

UNDERSTANDING, DEFINING AND MEASURING THE TRAIT OF SUPERSTITION

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Abstract : Superstitious beliefs influence a wide range of decisions and activities in the everyday life. Yet, superstition has received little attention in the consumer behaviour literature, which is surprising since superstitious behaviours are found in numerous related domains, such as sports (Schippers & Lange, 2006), gambling or travelling. In the psychological and sociological literature, there is no consensus regarding the definition and measure of superstition (Mowen & Carlson, 2003). For some authors, superstition includes all types of paranormal beliefs (i.e. religion, astrology...) which we think are not relevant for superstition construct. Other authors have a very narrow definition of superstition restricting it to popular beliefs such as (*black cats bring bad luck; if you break a mirror, you will have bad luck; the number 13 is unlucky*). The aim of this research is threefold: (1) to better define the superstition construct (2) to develop a scale that measures superstition and (3) to discuss the interest of superstition for marketing.

An exploratory qualitative study allowed us to define superstition as “beliefs and/or practices that have no religious nor scientific foundations and which lead people to think that certain facts (external events or one’s own actions), or objects can bring good or bad luck, or be signs announcing positive or negative consequences”. Three quantitative data collections helped us develop a scale that contains 27 items and 5 dimensions (good fortune popular beliefs $\alpha = 0,84$; misfortune popular beliefs $\alpha = 0,85$; belief in destiny $\alpha = 0,83$; magical thinking $\alpha = 0,86$; defensive pessimism $\alpha = 0,67$). Finally, the article concludes on future research and how the superstition construct could help explain irrational decision making.

You always bet the same numbers when you play the lottery...? You try to avoid walking under ladders? You sometimes believe that the fate sends you signs? Or still, you always look at football games according to the same ritual in hope it would bring luck to your team? If you answered positively one of these questions, you are probably a superstitious person ... So are the sailors Alex Thomson and Mike Golding who voluntarily threw the race and decided not to cross the finish line when about to win the prologue of a sailing race around the world. There is a superstition among sailors that it’s bad luck to win the prologue. Superstitious behaviours are frequent in sports, but can also influence consumer behaviour in other contexts (for example lotteries, air travelling or life insurances). Of course, using superstition in order to influence consumer decisions and behaviours would not be ethical (and even not allowed by law in certain countries). Still, it is necessary for marketers to be familiar with superstitious beliefs in order to conceive commercial offers which would not violate local norms.

What is superstition? In the literature, there are several definitions of superstition. Most authors agree on the fact that superstitions are beliefs or behaviours that are contrary to rational norms within a specific society. It implies that superstitious behaviours cannot be interpreted or explained according to religious beliefs which are usually not considered as irrational by members of a given society (Campbell, 1996). Superstitions are culturally anchored and differ according to countries. For example Simmons and Schindler (2002) demonstrate that, in China, prices ending with the digit 8 are very common because there is a local belief that number 8 brings luck, prosperity, and happiness. On the contrary, prices ending with the digit 4 are under-represented because this number brings bad luck. Kramer

and Block (2008) event conducted experiments where they demonstrated that Taiwanese consumers would rather buy a 888\$ radio rather than a lower priced 777\$ radio.

Definitions of superstition found in most dictionaries reflect the confusion that exists around this concept, and its multiple meanings. In most of these definitions, the frontiers between superstition, the paranormal, witchcraft or even religion are vague. As an example, let's consider the American Heritage Dictionary definition cited by Kramer and Block (2008). Superstition is defined as "*beliefs that are inconsistent with the known laws of nature or with what is generally considered rational in a society*". The purpose of the current research is to clarify the definition and the dimensions of superstition and to propose the adequate measurement scale. We also discuss the usefulness of superstition in order to better understand how consumer decision making can sometimes be irrational.

Superstition theories

ARE PIGEONS SUPERSTITIOUS?

