
						DIMENSIONS OF THE MOTIVES CONSTRUCT						
Frugality	**0.68**											
Price sensitivity	0.30	**0.87**										
Need to be unique	0.01	– 0.04	**0.90**									
Materialism	–0.01	0.21	0.05	**0.90**								
Predisposition to nostalgia	0.09	0.17	-0.00	0.13	**0.85**							
Distance from the system	0.12	0.26	0.15	-0.04	0.09	**0.81**						
Fair price	0.17	0.29	0.19	0.07	0.15	0.58	**0.75**					
Ethics and ecology	0.10	0.21	0.21	-0.12	0.14	0.66	0.52	**0.78**				
Treasure hunting	0.08	0.14	0.07	-0.05	0.27	0.31	0.25	0.43	**0.81**			
Nostalgia	0.13	0.10	-0.00	-0.07	0.26	0.34	0.21	0.48	0.67	**0.85**		
Originality	0.06	0.05	0.03	0.03	0.23	0.33	0.13	0.38	0.67	0.72	**0.86**	
Social contact	0.15	0.05	-0.07	-0.06	0.27	0.31	0.28	0.41	0.65	0.58	0.51	**0.80**

N.B. The figures in italics correspond to the square root of the extracted variances.

(*cf.* Table 8). This finding is not easy to interpret, since it could be due to economic factors – correlation between educational level and income – or associated with other price-related phenomena.[9] In regard to income levels, these are correlated with recreational motives, underlining that the pleasure dimension of this form of purchasing goes hand in hand with the financial resources available. The links between income and economic motives are, on the other hand, more difficult to isolate, since they depend on the distribution channels and the income levels concerned. They are highly significant for intermediate income brackets (€1,244 to €2,307 a month), which is also the criterion best accounting for the frequentation of second-hand markets, second-hand stores, and charity stores. Finally, age is positively correlated with all primary or aggregated motives, revealing the generational effect of this form of shopping.

With the effects of the three socio-demographic variables now controlled, the scale allows a third of the products purchased and half the channels frequented to be predicted. In particular, ten out of the 32 proposed product categories reveal correct classification percentages through logistic regression (*cf.* Table 9). Two of these categories are explained by recreational and economic motives: cultural products such as records, cassettes, CDs and DVDs, and adults' clothing. A desire to combat wastage and to maintain a distance from the system, as well as certain characteristics linked to products and channels, jointly motivate the purchasers of these products. Although treasure hunting is a widespread motive, nostalgia and originality account more for the purchase of cultural goods, while social contact plays a significant part in shopping for adults' clothing. On the other hand, and logically enough, the purchase of books, small collectors' and decorative items, crockery and knick-knacks is explained more by recreational than by economic motives. Two categories concerned with children – toys and clothing – are, on the contrary, explained more by certain economic motives, especially the two dimensions "ethics and ecology" and "distance from the system". In this area, where the price/useful life ratio is relatively high, intelligent recycling and avoidance of new product channels is

clearly profitable. Further conclusions may also be drawn from these results. First, a third of the product categories seem to be well explained by the various motives for shopping second-hand. It can also be seen that these categories correspond to the objects that are currently most sought after in second-hand markets. On the other hand, the purchase of technological items, where there is a greater risk of operational failure, is not particularly well captured by the different dimensions of the scale. This finding calls for the examination of other explanatory variables, especially the perception of breakdown/failure risk or financial risk associated with certain products.

In regard to the channels, the frequenting of two of them in particular – second-hand markets, swap-meets and flea markets, on the one hand, and second-hand stores and discount stores on the other – seem to be linked, unexpectedly, to recreational motives (*cf.* Table 10). Certain dimensions included in the economic factor, as we have defined it above – especially "ethics and ecology" and "distance from the system" - also explain the frequenting of antique shops and charity stores, owing to the anti-waste and avoidance of new channels motives that often accompany hunting around for old, unfashionable or recycled objects. Finally, for these two channels, and in contrast to second-hand markets and second-hand stores, the "social contact" dimension does not appear, since it is more characteristic of the interactions formed in transactions between private individuals. For the Internet, only the "ethics and ecology" dimension emerges as explanatory of behaviors where the principle of rotating products predominates and which values, for example, websites inviting consumers to recycle Christmas presents they do not like. In general, half of the proposed channels (five out of 11) emerge as well frequented for reasons linked to second-hand shopping. It can be noticed that this is not only a matter of the most visited channels – direct sales between private individuals, for example, apply to 51% of our sample against 18% for charity stores and 23% for the Internet – but also channels that have taken off in the last decade (the Internet), that predominantly value the economic and recreational dimensions characterizing them (charity stores, or that take advantage of the recent growth of the second-hand market as a whole (second-hand markets and second-hand stores). It may be hypothesized that making use of the other channels is less well explained by second-hand shop-

9. Lichtenstein, Burton and Netemeyer (1997) show, for example, that promotions proneness is higher among people with a low educational level.

