

Risk marketing

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Abstract

Purpose – In a modern world increasingly perceived as uncertain, the mere purchase of a household cleaning product, or a seemingly harmless bottle of milk, conveys interrogations about potential hazards, from environmental to health impacts. The main purpose of this paper is to suggest that risk could be considered as one of the major dimensions of choice for a wide range of concerns and markets, alongside aspiration/satisfaction, and tackled efficiently by mobilizing the recent findings of cognitive sciences, neurosciences and evolutionary psychology. It is felt that consumer research could benefit more widely from psychological and evolutionary-grounded risk theories.

Design/methodology/approach – In this study, some 50 years of marketing management literature, as well as risk-specialized literature, was examined in an attempt to get a grasp of how risk is handled by consumer sciences and of whether they make some use of the most recent academic works on mental biases, non-mainstream decision-making processes or evolutionary roots of behavior. We then tested and formulated several hypotheses regarding risk profiles and preferences in the sector of insurance, by participating in an Axa Research Fund–Paris School of Economics research project.

Findings – It is suggested that consumer profiles could be enriched by risk-taking attitudes, that risk could be part of the “reason why” of brand positioning, and that brand, as well as public policy communication, could benefit from a targeted use of risk perception biases.

Originality/value – This paper proposes to apply evolutionary-based psychological concepts to build perceptual maps describing people and consumers on both aspiration and risk attitude axis, and to design communication tools according to psychological research on message framing and biases. Such an approach mobilizes not only the recent findings of cognitive sciences and neurosciences but also the understanding of the roots of risk attitudes and perception. Those maps and framing could probably be applied to many sectors, markets and public issues, from commodities to personal products and services (food, luxury goods, electronics, financial products, tourism, design or insurance).

Keywords Risk, Perception, Attitude, Bias, Communication, Questionnaire, Positioning, Framing, Perceptual map, Promise

Paper type Research paper

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JEL classification – M31

The authors thank Axa Research Fund for financial support through the research project *The economics and psychology of risk taking, impatience and financial decisions: confronting survey, experimental and insurance data* (2009-2011) with Paris School of Economics. The authors thank Jean-Marc Tallon (Paris School of Economics) and Symetris for their help during the project. The authors also thank the anonymous reviewer and the Editor-in-Chief for their comments that contributed towards improving the presentation of the paper.



1. Introduction

As we have deeply changed our environment to increase our safety (against illness, starvation, wars, terrorism, etc.), we feel surrounded by new risks which challenge our understanding. For instance, intensive agricultural production raises doubt as to its health or environmental impacts; driving a diesel car instead of an electrical one or heating one's house is now related to increasing the risk of climate change. The period is probably ripe for closer interactions between risk concern and marketed offers.

On a broad basis, risk may derive either from the usage of goods and services (due to their intrinsic characteristics) or from the risk of dissatisfaction following the purchase of a specific brand. We propose to distinguish three product categories according to their risk status:

- (1) where risk is salient and is a by-product of the category (nuclear energy, automobiles or atmospheric pollution regarding health issues);
- (2) for those products where risk is intentional, salient or not (money gambling, financial products or base jump); and
- (3) for product categories in which risk is neither salient nor intentional (personal products and food), however for which some risk concern might arise (such as dietary, process or origin worries).

Marketing academic research has investigated risks since the early works of [Bauer \(1960\)](#), followed by [Cox \(1967\)](#). Since these pioneers, the interactions between marketing research and a growing body of economics and psychology literature has been significant, such as Kahneman and Tversky's loss aversion ([Kahneman and Tversky, 1974](#)), Thaler's mental accounting ([Thaler, 1985](#)) and others that we shall mention in the sequel.

We have attempted to systematically scan the academic literature – spanning over 50 years, embracing economics, psychology, anthropology, sociology and ergonomics – to get a better understanding of relationships between risk and marketing. Relying upon that literature analysis, we will illustrate specific issues where risk considerations could take a larger part in marketing practices. We have spotted two areas where risk psychology could complement marketing management:

- (1) risk attitudes as part of perceptual maps; and
- (2) risk perception in communication.

Our claim is that brand or policy promises could be justified and targeted in accordance to their risk-related product category, making perceived-risk attitudes a useful complement of positioning statement, and that brand communication could be framed according to psychological biases in a context of decision under uncertainty.

In Section 2, we present an overview of our screening of academic literature on risk and marketing. The following sections address two potential applications in an attempt to illustrate what marketing inspired by risk attitudes and perceptions could be: risk profiling and perceptual maps in Section 3; risk perception and message framing in Section 4. These two examples are substantiated by our work in the Axa Research Fund–Paris School of Economics research project *The economics and psychology of risk*

taking, impatience and financial decisions: confronting survey, experimental and insurance data (2009-2011), hereafter coined AXA-PSE research project. We conclude in Section 5.

2. An overview of risk and marketing in the literature

If raising aspiration for a product is a major goal of marketing, the discipline has since long recognized the importance of dealing with risk, to better understand how people make choices. In such perspective, marketing has for a long time investigated the importance of psychology in the process of purchase decision-making, product choices and brand preferences and loyalty. Specifically, there is a vast consumer behavior and marketing literature regarding consumer decision under uncertainty, communication of risks and the importance of risk in consumer decision-making.

2.1 Risk and marketing in academic journals (and books)

Scanning the database *Business Source Complete* (EBSCO) provides access to 250 academic magazines (reviews) published since 1965, in marketing, management, economy, finance, accounting (accounts department) and international affairs (business). Within EBSCO, as well as within *Science Direct database*, and using the key words 'risk', 'uncertainty', 'communication', 'marketing', 'evolutionary psychology', 'risk attitude', 'risk perception', we have retrieved about 60 articles.

Bauer (1960) introduced the concept of perceived risk to the marketing literature, and gave two possible definitions of risks as marketing management is concerned:

- (1) perceived consequences of an outcome in case of a wrong choice; and
- (2) subjective probability to make a mistake.