In a conditioning experiment with pigeons, Skinner (1948) shows that superstition results from a misleading interpretation of accidental contingencies. In his experiment, hungry pigeons were fed at regular intervals. Skinner observed that the birds developed superstitious behaviours believing that by acting in a particular way, food would arrive. A pigeon might have been incidentally standing on one leg when receiving food, and even if this posture had nothing to do with food reward, the pigeon reinforced his behaviour hoping to get more food. The pigeons seem to have thought that there was a causal link between their behaviour and the presentation of food. This is what Skinner (1948) and others authors (Staddon and Simmelhag, 1971; Devenport and Holloway, 1980) call superstitious rituals which usually take place in contexts of uncertainty.

This vision of superstition helps understand the mechanisms of superstition among Human Beings. Superstition beliefs rely on a mistaken causal link between two phenomena that from a rational standpoint have nothing to do with one another. For example, the superstition that black crows announce future misfortune is probably due to misinterpretations (which come back to Middle Age) of the presence of crows near dead bodies. There is a rational explanation for that. Crows have a keen sense of smell and are hence attracted by the smell of death. That explanation was not known at that period of time and this is why the presence of crows near houses where someone had just died was interpreted as a subnormal phenomenon. We can see in this example that in "primitive" culture superstition is related to true beliefs: people in Middle Age truly and deeply believed that crows brought bad luck; they feared witchcraft so badly that any suspected person would be immediately burnt to death; they really felt threatened by black cats, witches and Satan, etc. According to Campbell (1996), modern superstition distinguishes from primitive superstition because we don't really believe in our superstitions. Campbell introduces the concept of "half-belief" according to which, in modern superstition, people adopt superstitious behaviours without deeply believing in them.

MODERN SUPERSTITION

Superstitious beliefs and behaviours have survived¹ despite a context where rational thinking prevails over magical thinking (Zucker, 1947) and where both religion and science consider superstition as extravagant. We even noticed in our qualitative interviews that, when faced with rational criticisms, a superstitious person never answers back with rational arguments. Most of the time, the superstitious person answers "it's worth trying, it's costless", "we never

¹ According to Campbell (1996), in the 50's, half of British people admitted practicing superstition on a regular or occasional basis. Our own research shows that only 30% of our French subjects would call themselves superstitious, but X% practice at least one superstitious behavior.

know..." or "It's a very old ritual, I know it's absurd, but...". In short, a superstitious person doesn't want to think within the bounds of reason.

We already mentioned it: superstition relies on a mistaken causal link between two independent facts. For example, the football player who always touches the grass with his left hand before the game starts links this behaviour to a highest probability of winning the game. According to Campbell (1996), the man would never justify this behaviour by saying "I really think that touching the grass with my left hand will make us win". The football player would rather explain his gesture with arguments such as "we never know, if it works...". We cannot say that modern superstitious people really believe in the existence of those mistaken causal links. But neither can we say that they don't believe in them at all. To call something superstition, some sort of fuzzy belief must exist. A father who paces up and down in the corridor of a maternity hospital while his wife is giving birth to his first child could not be called superstitious because he doesn't believe (at all) that pacing up and down would facilitate the delivery. However, the same father that would think "if I manage to walk exactly 100 steps between here and the end of the corridor, then it means that..." is in fact superstitious.

This paradox between belief and non-belief is, according to Campbell, the main difference between modern and primitive superstition. The mechanism underlying modern superstition is called 'half-belief' and is a form of thinking that lacks rationality. When asked, superstitious people are unable to explain why they behave according to such or such ritual: they recognize that their behaviours cannot be justified. What characterizes half-belief is that people are reluctant to say they really believe in the validity of superstition, but they are also reluctant to say that they don't believe in it. Half-belief is characterized by the fact that we intellectually reject a superstition but still, it continues to influence our thoughts and actions. As Campbell mentions, some people who would never define themselves as superstitious would avoid walking under a ladder when on the way to their wedding ceremony.