Table 8. – Correlations between motives and socio-demographic variables*

	Total motives	Recreational motives	Economic motives	Nostalgia	Treasure hunting	Social contact	Originality	Ethics and ecology	Fair price	Distance from the system
Age (Pearson's r)	0.283	0.291	0.184	0.347	0.196	0.218	0.197	0.127	0.21	0.133
Income (Spearman's rho)	0.154	0.186		0.200	0.178		0.107			
Educational level (Spearman's rho)									−0.117	

N.B. Only correlations significant at the 0.05 threshold are shown.

Table 9. – Nomological validity: relation between motives and products purchased (% of correct classification obtained by logistic regression, controlling the impact of socio-demographic variables)

	Total motives	Recreational motives	Economic motives	Nostalgia	Treasure hunting	Social contact	Originality	Ethics and ecology	Fair price	Distance from the system
Books	69.1	69.1		70.6	69.6	69.1	69.3			
Records, cassettes, CDs, DVDs	68.8	63.8	64.8	64.3	63.3	(1)	62.5	65.3		65.1
Furniture	69.8	(1)		70.1	(1)	(1)	(1)			
Collectable items	83.3	85.3	(1)	84.8	82.3	79.1	(1)	(1)		79.1
Household decoration (lamps, rugs, etc.)	78.3	80.8	(1)	77.3	79.3	78.6	77.1	(1)		(1)
Knick-knacks	74.6	76.8	(1)	72.3	74.8	72.3	75.3	70.8	(1)	(1)
Crockery, glassware	80.0	80.8	(1)	80.8	79.3	76.3	77.3	75.3		(1)
Adults' clothing	71.1	72.8	70.8	(2)	71.1	73.1		70.8		71.6
Children's games and toys			81					81.5		(2)
Children's clothing										91.5

(1) The effect of age is more significant than the type of motives considered.
(2) The effect of income is more significant than the type of motives considered.

ping motives than by other variables. This is probably the case for direct sales, small ads and garage sales for which proximity or interpersonal trust play a key role. Finally, and this need to be emphasized, the "fair price" dimension does not, by itself, play any direct part in explaining the channels frequented or the product categories purchased, underlying, like O'Reilly et al. (1984), the relative nature of price as a central motive for shoppers.

Seventh stage: Revealing antecedents and examining criterion validity

Criterion validity depends on the capacity of the scale to predict behaviors outside the direct field of the study (Nunnally and Bernstein, 1994). It is the subject of the overall model shown in Figure 3, testing the relations between second-hand shopping motives and variables outside the field of the construct (Jolibert and Jourdan, 2006), but also including antecedents and variables internal to the field.

Antecedents of general motives for second-hand shopping

The literature on second-hand shopping reveals two psychological antecedents – price sensitivity and a low level of materialism – able to explain purchasers' motives in regard to this form of acquisition. We also tested their links with a third antecedent – the need for uniqueness – which was revealed in the qualitative stage not only among recreational-type shoppers as suggested by the literature, but also among economic-type shoppers.

– *Price sensitivity* is one of the most plausible antecedents of general motives toward second-hand shopping (Roux, 2003). Presented by Lichtenstein, Ridgway and Netemeyer (1993, p. 235) as a facet of the negative role of price, it is defined by these authors as "the degree to which the consumer focuses exclusively on paying low prices". In many studies, price is presented as the dominant motive for having recourse to second-hand shopping (Yavas and Riecken, 1981; Williams and Windebank, 2000). In the context of second-hand markets, the preference expressed in regard to the economic advantages of

these channels has also been emphasized (Razzouk and Gourley, 1982; Sherman et al., 1985). Although a number of authors have brought to light other motives (Belk et al., 1988; Sherry, 1990a; Gregson and Crewe, 1997a), many shoppers show a desire to find the lowest prices in this way. Thus, they sometimes think less about the items bought than the savings they will make or the bargains they will find (Bardhi and Arnould, 2005), particularly by resorting to negotiation and haggling (Stone et al., 1996; Gregson and Crewe, 1997b; Herrmann, 1996). We therefore put forward the following hypothesis:

H1: Price sensitivity is positively linked to overall motives for second-hand shopping.

– *Materialism* is a significant variable to consider in relation to the motives of shoppers of second-hand goods. Indeed, it is relevant to wonder whether, in compensation for seeking low prices, this form of acquisition allows people to own more objects and to satisfy materialist goals. It is this hypothesis that Bardhi and Arnould (2005) put forward, suggesting that the rational and moral representations people construct around second-hand shopping mask their inclination to accumulate. The conclusions we draw from the qualitative stage tend to contradict this hypothesis, in that our respondents' comments indicate a low level of materialism. On this point, we refer to the conceptualization offered by Richins and Dawson (1992) who consider materialism, in contrast to Belk (1985), to be a value rather than a personality trait. Richins and Dawson (1992) argue that for materialist individuals, possessions contribute to the accomplishment of personal goals which influence their lifestyle in three respects: the centrality of possessions in the life of the individuals; the happiness sought through such possessions; and the indices of success they represent at a social level. The comments of the respondents we interviewed suggest rather their distance from consumption and their refusal to adopt conspicuous behavior (Roux, 2004). Attaching more importance to the use value of products than to their sign value, they also emphasize the limited role that possessions play in their lives. Shoppers in second-hand markets are also concerned with the distinctive features of the objects bought, but few view possessions in themselves as crucial components of life. Hence, we formulate the following hypothesis:

H2: Materialism is negatively linked to overall motives toward second-hand shopping.