Risk perception establishes an important and natural connection to marketing. For instance, perceived risk has been used as an explanatory variable in empirical research on consumer behavior (Srinivasan and Ratchford, 1991). Volle (1995) research on risk concept is an attempt to apply perceived risk to marketing management, by establishing that perceived risk is partially depending upon risk attitudes, among many other independent variables. Theory of consumer decision also appears in marketing research, where risk is regarded as one of the possible dimensions of consumer decision-making (Bettman *et al.*, 1998; Fishbein and Ajzen, 1972).

Risk in marketing science is generally based on two elements: adverse consequences and uncertainty (Dowling and Staelin, 1994). However, across disciplines, there is no consensual acceptance of the concept of perceived risks, nor widely accepted definition of uncertainty and consequences. As a result of disseminated and categorized research, risk conceptualization is controversial (Fischhoff *et al.*, 1984). It all happened as if economics, psychology and marketing advanced, till recently, their research agendas on risk rather separately. An interesting attempt to cross these borders and make a synthesis between economics and psychology risk literature and consumer risk literature has been made in (Conchar *et al.*, 2004).

Speaking of adverse consequences, marketing research distinguishes several kinds of losses. For instance, Jacoby and Kaplan (1972) then Roselius (1971) consider seven types of loss risks: financial, performance, physical, psychological, social, time or convenience risk and linked-decision risk. Extending these works, Conchar *et al.* (2004) conceptualize risk as a multidimensional probability distribution of

realizing some of the seven losses described by [Jacoby and Kaplan \(1972\)](#) and further by [Roselius \(1971\)](#).

Regarding probability, decision theory (economics, mathematics) has inspired marketing. In this setting, risk is seen as an objective characteristic of a given situation, although assessing this risk may depend on each individual. A risky situation is generally modeled as a choice or a decision exhibiting a probability distribution of known consequences, as opposed to certainty when only one outcome is possible with a probability of one ([Vann, 1984](#)). In the most formal marketing research literature, *expected utility theory* ([von Neuman and Morgenstern, 1947](#)) is widely used. This approach is challenged by the observation that marketing deals with day-to-day choices when purchasing mainstream goods. Should such trivial choices now belong to the most complex decision-making under uncertainty? Any consumer is transformed into a decision analyst, having to elicit preferences without knowing the probabilities associated with large amounts of alternatives (as an illustration, a consumer can find some 700 wine stock-keeping units in a supermarket in England or in France). This is why risk marketing literature major topics deal with the links between psychology research and marketing research.

Kahneman and Tversky's *prospect theory* ([Kahneman and Tversky, 1979](#); [Tversky and Kahneman, 1992](#)) is also well known in consumer research and has inspired some works by economists and psychologists at the interface with marketing through *loss aversion* ([Rabin and Thaler, 2001](#); [Novemsky and Kahneman, 2005](#)) and *status quo bias* ([Samuelson and Zeckhauser, 1988](#); [Kahneman et al., 1991](#)). Thaler has exported insights from risk economics and psychology toward marketing, especially with the concept of *mental accounting* ([Thaler, 1985](#); [Thaler and Johnson, 1990](#); [Thaler et al., 1997](#)). Some connections may be established with the "influence and persuasion" focus of [Cialdini \(1984\)](#); for instance, status quo bias may be related to a drive for consistency.

Posterior to the above rather economic stream of research, many psychologists had suggested that there was an ecological ground in the way people interpreted their environment: Simon's *bounded rationality* ([Simon, 1982](#)), Gigerenzer's *frugal heuristics* and *adaptive toolbox* ([Gigerenzer, 1991](#)). The convergence of – bounded rationality, the feeling of risks ([Slovic, 2010](#)) and the role of the emotions, the relatively new behavioral economics initiated by the study of loss aversion and the prospect theory ([Kahneman and Tversky, 1979](#)) – all lead to the rise of a new approach of decision-making under uncertainty, and new applications within *neuroeconomics* ([Glimcher et al., 2009](#)). We identified a rich literature whose concepts could be more systematically exploited to the benefit of marketing, and could certainly enlighten the way people perceive and act according to their risk profile and to product's potential threats: risk in consumer science ([Williams and Noyes, 2007](#)); risk as *affect* ([Zajonc, 1980](#)) and the *affect heuristics* ([Finucane et al., 2000](#); [Rottenstreich and Hsee, 2001](#); [Slovic et al., 2004, 2007](#); [Peters et al., 2006](#)); *risk as feelings* ([Loewenstein et al., 2001](#)).

Although not focused especially on risk, an emerging trend in economics – ranging from *neuroeconomics* to *behavioral economics* and *nudges* – tries to identify and to exploit the mental biases influencing our decision-making process. Richard Thaler and Cass Sunstein published in 2008 *Nudge: Improving Decisions about Health, Wealth, and Happiness*, as an attempt to apply decades of behavioral economics to the framing of convincing – although not intruding – private and

public communications (on big issues like retirement schemes, schools, organ donation, medicare plan ...) (Thaler and Sunstein, 2008, pp.51). The nudge framing has been since then applied by several public administrations, to convey efficient messages to their population (in England, in the USA and more recently in France). Nudge marketers investigate how those *gentle messages addressed to free individuals* could be applied to consumers of goods and services (Singler, 2015). The relatively new discipline of *Neuroeconomics* can help in designing those communications by focusing on how behavior may be impacted by descriptions and pictures. By doing so, cleverly framed adverts and messages exploit the mental biases influencing our decision-making process.

Yet behavioral approaches fail (and do not bother so much) to provide *ultimate explanations* of *Homo economicus* choices, that is, the 'reason why' of the observed biases. As Thaler (2015, p. 261) puts it:

I argued, accepting the theory of evolution as true does not mean that it needs to feature prominently in an economic analysis. We know people are loss averse; we don't need to know whether it has an evolutionary explanation.