This concept of half-belief will help us differentiate superstition and related but distinct concepts. Superstition and religion are distinct concepts because religion is precisely based on faith and on true belief in the existence of one or several gods. The same applies for superstition and astrology since astrology relies on what is meant to be a science, according to which the position and the movements of celestial bodies influence life on Earth. It is interesting to note that both astrology and religion can be practiced in a superstitious way. For example, it would be the case for someone doing the sign of the cross or reciting "a little prayer" before an important event, without doing it according to real faith in God. It's also the case for those who read their horoscope and rejoice (or not) about what they read, but without really believing in the science of astrology. Finally, superstition must be distinguished from insanity. A psychotic patient who develops mystical or magical beliefs is not superstitious because those beliefs have a rational meaning for him and really exist in his world.

SUPERSTITION AND NEED FOR CONTROL

Most researchers agree that superstition appears in situations with uncertainty and stress (sports event, game of chance, exam, risky activity). According to psychoanalytic theory, superstition is a form of magical thinking that is characteristic of the anal stage in Freud's psychosexual stages theory. During that stage (from 18 months to 3 ½ years), the child learns to control his sphincters and suddenly becomes conscious that his mind is powerful: thanks to his willpower, the child can either retain or reject his faeces and as a result, satisfy or disappoint his mother. At this stage of his development, the child feels his mind is very powerful. In adulthood, superstition might reappear in periods of distress through regression as a defence mechanism (Piaget, 1974). The unconscious benefit of this regression is the illusion of an overpowered mind that can control the world.

According to Malinowski (1948), superstitions are used to fight anxiety and distress by filling the psychological gap caused by uncertainty. Superstitious thoughts or behaviours are used as a substitution to instrumental acts that people would have liked to achieve in order to influence the situation. In highly uncertain and uncontrollable situations, such instrumental acts do not exist and the best thing to do is precisely do nothing, because nothing can be done to control the situation. Modern societies are characterised by their orientation toward action. Our culture enhances the value of actions more than the value of inactions and we have a tendency to think that every problem has a solution as long as we dedicate enough efforts in that situation. Thus, it is very difficult for modern men to remain passive in the face of a stressful situation, because passivity goes against the core values of the society in which we live. Superstitious rituals bring emotional reassurance because they allow us to feel active rather than passive, and because they protect this fundamental need in modern culture: orientation toward action.

According to Campbell (1996), the practice of superstition is paradoxical. Our modern society enhances the value of actions, but also strongly believes in science and rational thinking. As a result, when someone practices superstition in a stressful and uncertain situation with the benefit of gaining (illusory) control over the situation, that person violates society's belief in rationality. The modern man is faced with one contradiction: he can either act in a way that respects his values but not his beliefs, or act in a way that violates his values but respects his beliefs. To solve that contradiction, individuals execute actions that have the characteristics of instrumentality, while refusing to admit that these actions can actually produce the desired effects. Superstitious acts have a symbolic value: they help reaffirm the power of Human hand in the world in general. Superstition is a way of reassuring oneself in an uncontrollable situation by restating the belief in the capacity of Human Beings to control their environment. Illusion of control is the common point among those three theories. Superstition gives the illusion of a control over one's environment and brings the psychological benefits associated with this illusion of control (Langer, 1975, 1977). Case and al. (2004) demonstrated that as the likelihood of failure increases, so did the use of superstitious beliefs. The more undermined or threatened is an event, the more people behave and think in a superstitious way.

Development of a measure of superstition

For several reasons, we think that there is a need for a reliable and valid measurement scale of superstition.

Firstly, because when asked, most people answer that they are not superstitious. Mowen and Carlson (2003) refer to a survey conducted in the United States in 1991 and according to which 56% of American people declare themselves not superstitious at all, whereas 74% admit reading their horoscope. Even if superstition and astrology are to be distinguished, those results are interesting because they demonstrate that people are reluctant to admit their irrational beliefs, even if a great proportion of them do have such irrational thoughts or practices. A multidimensional scale would help specify the variety of superstitious behaviours and contexts and would, as a result, be more reliable than existing measures.