Table 10. – Nomological validity: relation between motives and second-hand channels frequented
(% of correct classification obtained by logistic regression, controlling the impact of socio-demographic variables)

	Total motives	Recreational motives	Economic motives	Nostalgia	Treasure hunting	Social contact	Originality	Ethics and ecology	Fair price	Distance from the system
Second-hand markets, swap meets, flea markets	69.1	69.6	(1) (2)	69.3	70.1	(1) (2)	(1) (2)	(1) (2)		
Second-hand stores, discount stores	65.1	65.3	(1) (2)	63.1	66.3	66.3	63.1	(1) (2)		(1) (2)
Antique dealers	80.5	81.5	(1) (2)	83.5	81.8		80.5	77.3		78.1
Charity stores	82.5	84.8	(1) (2)	83	82.8		82	81.0		81.8
Internet								77.3		

(1) The effect of age is more significant than the type of motives considered.
(2) The effect of income is more significant than the type of motives considered.
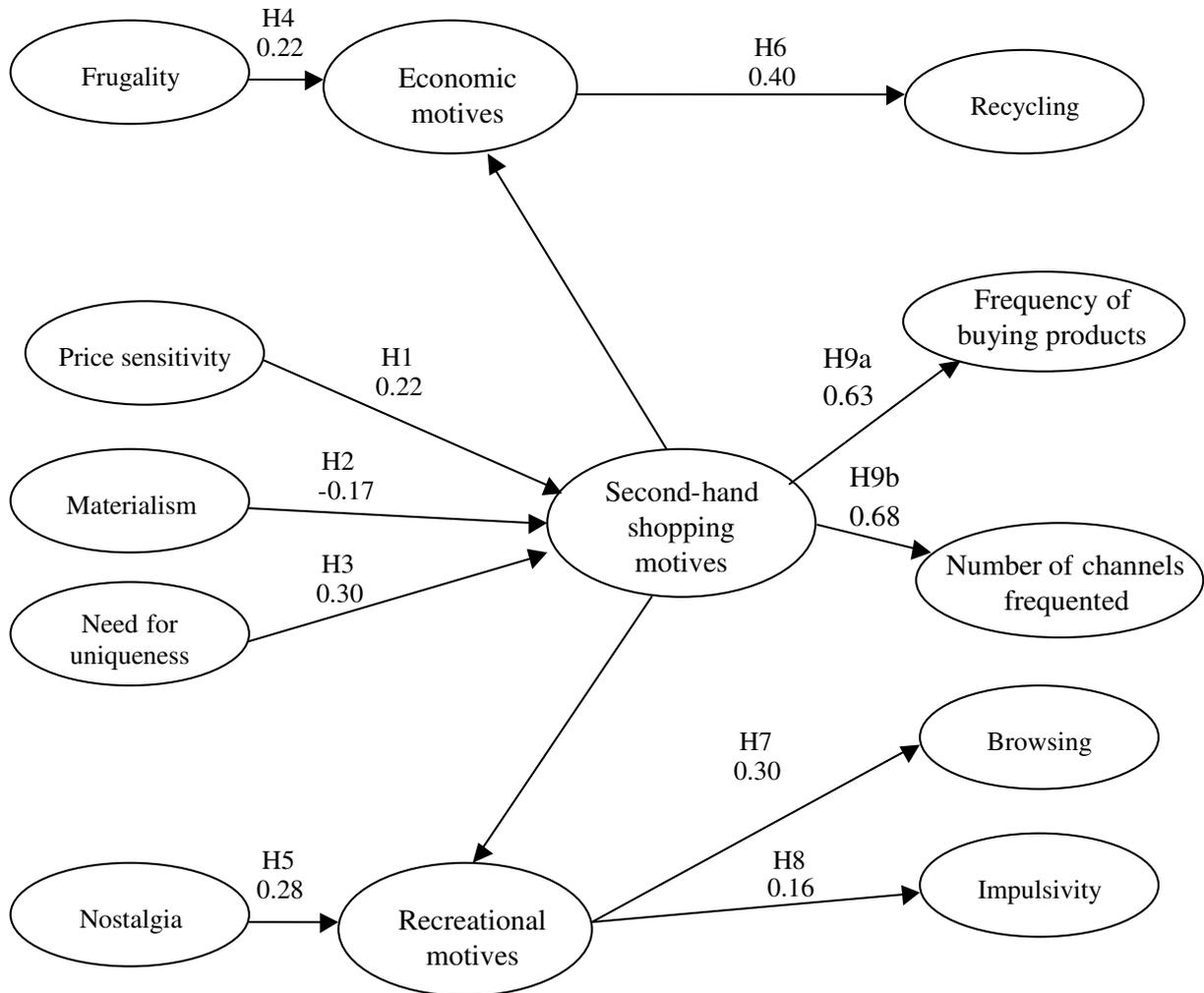
Figure 3. – Criterion validity: determinants and effects of second-hand shopping motives
(Standardized coefficients)