We take another stand. Together with other scholars, we claim that evolutionary psychology may provide useful ultimate explanations on the 'reason why' of individual's choices, a central theme of positioning and advertising copy (Boutang and De Lara, 2015). If one understands the universal roots of our inclinations, there might be a chance to craft efficient brand copy strategies even more purposely. The most accomplished contribution in evolutionary grounded marketing is the one by Saad (2013). Saad (2011, p. 17) provides ultimate explanations for personality traits such as risk taking:

Evolutionary theory recognizes that phenomena can be investigated at two distinct levels. Proximate explanations deal with mechanistic descriptions of how something operates and which factors affect its inner workings. Ultimate explanations tackle the why question, namely, why has a given behavior, emotion, thought, preference, choice, or morphological trait evolved to be of a particular form (i.e. identifying its Darwinian genesis). Whereas both levels of analysis are needed for a full understanding of the human condition, marketers along with many social scientists have largely focused on proximate explanations.

Pinker (2002, p. 230) quotes the irrational fears of artificial foods and genetically modified organisms on health grounds that could make food more expensive, for instance. An evolutionary explanation can be traced back to people's intuitive psychology, imagining:

[...] an invisible essence residing in living things, which gives them their form and powers.

Pinker (2002, p. 231) again points out that risk perception can depart from objective hazard evaluation because of evolutionary fears such as *heights, confinement, predation and poisoning*.

Recent publications regarding sociological, cultural and psychological factors describe a broader view of the complex situation of the consumer in front of risks and make it possible to consider risk in consumer context decision-making, (Corstjens and Gautschi, 1983; McGuire, 2000; Swait and Erdem, 2004).

2.2 Risk in marketing manuals

Cox published one of the first books on risk-taking and information handling in consumer behavior (Cox, 1967). He is considered as the pioneer in modeling perceived risks among consumers. Since those pioneers, a significant amount of research has explored the place of risk in consumer decision-making and in brand attributes. Although consumer research, mainly in the USA, acknowledged the role of risk in consumer decision-making, there is not much mention yet of risk in operational and general guidebooks or manuals of marketing management and consumer behavior, than in academic marketing articles.

2.2.1 Product risk and consumer preferences. The guidebooks that we examined classify risks in the five to seven categories described by Jacoby and Kaplan (1972). As such, classification seems to provide a useful and easy-to-remember operational tool for risk concerns. Widely distributed and read books of authors such as Kotler, Solomon or Lendevic hardly mention risk as part of marketing management concerns (Kotler and Armstrong, 1991; Lendevic *et al.*, 2006; Solomon, 2005).

As said in by Kotler and Armstrong (1991):

[...]Many purchases involve some risk taking [...] the amount of perceived risk varies with the amount of money at stake, of purchase uncertainty, and of consumer self-confidence. Consumer evaluation has changed since products are multi attribute objects.

Thus, information is to be managed by the firm to avoid the anxiety coming out of the feeling of risk.

In the Mercator guide (Lendevic *et al.*, 2006), the authors do not refer to risks associated to motivation, but to the sole context of decision-making. As such, uncertainty is seen as the unknown probability of a gap between expectations and delivering, combined with the consequences of this gap.

Solomon (2005) quotes the five kinds of risks suggested by Jacoby and Kaplan (1972) on one page, as part of a consumer research guidebook, which has been widely translated and distributed. Solomon distinguishes, for each of the five kinds, the buyers most sensitive to risks and the purchases most sensitive to them. For instance, monetary risk will be associated with money and wealth – with below-average revenue being the most exposed to risks, with top-range goods representing a costlier purchase. Also, psychological risks will be associated with loss of self-esteem, as well as with guilt of making large expenses.

Despite the above famous examples, the part devoted to risk and uncertainty remains modest in most marketing management books (the words 'risk' and 'uncertainty' are often not quoted). For instance, Michon's reference book (Michon, 2003, p. 82) has one mention of 'risk' in a 456-page book; this is again to quote Jacoby and Kaplan classification of perceived risk. In one of the reference marketing guidebooks (Kotler and Armstrong, 1991), 'uncertainty' is not mentioned, and the word 'risk' is quoted twice, each time within a short paragraph about decision process, when the book itself is about 700 pages. In the 2009 Marketing Encyclopedia, Lehu (2009) devotes two pages among more than 800 pages to describe perceived risk, mentioning Bauer and Roselius. Perceived risk is seen as being a consequence of various variables about the individual, the product or the situation. Among these variables we find risk attitudes. Dubois (2000) mentions Cox as the early pioneer of consumer risk psychology.

Concerning consumer behavior, Hoyer and MacInnis (2001), Robertson and Kassarian (2001) and Solomon (2005) briefly describe risk perception referring to Slovic and Fischhoff, or treat risks in relation to warranties and brand preferences. Hoyer and MacInnis (2001) quote risk perception as:

[...] the extent to which the consumer is uncertain about the personal consequences of buying, using, or disposing of an offering. If negative outcomes as well as positive outcomes are unlikely, perceived risk is high. Consumers are more willing to pay attention and to carefully process marketing communications when risk is high. As perceived risk increases, consumers tend to control information and evaluate it carefully.

2.2.2 Uncertainty and consumer involvement. Involvement is the importance attached to a consumer's decision. Within consumer psychology, both product involvement and perceived risk are considered to be motivational constructs influencing, for instance, information search and decision-making process (Dholakia, 2001). Hoyer and MacInnis (2001) also establish a clear link between risk perception and involvement. As high level of risk is generally uncomfortable for consumers, they tend to engage in a higher information-processing activity, to reduce the uncertainty component of risk.

Relationships between product involvement and risk perception are supposed to be two ways. Mainly, when products are perceived to be risky, consumers show higher levels of involvement (e.g. radio frequencies of mobile phones, genetically modified food, higher interest rates, etc.). However, it can also be assumed that, in various circumstances, involvement might affect risk perception. For instance, a closer and deeper search at product information could change risk perception; deeper concern for purchases could provoke a higher sensitivity and less tolerance to perceived risks.