The second reason that justifies the need for a new scale is the lack of such an instrument in the literature. In 2003, Mowen and Carlson used a 3 items proposed by Jahoda (1696) ("Have you avoided walking under a ladder because it is associated with bad luck?"; "Would you be anxious about breaking a mirror because it is thought to cause bad luck?"; "Are you superstitious about number 13?"). As can be noticed, this scale only measures negative popular superstitious beliefs. In 2004, Wiseman and Watt introduce a new scale with two dimensions: positive superstitious behaviours ("Do you say fingers crossed or actually cross your fingers?";

“Do you touch wood or actually touch or knock on wood?; Do you sometimes carry a luck charm or object?) and negative superstitious behaviors (to avoid walking under ladders, to break a mirror, to be superstitious with number 13). This scale remains incomplete because it doesn't measure the variety of superstitious behaviors as we will now define them.

DEFINITION OF SUPERSTITION

Because the conceptions of superstition in the literature were multiple, leading to a vague understanding of the construct, we decided to conduct an exploratory qualitative study in order to better understand its underlying mechanisms and to establish a list of superstitious beliefs and behaviors. 52 individual qualitative interviews were led in France with individuals aged 23 years. These qualitative interviews together with the existing literature, allowed us to give the following definition of superstition: superstition consists in unfounded half-beliefs that certain facts (external uncontrollable events or internal actions) or objects can carry good or bad luck, or be omens of future positive or negative events. The term half-belief relates to the fact that people don't truly believe in superstition, but at the same time are reluctant to admit they don't. What characterizes half-belief is the following statement “you never know...in case it works”. As a result, religion, astrology or insanity cannot be qualified as superstition. Belief in extra-terrestrial life and in ghosts should also be distinguished from superstition because these beliefs have nothing to do with bad or good luck. Our definition excludes:

- Para normality (extra-terrestrial life, witchcraft, ghosts and spiritualism)
- Religion
- Astrology

The list of superstitious beliefs and behaviors mentioned by our French subjects was organized within 4 categories, each of which defines one dimension of superstition:

- beliefs in popular sayings
- magical thinking and rituals
- interpretation of facts and events as omens
- possession of lucky charms objects or dates.

The list of items designed to measure those beliefs and behaviors are presented in table 1. It has to be mentioned that when relevant, we formulated 2 items: one for belief (for example “black cats bring bad luck” or “being 13 around the table brings bad luck”) and one for practice (“when I see a black cat I turn my way” “I would never organize a dinner with 13 people”).

Table 1 – Pool of items

1. To pass a black cat is bad omen	21. If something wrong happened to me, it is a sign that it was the wrong way
2. I have confidence in signs, they guide my life	22. If a crow knocks at the window, it is a sign that a misfortune will arrive
3. Before making an important decision, I look for signs which indicate me that it will be the best.	23. Knocking over saltcellar bring bad luck
4. Walking under a ladder bring bad luck	24. I try not to have 13 persons around the table
5. Walking in the dog mess with one's left foot bring good luck	25. There is one (or several figures) which bring me good luck
6. If I find a four-leaf clover, I think that it brings me good luck	26. I believe on a good or bad destiny