All the constructs show satisfactory reliability as well as coefficients higher than 0.7. This is also the case for convergent validity, whose indices are all higher than 0.5 except for the frugality index, which has a coefficient slightly below this threshold. Inter-concept discriminant validity is also confirmed: every construct shares more variance with its indicators than with the other latent variables, as shown in Table 7.
A third-order structure was adopted for motives for buying second-hand products. This is theoretically justified through the existence of a common factor "explaining" the very high covariance between the economic and recreational dimensions. For statistical reasons, it cannot be tested in isolation. It would then impose constraints on the latent error terms or on the structural coefficients for which no theoretical justification can be provided. The model in Figure 3, on the other hand, contains sufficient information to be able to include it without creating identification problems.

– *The need for uniqueness* is a concept developed by Tian, Bearden and Hunter (2001, p. 52) and is described as "the trait of pursuing differentness relative to others through the acquisition, utilization and disposition of consumer goods for the purpose of developing and enhancing one's self-image and social image". This construct is expressed through three types of choice: creative choice counterconformity, unpopular choice counterconformity, and avoidance of similarity. Among studies on second-hand mar-

kets, Gregson and Crewe (1997b) emphasize the creative capacities that second-hand shopping mobilizes through rituals of transforming objects to personal expressive ends. Sherry (1990b) illustrates more the two other dimensions of the need to be unique, and shows that the interest of these outlets is based on a resistance to market conformist pressures and the desire to escape the homogeneity of conventional channels. The distinctiveness of second-hand products gives the individual the means to differentiate him or herself by appropriating their unique character. Finally, from the standpoint of buying for others, Herrmann (1996) also suggested that certain people buy gifts second-hand in order to share with them the counter-cultural values expressed by these objects. Although these three forms of distinctiveness can be related to recreational motives for shopping second-hand, we assume that the need for uniqueness is also associated with economic motives. The comments collected in the qualitative stage show that some purchasers engage in smart shopping (Schindler, 1989; Mano and Elliott, 1997), manifested in the wish to use their expertise and creativity to find alternative means of supply. While the need to be unique is above all evoked in relation to the choice of products, it seems nevertheless relevant to consider it as a possible antecedent to a desire to distinguish oneself, not only through the objects purchased, but also through the channels used to find them. Hence, we formulate the following hypothesis:

H3: The need to be unique is positively linked to overall motives in relation to second-hand shopping.

Antecedents of economic motives for second-hand shopping

Frugality is a lifestyle trait which supports a potential direct link with economic motives for buying second-hand. Characterized both "by the degree to which consumers are both restrained in acquiring and in resourcefully using economic goods and services to achieve longer-term goals" (Lastovicka et al., 1999, p. 88), frugality refers to a disciplined and careful use of money and objects. It is therefore potentially linked to the three dimensions of the economic factor: "fair price", "ethics and ecology" and "distance from the system". Indeed, the first dimension bears upon an underlying refusal to

pay a "newness premium" and naturally suggests frugality as an antecedent in its reasoned approach to purchasing. The second dimension places the emphasis on anti-wastage motives, which echo the desire to use goods parsimoniously and over an extended period of time. The third dimension stresses the potential escape from the conventional market system offered to frugal purchasers through second-hand acquisition. We hypothesize, therefore, that:

H4: Frugality is positively linked to economic motives for second-hand shopping.

Antecedents of recreational motives for second-hand shopping

Nostalgia is manifested through the propensity to think about the past and by the associations attached to souvenirs (Boulbry, 2003; Perrusson, 2003). It emerges as a possible antecedent of the wish to seek out, in second-hand outlets, old objects that are characteristic of a historical period, type of manufacture, way of life or bygone tradition. Motives in regard to the past dimension of objects is attested to both by the literature on second-hand channels (Gregson and Crewe, 1997) and by the growth of an emerging market in this area – "vintage" items and "retro" brands (Palmer, 2005; Gregson and Crewe, 2005; Brown, Kozinets and Sherry, 2003). It therefore seems appropriate to examine the links of these motives with consumers' nostalgic predispositions. From this standpoint, the predisposition-to-nostalgia scale (Perrusson, 2003), based on the recollections of memories and regret for the past, seems to us to be well suited to our problem. We therefore formulate the following hypothesis:

H5: Predisposition to nostalgia is positively linked to recreational motives for second-hand shopping.