Kapferer and Laurent (1982), and even more, Kapferer (1998), mention and analyze risk as one of the variables possibly linked to involvement, interest and brand sensitivity. When Kapferer and Laurent (1982) suggest a framework regarding brand sensitivity, they briefly mention risk perception as the seriousness of negative consequences in case of error (of choice). Probability of an error made by the consumer choosing the brand is, to Kapferer, 1 of 12 variables explaining brand sensitivity. As such, risk perception is believed to enhance brand sensitivity. However, risk perception is not mentioned as one of the ten variables measuring involvement by Zaichkowsky (1994). Hoyer and MacInnis (2001) mention that perceived risk can be associated with any kind of product or service, but it would be higher in the following cases: little information available, new or high price or complex offering, high level of brand difference, little consumer confidence and social norms. We suspect that complex foods (e.g. organic, fair trade, highly processed, occasional purchases, gambling, financial products), with multiple attributes, will generally be regarded as being associated with higher levels of involvement than simple products (e.g. staple foods and commodities purchased routinely).

2.3 Cross-discipline analysis

We have also explored literature outside economics, consumer research and risk psychology to enrich the perspective of risk marketing: anthropology and evolutionary mind (Leakey and Lewin, 1977; Barkow *et al.*, 1992; Cosmides and Tooby, 1994; Benford, 2000; Haselton and Nettle, 2006), sociology (public and private risks) (Douglas and Wildavsky, 1983; Beck, 1986; Kasperson *et al.*, 1988), communication (design, media, questionnaire, copy strategy, etc., see references in Appendix).

A look at recent academic publications shows an interest in screening the potential implications, on positioning and context, of risk attitudes: (Panagopoulos, 2014) on the impact of being observed while voting; Abay and Mannering (2016) on the prevention actions against risk-taking in car driving. Similarly, Scott *et al.* (2016) examine individual's attitude strategy regarding smoking, then infer strategies to deter youth from it. Regarding food consumption, Hung *et al.* (2016) try to correlate consumer attitude and purchase intention toward processed meat products when lowering down the level of nitrite; Boulu-Reshef *et al.* (2016) investigate risk aversion in financial markets and show they might bias the predictions made by sector specialists. In touristic economy, Buckley (2012) suggests that:

To the analyst, it (rush) may be seen as the simultaneous experience of flow and thrill. Experiences which provide rush are often risky, but it is rush rather than risk which provides the attraction. Rush is addictive and never guaranteed, but the chance of rush is sufficient motivation to buy adventure tours.

Risk attitudes and perceptions differ among individuals, and according to the situation at stake, forming risk profiles. There is a gender difference in risk attitudes, as shown in many papers, and as summarized recently by Meyers-Levy and Loken (2015). This could affect positioning strategy.

We then began to organize the convergence and inspiration from all these sources and literature, with the perspective to suggest to systematically include risk as one of the operational dimensions of marketing, let it be in the most obvious fields where risk is not only salient – environment, health, finance – but also on mass market products, like food or personal goods. We suggest that risk attitudes, beliefs and motivations offer new perspectives for positioning. We also think that research on risk perception and framing could benefit message design, with possible applications in opinion surveys, advertising and labeling – signs and, more generally, all kinds of visual information and wording (Boutang and De Lara, 2015).

Complementing that literature survey, we also took inspiration from our work in the AXA-PSE research project. The first phase of the project consisted of a series of qualitative exploratory studies (focus groups), as an exploratory phase before quantitative questionnaires design. Various evaluation methods of the perceptions, beliefs, attitudes and behaviors, as well as of framing of cognitive and emotional questionnaires, have been tested to elicit the individual parameters of risk preferences and aspiration.

The following sections address two potential applications of risk-related research in marketing: risk-enriched positioning and message framing according to risk biases. In Section 3, we examine risk profiling and perceptual maps based upon of the Lopes psychological model (Lopes, 1996; Lopes and Oden, 1999) as regards to the decision-making in investment and in savings. In Section 4, we describe message framing techniques in the case of quantitative financial risk questionnaires, on the ground of identified biases.

3. Risk profiling and perceptual maps

In the following, we will define the positioning of a brand as a strategic approach which consists in delivering a promise to a specific population target, thus occupying a particular position within targeted people's mind. We are examining the possibility of enriching this promise, that we will relate to people's aspiration, with a "risk-attitude

dimension". This enlarged conception of positioning, taking into account both satisfaction and risk attitude, could then be described on perceptual maps.

3.1 Risk profiling and perceptual maps literature

Perceptual mapping is a graphics technique used by brand marketers to visually show the perceptions of customers or potential customers within a product category. Competing alternatives are plotted on a graph with two dimensions that best characterize how customers differentiate between alternatives (Lilien and Rangaswamy, 2003).

Wilcox (2003), among many others, describes simple methods for producing perceptual maps from data. Kohli and Leuthesser (1993) describe various methods to display data: factor analysis, discriminant analysis and multidimensional scaling. Factor mapping – a graphical representation of products, brands, individuals's coordinates (positions) according to descriptive and predictive dimensions (most often two dimensions) – is meant to describe attitudes and behavior. Such techniques are largely used in behavior research as well as by communication and marketing professionals (Frederick *et al.*, 1982). Distances between positionings truly correspond to differences in attitudes. Recent approaches of marketing strategical maps take into account both consumer's heterogeneity (e.g. segmentation) *and* competitive positioning of brands. As such, positioning becomes segment specific (Day *et al.*, 1987). Product positioning is a crucial component of competitive marketing strategy. Typically, the position of a product, product line, brand or company is displayed relative to their competitors. For instance, firms wishing to sell brands within a specific product category may consider the image of that category and the firm's own image. Usually, quantitative perceptual maps are produced when respondents rate the similarity between several dimensions within that category using a paired comparison procedure. Implications are for a firm to select a specific dimension for their brand. Perceptual maps usually reveal that most markets are not homogeneous, and that they can be segmented into smaller homogeneous groups (Wong and Chan, 1999; Blattberg and Sen, 1974; Bijmolt and Wedel, 1999).