7. To guide me in my life, I look for signs	27. I often tell me “Ah, this is a sign”
8. There are some dates which bring me good luck	28. If I walk in a dog mess with my left foot, It will bring me good luck
9. If I pass a black cat, I tell myself that it may happen misfortunes	29. I avoid to pass under a ladder, It brings bad luck
10. I see signs everywhere	30 To avoid bad luck, I touch my head or wood
11. I avoid to wish “good luck” to someone, It could bring him (her) bad luck	31. When I hope that something is going to happened, I cross my fingers
12. I often look for signs when I want to be reassured myself	32. There are some days which bring bad luck
13. I avoid to open an umbrella in a room, it brings bad luck	33. I have some rituals which bring me good luck
14. I something wrong happen to me, I tell me “It had to happen!”	34. Friday the thirteenth is a day which bring me bad luck
15. I do not like to celebrate my birthday before the D day, it brings bad luck	35. I often challenge myself to bring me good luck
16. I avoid to buy a gift for a baby before his birth	36. When I see a black cat, I turn my way
17. If something wrong happen to me, I tell me: “It was written”	37. Before an important event, I always have the same ritual. It brings me good luck
18. I think that fate send us signs which guide us in a life	38. If I break a mirror, I am afraid that It will bring me bad luck
19. Friday the thirteenth is a day which brings bad luck	39. Putting bread in the wrong way bring bad luck
20. When I make a wish, I do not say it out loud, it do not have chance to happened	40. There are numbers which bring me bad luck

METHOD

Accepted psychometric scale development procedures were followed, which rigorously tested a large pool of items for their reliability and validity (Nunnally 1978, Churchill 1979).

Samples

Three samples were used for data reduction, using factor analysis as a data reduction method:

- Sample 1: 150 French business students completed a questionnaire including the 45 items presented in table 1. Mean age was 21 years old. This first sample was used for scale reduction and item reformulation. A new questionnaire was designed with the remaining 32 items.
- Sample 2: 119 French business students completed the 32 items questionnaire. Mean age was 21 years old. After this new data collection, the sample of items was reduced to 27 items.
- Sample 3: 215 French non-student individuals aged 20 to 63 years old completed a 27 items questionnaire. 73 % were female and 27 % were male.

Procedure

All subjects were asked to participate on a voluntary basis and anonymity was guaranteed in the three samples. Students were tested in groups of 30. It took them approximately 7 minutes to complete the questionnaires. The convenient non-student sample completed the questionnaire individually online. It took them less than 5 minutes. The questionnaires were

designed to be short so as to improve the quality of the answers. All items had to be answered on a 7 point Likert scale.

For each data set, principal component factor analysis was used to identify superstition dimensions and select the best items for each dimension. Items were selected on the basis of their facial validity as well as on the basis of their communalities ($>0,5$) and contributions ($>0,5$) on the scale factors.

RESULTS

Preamble

Due to space limitations, the iterative procedure used to construct the scale won't be presented in details. We find it more interesting to present the final scale structure obtained on our last sample and thanks to the three data collections. One interesting information to mention is that we discovered that items measuring the same superstition through practices and beliefs were highly correlated ($r>0,8$). Based on that result, and with the purpose of reducing the final number of items, we decided to keep only the belief-formulated items. This means that instead of "When I see a black cat I turn my way", we will formulate "Black cats carry bad luck". This decision is justified for the following reasons:

1/ Correlations between practice-formulated and belief-formulated items were all very high

2/ Measuring beliefs instead of practices is not inconsistent with the concept of half-belief included in our definition. Half-belief implies that a superstitious person will be reluctant to say he does not believe in the superstition, even if he doesn't recognize any rational explanation for that belief. This means that a superstitious person should obtain a higher score on the concerned items than a non-superstitious person who would without any doubt answer "I don't believe in it at all".

3/ In most cases, measuring superstition with practice-formulated items is not relevant. Superstitious practices are very difficult to achieve in our rational modern culture. For example, in most circumstances (e.g. a business dinner), it would be very complicated to refuse having dinner with 13 people around the table! We don't try to identify the very few people who would refuse to have a dinner with 13 people whatever the circumstances. We'd rather identify those who would feel uncomfortable doing that.

Scale structure

Finally, and after our three data collections, we obtained a 24 items measure with 5 dimensions accounting for 60% of the total variance. The scale structure is shown in table 2.