The effects of motives for second-hand shopping

Three types of effect, relating to different dimensions of the construct, are evident:

– Economic motives should be able to predict other types of behavior linked to the careful management and protection of resources. We have therefore

put forward the hypothesis of a link between economic motives and recycling behavior studied in the context of expressions of voluntary simplicity (Leonard-Barton, 1981). This lifestyle is characterized by the material simplicity and ecological awareness that some of our respondents laid claim to in the qualitative stage. They see second-hand shopping as a way of limiting wastage and of prolonging the life-time of objects that can still be of use. Similar behavior was described by Dobscha and Ozanne (2001) in their study of American eco-environmentalist women, who repair, recycle and trade used objects rather than buy new ones. Three items in particular, relating to the avowed recycling of paper, glass and packaging, have therefore been extracted from Leonard-Barton's (1981) voluntary simplicity scale to formulate the following hypothesis:

H6: Economic motives for second-hand shopping are positively linked to recycling behavior.

– The recreational dimension of shopping associated with many second-hand channels is, as we have seen, strongly emphasized by the literature, which reveals situational factors not found in conventional channels – shopping outdoors, visual stimulation, social relations fed by exchanges between buyers and sellers in the course of bargaining, theatricality, and above all the originality and unexpected nature of the products for sale (Belk et al., 1988; Sherry, 1990a, 1990b; Gregson and Crewe, 1997a; Roux, 2004, 2005). Such places, therefore, have characteristics suited to inducing browsing behaviors as defined by Lombart (2003, 2004, p. 3), i.e., "leisure activities whose motives are mainly recreational". Wandering around for the pleasure of it and without any intention of buying could be a possible effect of recreational motives for second-hand shopping. Hence, we formulate the following hypothesis:

H7: Recreational motives for second-hand shopping are positively linked to browsing behavior.

In addition, the unpredictability of the goods for sale in second-hand channels seems to favor their use in the hope of coming across a "find" or an object that is consciously or unconsciously desired (Sherry, 1990a). Weinberg and Gottward (1982) suggest that some contexts bring together conditions that are favorable to impulse buys. Bardhi and Arnould (2005) show that some purchasers display buying behaviors that go beyond the wish simply not to miss

out on finding a bargain. A study carried by Trinkaus (1980) had previously emphasized the low level of financial rationality of shoppers in second-hand markets. Through an experiment in which products were offered for sale either singly or in batches at a higher price, it was shown that buying in bulk occurred three or four times more frequently than buying items singly, even though the latter were cheaper. This paradox was explained by the anarchic conditions of the purchasing context – crowds, limited time for analyzing information – which could disrupt rational decision making (Gregson and Crewe, 1997a). The spontaneous and impulsive aspect of the purchase under cover of the savings made therefore leads us to view impulsiveness, following Stone et al. (1996), as an effect of recreational motives. We thus used Donthu and Gilliland's (1996) scale and put forward the following hypothesis:

H8: Recreational motives for second-hand shopping are positively linked to impulsiveness.

Finally, the sum total of motives for second-hand shopping should allow us to predict the behaviors stemming from them. The stated frequency of buying second-hand products and of using second-hand channels enables us to formulate the following hypothesis:

H9: General motives for second-hand shopping are positively linked to the frequency of buying second-hand products (H9a) and to the number of second-hand channels visited (H9b).

Results of testing the hypotheses

In the initial stage, we checked the psychometric properties of the measurement tools shown in Table 11. The reliability of the scales is shown, in a confirmatory analysis, by Jöreskog *rho* values being higher than 0.7.

In a second stage, we went on to test the hypotheses using a structural equations model under AMOS (*cf.* Figure 3). The indices' goodness-of-fit was very satisfactory (chi square/ddl = 2.05; GFI = 0.939; AGFI = 0.913; TLI = 0.973; CFI = 0.975; RMSEA = 0.048). The results for the structural parameters, both with and without bootstrapping,[8] are

10. A bootstrap procedure (400 replications) was carried out due to the high number of parameters liable to the multinormality of the data and in order to test the stability of the causal relations.

Table 11. – Measurement model parameters: antecedents and consequences (2nd data collection)

Constructs (sources)	Indices	
	ρ^*	ρ_{vc}
Price sensitivity (adapted from Lichtenstein, Ridgway and Netemeyer, 1993): 5-item unidimensional scale. Reading errors linked to reverse coding were revealed during the pre-test and led to a reformulation of the final survey.	0.86	0.75
Materialism (Richins, 1987): 6-item unidimensional scale.	0.89	0.80
Need for uniqueness (Tian, Bearden and Hunter, 2001): 3-dimensional scale (creative anticonformism, provocative anticonformism, avoidance of similarity).	0.90	0.82
Frugality (Lastovicka et al., 1999): 8-item unidimensional scale.	0.76	0.45
Predisposition to nostalgia (Perrusson, 2003): 8-item two-dimensional scale (recall of memories and regret for the past)	0.88	0.72
Recycling behaviors (Leonard-Barton, 1981): questions 3, 4, 5 of the index on recycling of glass, paper/cardboard and packaging.	0.92	0.92
Browsing (Lombart, 2003, 2004) : 9 item unidimensional scale positively confirmed at several stages	0.93	0.60
Impulsiveness (Donthu and Gilliland, 1996): 4-item unidimensional scale	0.86	0.50