We claim that perceptual maps could help to display what people think about risk, provided proper dimensions are chosen. Those dimensions would describe how people choose in a context of uncertainty, and would be related to the attitudes consumers adopt to make such choices.

We found very few examples of risk-based positioning, and they were all recent. And we did not find, in the academic literature, perceptual maps crossing risk attitudes with attitudes towards aspiration. Vanlaar *et al.* (2008) present maps linking driver's worries to their risky driving behaviors. Two dimensions are found to explain the data: perceived risk and the perceived level of concern of others. The results from these analyses are summarized using a perceptual map. Kimura *et al.* (2009) make use of prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) to explain the dispersal of firm positioning, including risk as one of the strategic dimensions of firm positioning.

Risk/aspiration maps would prove to be useful to marketing, if brand preferences, product choices were related to risk lifestyles and attitudes. Reciprocally, in a product-based approach, risk attitudes and lifestyles could be inferred from risky products' (such as financial ones) consumption analysis. For the purpose of this article,

we will focus on a specific model of risk, combining both types of risk identified in consumer research: on the one hand, the probability of achieving an aspiration level, and on the other, the attitude toward risks.

3.2 Lopes' security-potential/aspiration model and positioning

We suggest that Lopes' *security-potential/aspiration* (SP/A) theory (Lopes, 1996; Lopes and Oden, 1999) could provide a useful scheme to characterize individual profiles according to two dimensions of personal aspiration and risk attitude. According to Lopes:

SP/A theory is a dual criterion model in which the process of choosing between lotteries entails integrating two logically and psychologically separate criteria, where SP stands for a security-potential criterion and A for an aspiration criterion.

As for the A (aspiration) criterion, it is assumed that subjects assess the attractiveness of lotteries by the probability that a given lottery will yield an outcome at or above their aspiration level. We would expect to be able to differentiate *satisficers* ('good-enough heuristic') from *optimizers* ('best-so-far heuristic'), along this motivational aspiration (A) axis. The other axis of the Lopes model is called SP, a bipolar situational axis with security (S) on one side and potential (P) on the other. We interpret this SP axis as measuring an attitude towards risk: a "security-minded" individual (Lopes and Oden, 1999) pays more attention to the worst outcomes than to the best ones. According to this model, the evaluation process of the personal aspiration is subjectively made. It retains choices situated above a personal aspiration threshold, fluctuating with the environment and the individual. As a consequence, a majority of individuals, being risk-averse, will rather go for security positions and above level-aspirations. When potential (risky) attitudes are shown they are more often combined with high level of motivation.

In Figure 1, we represent the SP/A model as if it were a mapping of financial saving attitudes. To do this, we refer to the AXA-PSE research project. About the risk attitude dimension, we submitted the following question 1Q26 to 1,000 individuals using a sampling-weighted quota method, seven-point Likert scale: (1Q26) *Which proportion of your heritage could you invest in a risky manner?* Answers were offered from point 1: less than 5 per cent of total heritage to point 7: more than 50 per cent. Below-average score is concerning 88.6 per cent of respondents; above-average score only 4.2 per cent of

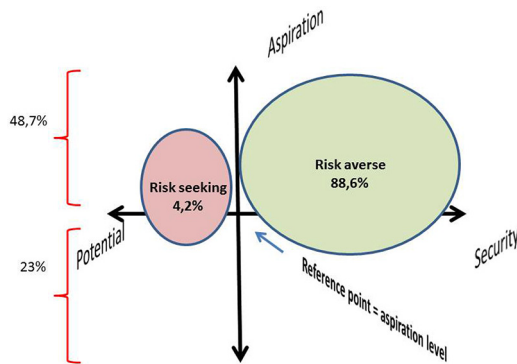


Figure 1.
SP/A like mapping
and financial saving
attitude

respondents (the rest declared 'did not know'). Regarding the second dimension 'A', we assumed that question 1Q23 was correlated to aspiration level. In question 1Q23: *I am always expecting more in life* (six-point Thurstone scale), individuals declared to be maximizers: *totally agree plus partially agree* = 48.7 per cent; *totally disagree plus partially disagree* = 23 per cent (the rest nor agree nor disagree). We plotted 1Q26 answers (SP dimension) against 1Q23 answers (A dimension), as in the Lopes model. Obviously the correct chart showing how dimensions actually correlate, should result from a quantitative multi-variate analysis. We are just illustrating here how risk attitudes and motivations can interact, like in a SP/A Lopes model of choice.

Of course, these preliminary results would have to be validated by the correlations existing between declarative statements and actual behaviors. At this stage, we simply formulate the hypothesis that the positioning of the brand, especially in the case of involving purchases, could be strengthened, on the one hand, by including one's risk attitude (SP) and, and on the other hand, by the level of aspiration (A). The combination of three processes of evaluation – Security, Potential and Aspiration – leads *a priori* to a large number of decision-making plans. As far as the behavior seems adapted to the structure of the environment (Simon, 1982), this model of decision under uncertainty could characterize the individuals in a specific environment or personal situation, as well as the construct of attitudes with regard to one given product. It could also allow to estimate the attractiveness, in the sense of its level of risk, of a brand. It would also be conceivable to characterize individual's or brand's coordinates, according to their SP/A, and the relative strength of these three poles. A perceptual map crossing risk attitudes and levels of aspiration could be proposed. Within the AXA-PSE research project, we started to investigate the concepts of individuals and brand positioning in the case of a financial risky choice, by proposing an updated vision of complex decision-making process (McGuire, 2000; Swait and Erdem, 2004). We found several socio-style surveys, such as the ones conducted by specialized socio-style agencies (CCA, Cofremca or TNS) that intuitively position products and brands along similar SP/A axis. For instance, CCA perceptual maps published in 2002, and applied to drinking attitude in France, suggest that pole people choices may be positioned on one axis in between a traditional expectation a more exploratory attitude. We would like to consider that such an axis is similar to a risk attitude with two poles S and P. The other axis opposing two poles, aspiration for sensation and aspiration to meaning, seems analog to the aspiration level described by Lopes.