	Lucky Charms	Fate and signs	Magical thinking	Defensive pessimism	Popular sayings
When I hope something good arrives, I cross my fingers	0,852				
I have some days which bring me good luck	0,674				
I have some figures which bring me good luck	0,610				
Friday the thirteenth brings me good luck	0,587				
I have some objects which bring me good luck r	0,580				
To avoid misfortune, I touch my theat or wood	0,532				
I have some rituals which bring me	0,517				

good luck (I always wear the same tee shirt for example)					
I think that the fate send us some signs which guide us in our choice		0,825			
If something wrong happened to me, I tell me « I was written »		0,819			
I believe on good or bad destiny		0,759			
I look for signs to guide me in the life		0,524			
I often challenge me to bring me good luck			0,937		
I often look for signs when I want to be reassured (for example if I cross more than 7 underground train)			0,817		
Sometimes, I challenge me to know if I have good luck (I draw a pellet of paper in a trash)			0,731		
I never buy a gift for a baby who is not born...				0,815	
I do not like to celebrate my birthday before the D day, it brings bad luck				0,617	
When I believe that something good is arrived, I do not say it if it does not arrived... pas				0,536	
When I make a wish, I do not say out loud, it will not come true				0,513	
If I see a crow , it is a sign that I will happened misfortune to me					0,816
To meet a black cat is a sign of misfortune					0,744
Friday the thirteen is a day which brings bad luck					0,738
Passing under a ladder brings bad luck					0,592
Breaking a mirror bring bad luck					0,523
Finding a four-leaf clover bring bad luck					0,323
<i>Cronbach Alpha</i>	<i>0,84</i>	<i>0,83</i>	<i>0,86</i>	<i>0,67</i>	<i>0,85</i>

The first dimension is related to lucky charms rituals (7 items, alpha = 0,84). The second dimension refers to the belief in fate and signs (4 items, alpha = 0,83). This dimension will be discussed as it is not clear whether it actually refers to superstition as we defined it. The third dimension defines what is commonly called “magical thinking” and that refers to ideas such as the ability of the mind to control the world (3 items, alpha = 0,86). We qualified the fourth dimension “defensive pessimism” (3 items, alpha = 0,67). Defensive pessimists believe in the power of negative thinking and usually adopt pessimism as a way to avoid negative events (If I think the worse will happen, it will probably not happen – Let’s not rejoice before it’s really

there, it could bring bad luck!). Finally, the last dimension measures beliefs in popular sayings (7 items, $\alpha = 0,85$).

The analysis of the correlation matrix between these 5 dimensions is displayed in table 3.

Table 3 – Component correlation matrix

	LUCKY CHARMS	FATE AND SIGNS	MAGICAL THINKING	DEFENSIVE PESSIMISM	POPULAR SAYINGS
LUCKY CHARMS	1	0,266	0,414	0,293	0,488
FATE AND SIGNS		1	0,204	0,225	0,275
MAGICAL THINKING			1	0,170	0,253
DEFENSIVE PESSIMISM				1	0,269
POPULAR SAYINGS					1

The five dimensions are moderately but significantly correlated. These significant correlations demonstrate that the dimensions are part of one higher order construct. At the same time, the correlations not being too high demonstrate the relevancy of each of these dimensions for a better definition of superstition. We believe our measure of superstition is more complete than existing ones because it includes the variety of superstitious thinking and is not restrained to popular sayings as were Jahoda (1969) and Wiseman and Watt (2004) 's measures.

Scale characteristics

Means, standard deviations and internal consistency coefficients are presented in table 4.

Table 4 – Means, standard deviations, and reliability scores for the superstition scale

	LUCKY CHARMS	FATE AND SIGNS	MAGICAL THINKING	DEFENSIVE PESSIMISM	POPULAR SAYINGS	SCORE GLOBAL
Mean	2,71	3,02	2,99	3,35	2,10	4,15
Median	2,29	2,75	2,67	3,25	1,6	4
Mode	1	1	1	4	1	3,4
SD	1,38	1,58	1,71	1,45	1,29	1,49
Cronbach alpha	0,84	0,83	0,86	0,67	0,85	0,93
Kolmogorov Smirnov test for normality	Sig.	Sig.	Sig.	Sig.	Sig.	Non sig.