* Jöreskog's *rho.*

Table 12. – Estimation of the parameters of the causal model (final data)
Determinants and effect of second-hand shopping motives

	Hypotheses	**Standardized parameter**	**Standard deviation**	**t test**	
H1	Price sensitivity → General motives for second-hand shopping	0.22	0.03	3.15	Confirmed
H2	Materialism → General motives for second-hand shopping	– 0.17	0.02	-2.60	Confirmed
H3	Need for uniqueness → General motives for second-hand shopping	0.30	0.03	4.21	Confirmed
H4	Frugality → Economic motives for second-hand shopping	0.22	0.07	3.13	Confirmed
H5	Nostalgia → Recreational motives for second-hand shopping	0.28	0.06	5.44	Confirmed
H6	Economic motives for second-hand shopping → Recycling	0.40	0.12	6.26	Confirmed
H7	Recreational motives for second-hand shopping → Browsing	0.30	0.06	5.30	Confirmed
H8	Recreational motives for second-hand shopping → Impulse buying	0.16	0.06	2.76	Confirmed
H9a	→ General motives for second-hand shopping → Frequency of shopping second-hand	0.63	0.23	6.23	Confirmed
H9b	→ General motives for second-hand shopping → Number of channels visited	0.68	0.42	6.43	Confirmed

almost equivalent and confirm the stability of the causal model (*cf.* Table 12). They reveal that, with more than 14% of variance explained, price sensitivity, materialism and the need to be unique turn out to be antecedent variables shared by all motives for buying second-hand products. More specifically, frugality explains 4.8% of the variance of economic motives, while nostalgia accounts for 7.7% of the variance of recreational motives. These variables turn out to be determinants of motives for buying second-hand products.

The percentages of variance of behavioral variables explained by all motives rises to 39.7% for the frequency of buying second-hand products and to 45.9% for the number of channels visited, which confirms the assumed links between purchasers' overall motives and their stated behaviors. Economic motives explain 16.4% of the variance of recycling behavior, while recreational motives explain 9.1% of the variance of browsing behavior. Taken as a whole, these results attest to a satisfactory external validity, and thus allow the nomological validity and criterion validity of this measurement scale to be established. The scale also lends itself to various uses in the future: it is possible to use a total score corresponding to all dimensions of the aggregated construct, and also to have recourse to the disaggregated level to explain variables linked to the economic or recreational dimensions of shopping.

CONCLUSION, LIMITATIONS AND FURTHER RESEARCH

The aim of this article was to design a measurement scale of motives for second-hand shopping. Having developed a tool with satisfactory psychometric properties, we obtained a measure of the construct, which is reflected in two principal factors – economic and recreational – themselves higher-order constructs comprising seven primary motives. The scale's reliability, and its convergent and discriminant validities, were confirmed. We showed its nomological validity on behaviors linked to second-hand shopping and its criterion validity on recycling, browsing and impulsive buying behaviors. Finally, the scale satisfactorily captures a variety of motives for a specific form of acquisition, which is no longer dependent on contextualized approaches. However, because of the heterogeneity of second-hand purchasing situations, it turned out to be unsuitable, as a whole, for accounting for a specific buying process in a particular situation. For example, replacing a broken-down car or an out-of-order household appliance, or the furniture in a second home or in the room of a child leaving the family home, would not necessarily be correctly predicted by the whole scale, since such purchases are not in this respect similar to buying a rare curio or antique for sentimental reasons. Because of its focus on general individual motives, and not in relation to situations, it would not be an appropriate tool for this type of problem, whose development leaves the way open to further research.

A number of limitations should therefore be emphasized. First, although the study was carried out on large samples (224 in the first collection and 484 in the second) and among a non-student population, they are not necessarily representative. Although it is very difficult to establish the composition on the basis of second-hand shopping behaviors, due to the lack of a census and published criteria, it would be possible to replicate the study on a representative sample of the French population. The geographical origin of our respondents, for example, is confined to urban areas, and this criterion necessarily influences the results in terms of frequenting of channels, since these places feature ancient second-hand markets (such as the "Puces" in Paris, the "Grande Braderie" of Lille or the "réderies" of the Somme) to a greater extent than other regions of France.

Next, although the scale obtained is of a very reasonable length and succeeds in capturing the key dimensions of the concept, we should note, between the exploratory study and the quantitative confirmation, the significant loss of information resulting in the disappearance of eight dimensions.