4. Risk perception and message framing

As it has been shown by the tenants of behavioral economics, consumers are sensitive to framing. Although they should react the same way no matter how the message is formulated, it happens that people tend to make distinct judgments when exposed to alternate but equivalent ways of describing a promise. According to Tversky and Kahneman (1986):

Alternative descriptions of a decision problem often give rise to different preferences, contrary to the principle of invariance that underlies the rational theory of choice. Violations of this theory are traced to the rules that govern the framing of decision and to the psychophysical principles of evaluation embodied in prospect theory.

Here is a selection of recent academic works about consumer preferences facing risky environments, that investigate the possible applications in terms of message framing. [Lepp *et al.* \(2011\)](#) apply this to communication of African tourist destination, as risk is increasingly a part of the destination's image; [Hartmann and Apaolaza-Ibanez \(2010\)](#) look at the behavioral effects of nature scenery in green advertising. As for [Baxter and Gram-Hanssen \(2016\)](#), they show that:

The do-nothing option in mobile phone recycling is shown to be environmentally negative and the body of do-nothing consumers is a large potential source of environmental improvements.

Also, in an attempt to investigate the importance of framing the negative outcomes of air pollution, [Mir *et al.* \(2016\)](#) conclude that:

Framing the positive consequences of mitigating air pollution take precedence over framing the negative consequences. Moreover, the gains of mitigating air pollution have an impact on the willingness to use of bicycle and bus.

In the same vein, [Moon *et al.* \(2016\)](#) propose that:

[...] a negatively framed educational message highlighting the negative impact of gasoline (versus biofuels) is most effective in leveraging the social desirability of product adoption against its economic disadvantages.

We claim that systematically taking into account psychological biases in the domain of risk perception could help build efficient message framing. Thus, brand communication from copy strategy to advert artwork could be strengthened according to risk product category, and to framing according to risk psychology. In this section, we will specifically examine the case of risk questionnaires, in an attempt to take into account risk perception biases, to design questionnaires according to message framing.

4.1 Risk, framing and questionnaire literature

Risk framing theory takes its source in prospect theory ([Kahneman and Tversky, 1974](#); [Kahneman *et al.*, 1982](#)), as it describes how our perception of risk and utility are biased.

A number of factors are identified that have been found in the literature to influence perceptions and evaluations of risk (sources and details are given in [Appendix](#)). Such factors are related to the design of risk messages: the message (color, signal word, surround shape and the framing effect), the source of the message (credibility and trust) and the target of the message (risk target). To design effective risk communications and to facilitate decision-making and safe behavior, these factors need to be considered, in a context-dependent manner.

Categorizing individuals according to their risk profile is a difficult task ([Conchar *et al.*, 2004](#)). Properly designed, risk psychology questionnaires can be a powerful means to capture risk attitudes and profiles. They are expected to be useful businesses for addressing the right target-specific products or to give the right risky products (such as financial or chemical) to sell to the right vendor. More generally, they can be quite efficient regarding direct marketing campaigns, targeting the message to the right audience.

Our database search only retrieved a few academic articles having theorized questionnaires, and even fewer regarding more specifically risk questionnaires. According to [Malhotra \(2006\)](#), there is no such thing as 'A' standardized method for

designing questionnaires. Most of the literature describing questionnaire design and framing is pragmatic, based upon the experience gathered by finance professionals, marketers and information specialists. Indeed, the main contributors are consumer research and psychology practitioners (Weber *et al.*, 2002; Yook and Everett, 2003; Baumgartner and Steenkamp, 2006).

Financial advisers counsel suitable investments and classify investors according to their personality traits (Yook and Everett, 2003). Financial questionnaires try to evaluate the level of volatility an investor can tolerate, the personal comfort with risk return or the amount of loss someone will risk incurring. Respondent's degree of risk taking appears to be domain-specific, so that specific measures of investment risk tolerance are needed (Weber *et al.*, 2002).

4.2 Designing a bias-free questionnaire

We took inspiration from various authors to design psychometric questionnaires (Barsky *et al.*, 1997; Weber *et al.*, 2002; Malhotra, 2006; Abdellaoui *et al.*, 2007; Arrondel *et al.*, 2004).

Yet, bias-free questionnaires are ideal constructs. Within the AXA-PSE research project, we chose to begin with an exploratory phase before setting-up a risk quantitative questionnaire, in the form of focus groups. These latter are meant to reduce unintentional biases, and were set up to identify and validate opinions, perceptions, words, symbols and risk visuals, as well as individual attitudes *vis-à-vis* financial risks and institutions (McDaniels *et al.*, 1995). We observed the following:

- Risk is mostly perceived as *negative and emotional*.
- Financial risk perceptions and attitudes seem to be *dependent on the amount of wealth*.
- Individuals seem to position themselves according to poles: *emotion/cognition, dread/ controlled and experience/ diversification*.
- We identified *words and visuals linked to risk and uncertainty*.

We then incorporated those findings into a closed-end questionnaire aimed at eliciting financial risk preferences. For this, we developed a checklist to design an “intentionally framed” questionnaire and (supposed to be) free of unintentional biases. This work has been inspired by a vast array of economic, psychological, consumer research and sociological theories, such as loss aversion (prospect theory Kahneman and Tversky, 1979; Tversky and Kahneman, 1992), Lopes decision model combining aspiration with risk preference (Lopes, 1996; Lopes and Oden, 1999), affect theories (Lavine *et al.*, 1998; Finucane *et al.*, 2000; MacGregor *et al.*, 2000; Loewenstein *et al.*, 2001; Rottenstreich and Hsee, 2001; Slovic *et al.*, 2004; Gilovich *et al.*, 2002; Peters *et al.*, 2006) and need for cognition (Cacioppo and Petty, 1982; Cacioppo *et al.*, 1984), as well as cognitive limitations (Simon, 1982, 1990; Gigerenzer and Goldstein, 1996; Gigerenzer, 1991, 2004, 2007, 2008a, 2008b) and mental accounting (Thaler, 1980).