Another limitation is associated with the fact that, while the motivations satisfactorily capture, for the most part, a variety of motives that orient people toward this form of purchasing, they take account neither of the risk attached to second-hand shopping, nor of the perceived drawbacks that an approach

through benefits would have cast more light on, nor of the trade-off which would enable the purchase of a particular product to be accounted for. The stand-point adopted in this study, which aims by measurement to extend a significant area within the existing literature, will in future involve examining the links between all or some of the scale's dimensions and the characteristics of the purchasing decision processes, which are liable to vary according to the nature of the products concerned. It would be interesting in this respect to study the extent to which the decision-making processes, at different stages of the purchase, are or are not affected by certain of the dimensions captured in this scale, and in which contexts. Within the perspective of more process-focused approaches, it is also relevant to explore further the drawbacks in regard to this form of shopping, of which risk is an important aspect.

A final limitation, which concurrently opens up a significant extension of the research, concerns its explanatory power in regard to phenomena other than those studied here. Over and beyond recycling for economic motives and browsing and impulse buying for recreational motives, we believe it essential to use this tool for predictive purposes for other predominantly economic and/or recreational behaviors. At the economic level, for instance, the role of price suggests links between this type of motivation and the attraction of sales (Gonzalez and Korchia, 2005) and reduction vouchers (Lichtenstein et al., 1997). The links between critical economic motives – particularly the "distance from the system" dimension – and the level of brand awareness (Kapferer and Laurent, 1992) could also be tested. Then, from the recreational angle, the nostalgic dimension invites us to explore the possible links with notions like perceived market authenticity (Camus, 2003). Finally, the overall construct of motives for second-hand shopping suggests studying the relations with frequenting other distribution channels that combine economic and recreational benefits, such as factory outlets (Cottet and Vibert, 1999). Other possible lines of research could include examining the links that the concept has with emergent yet still inadequately measured phenomena such as socially responsible consumption, consumers' discontent, alienation or resistance (Roux, 2007).

In managerial terms, several applications can be envisaged. For example, this scale could be directly attached to surveys on consumer purchasing behavior, the implications of which, in view of the competition between new and second-hand products, are of interest as much to the retailers in these two sectors as to the manufacturers themselves. The results obtained in developing the scale in particular reveal the significance of recreational motives. Dealers in second-hand products, therefore, have every interest in considering a market approach that does not limit itself simply to an emphasis on attractive prices. To attract as many purchasers as possible, the pleasures of "hunting around" and the presentation of the product offering should also be taken into consideration. From this point of view, nostalgia proves to be significant and can be aroused by certain types of product such as vinyl records, films, gadgets or other items evocative of childhood or adolescence. This is particularly relevant for certain manufacturers whose products have significant nostalgic capital and who currently deploy retro-branding based on this type of expectation (Brown, Kozinets and Sherry, 2003). New product retailers can also take advantage of these motives by catering to them in the manner of Agapia, a company specializing in producing period furniture and antique items, which over and beyond their decorative function, serve in particular to underline the authentic aspects of the products sold. For both types of distribution – traditional and second-hand – sophisticated sensory marketing would usefully contribute to the stimulation of nostalgic associations by using, for example, the colors or fragrances of a specific period. To optimize this approach, a "dramatization of the offering", by playing on all five senses, would help enhance the presentation of second-hand products. Nevertheless, this type of action needs to be carefully tested in advance in order to avoid being perceived as false by consumers who are clearly sensitive to the authenticity of certain products and atmosphere.

General merchandise retailers, for their part, can develop complementary strategies by offering, in addition to their standard product range, sections given over to second-hand articles. By doing this, they are in a position to respond to both economic and recreational motives. In particular, an activities policy in the second-hand section could be optimized by organizing swap-meets, second-hand markets and second-hand counters in retail outlets, following the example of the sports goods distributor, Decathlon,

which organizes second-hand events with its Trocathlon (Chantelat and Vignal, 2002). In the leisure sector in particular – CDs, books, videos, etc. – such events would contribute to attracting a substantial number of shoppers to a form of treasure-hunt offering social interactions that are generally little valued in conventional retailing. They would also allow sellers, as has long been shown by examples such as the book shop, Gibert Jeune in Paris, to obtain additional resources that can be immediately used in the store.

In brief, the second-hand shopping motivation scale lends itself to new applications in marketing and helps to shed light on a variety of needs, hitherto rarely taken into account, that encourage shoppers to look for alternative forms of consumption. Instead of ignoring them, producers and distributors would be well advised to incorporate them into their marketing strategy. Failure to do so would be to risk seeing the growth of a parallel market that they play no part in and, by the same token, to underestimate the critical distance and the dimension of resistance it reflects.