Before writing the individual contents of each question, we recommend to determine first the psychological constructs (beliefs, motivations and needs, attitudes and behaviors) to be evaluated, as well as the questionnaire's intentions and design. The checklist examines potential biases and framing in each question and their validity and reliability. By designing psychometric questionnaires starting with psychology

concepts and risk biases, we hope to decrease the influence of unintentional biases, and to increase the reliability and the validity of short-duration quantitative questionnaires.

As an illustration of how we used the above method within the AXA-PSE research project, we present several questions that we submitted to 1,000 individuals representing French adult population (quantitative CATI interviewing method, initial questions were in French and have been translated here).

4.2.1 Example of question 1QS2

- 1QS2 is an attempt (among other similar attempts in our questionnaire) to assess the financial vulnerability of an individual through self-evaluation (Figure 2).
- Information needed is risk feeling (*Do you feel [...]*), a class of risk perception. Employment, the chosen theme to evaluate risk feeling, is known to regularly be one of the main concerns for French adults (As yearly shown by the IRSN annual risk barometer). It seemed that employment vulnerability could be addressed with one question only, however, introducing a certain order of bias. Literally, in French, the question was asked as: *Your job is secured AND you have the power to keep it*. We considered that instead of truly having two questions instead of one, introduced a clear ambiguity bias, the second part of the sentence was a precision given to the first. Individual economic context, such as possible heritage, or household structure, could also impact answers distribution. Therefore, we have also addressed these issues elsewhere in our questionnaire. We only interviewed people who said they were employed. Question structure is a multiple-choice open-ended one. The seven-point Likert scale provides a useful structure to avoid answer overlapping, and relies upon bounded rationality considerations (Miller, 1956). Item 8 was codified as '8' afterward and is related to a 'without opinion' answer. All words used in the question are ordinary, and we carefully avoided implicit guidance. Pilot testing was used prior to quantitative phase. Question structure was inspired by similar experiments made by Taylor on anxiety evaluation (five-item Likert scale, with good reliability) (Taylor and Claxton, 1994) and a nine-item Likert scale used by Grewel *et al.* (1994) to evaluate the perceived degree of financial risk or even seven-point Likert scales on skepticism (the level of doubt and uncertainty) in Babin *et al.* (1995), with an excellent reliability score.
- Regarding the results from 1QS2 (Figure 3), we can see that people massively consider that they will retain their job in the future, so they do not express a state

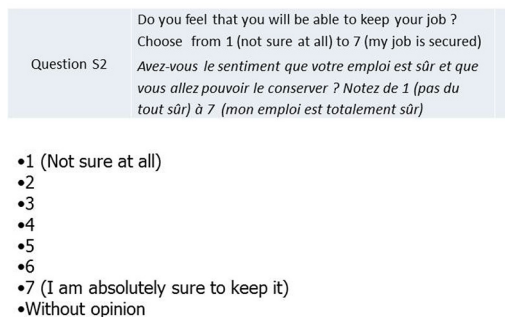


Figure 2.
Question 1QS2

Do you feel that you will be able to keep your job ?				
Mode	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	47	6.49	47	6.49
2	31	4.28	78	10.77
3	34	4.70	112	15.47
4	75	10.36	187	25.83
5	134	18.51	321	44.34
6	129	17.82	450	62.15
7	263	36.33	713	98.48
8	11	1.52	724	100.00

Figure 3.
Answers to Question
1QS2

of vulnerability regarding employment. Because of the distribution of the results, we were unable to infer from employment vulnerability any financial risk attitude or behavior in the rest of the questionnaire. We can also interpret the results as a consequence of a bias called *illusion of control*, introduced by (Langer, 1975). It has been reported that people tend to believe they have a better control of events than they actually do. Employment vulnerability is therefore quite difficult to assess through declarative statements, and it has to be evaluated through factual descriptions of revenues, past history and job description.

4.2.2 Example of question 1Q3

- In Figure 4, we reproduced a visually assisted question as an attempt to identify sub-attributes and dimensions of financial risk constructs. In the same questionnaire as above, people were exposed to several visuals which had been exhibited, in an exploratory phase of several focus groups, as conveying different possible meanings of financial risk. They were asked to pick up three visuals

QUESTION 3 Indicate the 3 visuals below that you link the most to the notion of risk Indiquez les 3 visuels que vous associez le plus étroitement à la notion de risque.		
	freq choosing alternative	percent of 1,000
1. Revolver	660	66
1. Reversed red triangle	93	9.3
1. Napoleon	42	4.2
1. Tightrope walker	680	68
1. World Trade Center towers	178	17.8
1. Syringe	473	47.3
1. Bank notes (10, 20, 50 euros)	180	18
1. Bank logotypes	179	17.9
1. Ships in a storm	509	50.9

Figure 4.
Answers to Question
1Q3

among nine choices. We chose the combination of words and visuals, following the observation that images generally convey a stronger impression (vividness) than words (Sandman *et al.*, 1993; Jones and Nisbett, 1971; Loewenstein *et al.*, 2001). We did not find similar questions in the academic literature and most bank questionnaires rely on words and numbers to evaluate risk profiles.

- Results from 1Q3 (Figure 4) show that preferred risk items are the revolver, the tightrope walker, the syringe and the wrecked ship. They were chosen well ahead of other suggested items. Symbolic visuals – the red point-down triangle (suggesting alarm and instability; Williams and Noyes, 2007), bank logotypes (suggesting bank institutions and power), Napoleon (suggesting war to French people) and banknotes (suggesting money) – were probably less vivid than concrete dangers. Chosen items were directly related to the probability of a danger that may harm all of us personally (drowning, pain, fall). The possibility of death is behind every most feared item. Risk is therefore first of all physical. Physical integrity may apparently be threatened by some kind of intrusion in our body (by a needle, a bullet, water), or by a fall from a high position (a cliff). These findings relate quite well with the etymology of risk as what cuts: Greek navigation term *rhizikon*, *rhiza* which meant "root, stone, cut of the firm land" is used as a metaphor for "difficulty to avoid in the sea"; latin *resicum*, *risicum*, *riscus* mean a cliff (Boutang and De Lara, 2015).