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Appendix A1. – Results of confirmatory factor analyses of a 1st-order alternative model

1st data collection

Confirmatory analysis	Goodness-of-fit indices
Chi-square Chi-square/ddl *p*-value	324.97 1.93 0.0000
RMSEA	0.07
GFI	0.88
AGFI	0.84
TLI	0,90
CFI	0.92
CAIC	726.92

2nd data collection

Confirmatory analysis	Indices d'ajustement
Chi-square Chi-square/ddl *p*-value	356.42 2.12 0.0000
RMSEA	0.05
GFI	0.93
AGFI	0.91
TLI	0,95
CFI	0.96
CAIC	808.89

Appendix A2. – Socio-demographic characteristics of the 2nd collection sample

Gender	Male	Female	Total
	46%	54%	100%

Age	< 40	> 40	Total
	55%	45%	100%

Monthly income	⩽ €1 243	€1 244 to €2 307	€2 308 to €3 769	⩾ €3 770	Total
	30.5%	28.5%	24%	17%	100%

Educational level	Primary/ secondary	Attended university	University degree +	Total
	20.1%	33.8%	46.1%	100%

Appendix A3. – Discriminant validity between the two types of motivation

COMPARISON OF NESTED MODELS							
With the hypothesis of an accurate model A							
				NFI	IFI	RFI	TLI
	DL	D Chi 2	P	Delta-1	Delta-2	Rho-1	Rho-2
Model B	1	65.704	0.000	0.010	0.010	0.011	0.011

R = 0.57 in Model A
R = 1 in Model B (deterioration of the model when R is constrained to 1 between the 2 dimensions).

Appendix A4. – Relative frequency of product categories bought and of channels frequented (% of respondents saying they bought the product category or frequented the channel)

Books	67.1	Car	58.9
Records, CDs, DVDs, video cassettes	56.8	Motorcycle	9.9
Furniture	44.2	Adults' bicycles	19
Collectors' items	26	Large household equipment (oven, washing machine, dish-washer)	12.8
Crockery	26.1	Electrical appliances (coffee-maker, toaster, food processor)	11.2
Infant care equipment	10.7	Cell phones	16.7
Children's clothing	9.3	Land-line phones	5.8
Adults' clothing, accessories (watches, etc.)	28.9	Video game consoles	18.4
Children's toys, board games	19.4	TV	13
Video games	39.5	Camera	10.1
Children's bicycles	12	Electric tools	7.2
Hand tools	13	Hi-fi system, mini music system	11
Jewelry	19	Printers	6.8

1. Second-hand market, swap meet, flea market	68.4
2. Second-hand store	54.7
3. Antique dealer	22.2
4. Charity store	18.1
5. Specialist second-hand stores	46.5
6. Cash Express outlets	27.0
7. Second-hand sections of traditional stores	26.5
8. Used car / motorcycle dealers	34.7
9. Personal ads: press, notices, radio	28.2
10. Internet sale or auction sites	23.4
11. Direct sales between individuals	51.3

Appendix A5. – Way of using logistic regression models

Logistic regression analysis allows a qualitative variable to be explained through a set of other explanatory nominal, interval or relational variables. It is highly appropriate for predicting the frequenting of a type of retail outlet or the purchase of a product category, coded 1 if frequented or purchased and 0 otherwise (Jolibert and Jourdan, 2006). In this study, we have aimed to test the effect of second-hand shopping motives on the purchase of second-hand products and the frequentation of the channels selling such products by controlling for the effect of three socio-demographic variables, of which two are nominal. Income, educational level and age (quantitative variable) were inserted into the models with the second-hand purchasing motive scores as explanatory variables.

In view of the potential multicolinearity between the dimensions of the motives, we tested the models on each of these.

The results below illustrate the use of a logistic regression analysis specifically to explain the frequentation of second-hand markets on the basis of total scores of second-hand shopping motives.

Variables in the equation

	B	E.S.	Wald	ddl	Signif.	Exp(B)
Stage 1(a) Second-hand shopping motives	0.265	0.077	12.001	1	0.001	1.304
Age	0.025	0.011	5.339	1	0.021	1.025
Income	– 0.124	0.294	0.177	1	0.674	0.883
Education	0.113	0.346	0.078	1	0.166	0.716
Constant	– 47.750	20.937	5.201	1	0.023	0.000

a Variable(s) entered at stage 1: Second-hand shopping motives, age, income, education.
–2LL = 452.811
Chi^2 = 39.948 (p = 0.000)
Nagelkerke's R^2 = 0.134
% of correct classification from the model = 69.1
% of classification observed = 66.4

The overall significativity of the model is estimated by comparison with a null model which includes no explanatory variables (all the coefficients are equal to 0 in the population). It requires calculating the difference between the verisimilitude values (–2LL) associated with the two models. This difference follows a chi square distribution. If the value is significant, it can be concluded that the model conforms to the data. This is the case with p = 0.000.

Nagelkerke's R^2 enables the explanatory power of the model to be established and corresponds to the percentage of variance explained (13.4%).

The significativity of the regression coefficients is established from the Wald statistic, which also enables the relative effects of the explanatory variables to be compared. The exponential of regression coefficients (Exp (B)) allows one to interpret the impact on the value taken by the variable to be explained. In our example, an increase of one in the purchasing motives score multiplies the probability of frequenting second-hand markets by 1.304.

The final confirmation of the model is obtained by comparing the ranking of subjects predicted by the model (69.1%) with that one would obtain if all the subjects were arbitrarily classified into the largest size groups (66.4%). As can be noted from this example, the use of a logistic regression model is desirable once it results in a gain in precision in the ranking of subjects (Hosmer and Lemeshow, 2000).