5. Conclusion

Our starting point was the observation that modern world is increasingly perceived as uncertain and that all products tend to be considered as conveying potential hazards. This rising concern for risk, and the need for security/safety, certainly challenges marketing scope and methods. In an attempt to identify potential applications, we scanned some 50 years of risk in marketing literature, cognitive sciences, behavioral economics and, more recently, evolutionary psychology. We observed that, in some key areas of marketing management – individual profiling, brand positioning (brand promises being considered as a main choice's criteria), message framing and, before that, take-away messages of the brand copy strategy – risk psychology has diffused to a limited extent. We investigated positioning statements and communications according to risks' perceptions and attitudes in the field of insurance and investment, within the Axa Research Fund–Paris School of Economics research project *The economics and psychology of risk taking, impatience and financial decisions: confronting survey, experimental and insurance data* (2009-2011).

Evolutionary psychology and recent cognitive science findings explore the roots of risk perception and attitudes which guide safety/security promises. They help us to frame efficient messages and claims that evoke security/safety and ease decisions and purchases. We are suggesting a new approach to marketing concepts – such as promises, 'reason why' and copy strategy – in which risk would be a key dimension of choice and preferences, that can be addressed efficiently by evolutionary-based cognitive sciences. We make the hypothesis that people's aspirations, the core of operational marketing, could be profitably complemented and described by people's risk attitudes and perceptions, so as to position brands and products as a combination of aspiration and risk-taking attitude. Brand claim itself would frame security, and the 'reason why' of the promise would tackle the potential risks. At the same time, the

framing of brand messages – in all categories of products and services, even riskless ones – could benefit from the knowledge of risk psychological biases.

This could be a first tentative step within a larger prospective program for risk marketing, where combining aspiration levels with risk attitudes and perceptions would form a wider risk preference model. *Security versus aspiration* positioning, as well as framed communication on risk/safety, are two domains of marketing where we have tried to incorporate ideas and concepts inspired by research on risk and biases.

This program for risk marketing should also require further developments and confirmations. They could include attitudes as one of the keys of a revisited marketing approach. Besides, an evolutionary psychology approach of risk perception might provide useful keys to the positioning and the copy strategy of brands, considering risk as one dimension of choice.

In our view, evolutionary-based messages could frame 'unbiased' questionnaires, as well as referendums, either to convey the right message according to the adequate target – like policies on risky matters such as GMO, smoking, pollution, medications and climate change concerns – or to evaluate risk profiles and attitudes. The ambition would be to implement a risk-centered approach based on evolutionary psychology to assess the efficiency of positioning statement, profiling, copy strategy and messages. Risk perceptions themselves would partially derive from message framing methods backed on the knowledge of psychological biases.

The limits of this suggestion of a risk-centered marketing approach derive from the fact that our findings were made only on the basis of insurance behavior. They also stand as a qualitative model needing to be replicated within the insurance sector, extended to different financial matters, and even tested quantitatively in other markets and concerns, such as food consumption, tourism, design, environment or health. Also, it could be enlightening to check whether the hypothesis of a positioning model with two axes – security and aspiration – works the same way according to gender in those markets where a motivation difference is expected (luxury markets, cars). Running quantitative multivariate analysis could reveal the existence of people and group clusters shaped by principal criteria – such as a security-potential criterion and an aspiration criterion – in other product categories than finance and investment. Also, questionnaires, advertising and referendum framing is an empirical field that might benefit from recent cognitive science and evolutionary psychology, in a wide array of situations and decision-making contexts, in the search of bias-free formulations.

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Appendix. Risk communication

We point to various fields from which risk communication could find inspiration.

- How to present risk probabilities? Formatted as chances, percentages, frequencies? (Spetzler and Von Holstein, 1975; Gigerenzer and Hoffrage, 1995; Cosmides and Tooby, 1996; Lipkus, 2007; Raghbir, 2008).
- Verbal and numerical expressions of probability (Bruine de Bruin *et al.*, 2000).
- Warning visualization (ergonomics) (Young *et al.*, 1995; Kalsher *et al.*, 1995; Wogalter *et al.*, 1997, 2002; Adams *et al.*, 1998; Laughery, 2006).
- Warning words (Hellier *et al.*, 2000, 2007).
- Designing risk communication (Mumpower, 1988; Atman *et al.*, 1994; Fischhoff, 1995; Williams and Noyes, 2007).
- Graphics in risk communication (Lipkus and Hollands, 1999; Leonard, 1999; Kontio *et al.*, 2004; Hogganvik and Stølen, 2006; Lipkus, 2007; Tufte, 1997).
- Role of media and graphics on risk perception (Joffe, 2005; Fischhoff, 1995; Hogganvik and Stølen, 2006).
- Framing of messages (Tversky and Kahneman, 1981; Meyerowitz and Chaiken, 1987; Slovic *et al.*, 1988; Kühberger, 1998).
- Risk representation in the media (Joffe, 2005) audiovisual risk communication (Visschers *et al.*, 2008).
- Social amplification of risk (Kasperson *et al.*, 1988).
- Cultural aspects of risk (Lesch *et al.*, 2009) ecological risk perceptions (McDaniels *et al.*, 1995).
- Moral dimension of risk (Söberg, 2000) “risk = hazard + outrage” (Sandman *et al.*, 1993).
- Source credibility (Wogalter *et al.*, 1999; McComas and Trumbo, 2001; Viklund, 2003; Siegrist *et al.*, 2005; Boutang and Vilmain, 2014).

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