The analysis indicates sufficient internal consistency for the scale. However, it reveals that the dimensions distributions suffer from violation to normality. The distribution is asymmetrical as the scores are quite low. This reflects that most respondents are either moderately superstitious or are reluctant to admit it. The deviation from normality should be taken into account during further statistical analyses by using non-parametric tests.

Discussion

PAPER CONTRIBUTION

The paper presents an exploratory measure of superstition. Our scale has not been tested for validity yet, but it seems to demonstrate a good lever of reliability which is a prior step to validity. The 5 dimensions are conceptually interesting for a better understanding of

superstition. They allow a more precise definition of what should be considered as superstition or not. It was also interesting to find out that the way superstition used to be measured with Jahoda (1969) or Wiseman and Watt (2004)'s scales was probably the worst way to do it. In fact, those scales were only measuring the popular belief superstitions which are probably the less prevalent among modern people. Our results showed that the "popular sayings" dimension was the less explanatory in our 3 samples. The observed variance on this dimension was the lowest with very low central-tendency values. During our item selection process, most items that were withdrawn because of a lack of discriminatory power ($SD < 1$) were items that referred to popular sayings (e.g. "I don't like to have dinner with 13 people around the table"). Superstition nowadays does only rarely take the form of beliefs in popular sayings. It is usually more idiosyncratic and this is why there was a high need for a multidimensional measure of superstition.

LIMITATIONS

At this stage, our research suffers from many limitations and still carries questionings on conceptual aspects:

The "fate and signs" dimension should be reconsidered since it is not clear yet whether this factor actually fits with our definition of superstition. Every other dimension has something to do with the power of mind and the idea that willpower can help control one's environment. The only dimension that does not respect that idea is the fate and signs. In other words, the other dimensions refer to an internal locus of control (with my mind, by respecting some mental rules, I can control the world), whereas the "fate and signs" dimension is related to external locus of control and to a high degree of passivity. This aspect could be an interesting issue to discuss during the conference.

The second main limitation concerns the violation to normality and the fact that most people exhibit very low scores. When the validity tests are performed, there will be an urge need for developing norms for the scale. The question of how to compute superstition scores remains opened. Is the mean a relevant indicator or should we consider using other scoring methods in order to take the distribution asymmetry into account. From which score level should someone be considered as a superstitious person is an issue that we still haven't resolved.

Finally, future research will have to be held in order to assess the validity of the scale. The scale was developed in France and might not apply in other cultures. This constitutes another limitation.

RELEVANCE OF SUPERSTITION IN ECONOMIC PSYCHOLOGY RELATED LITERATURES

Superstition and marketing

As mentioned by Kramer and Block (2008), it is surprising to see that despite the large impact of superstitious beliefs in the economic world, economic and business academic research provides such little interest in superstition. Mowen and Carlson (2003) studied the trait antecedents of superstition and suggested superstition trait was an antecedent of belief in astrology and attitude toward bioengineering. Ang (1997) and Simmons and Schindler (2003) demonstrated that brand names or prices containing lucky numbers were perceived as more favorably. Very recently, Kramer and Block (2008) conducted a series of studies to show that superstition could influence risk taking and product satisfaction judgments. They also give evidence that this influence of superstition can be both conscious and unconscious, but that the unconscious influence is three times higher. The scarcity of academic business research on superstition is even more surprising that, as explained by Kramer and Bloke (2008), superstition has a strong economic impact. It was estimated that in the United States, between \$800 million and \$900 million are lost in business of each Friday the thirteenth because

people do not want to go to work. Some American hotels don't have any 13th floor. And the number of weddings celebrated on the 7/7/2007 increased considerably compared to past years. A wedding agency in the United States (The Knot.com) registered 31 000 weddings on that day compared to 12 000 for an ordinary Saturday of July. As a last example, we can mention that the Beijing Summer Olympic games are scheduled to open on August 8, 2008 at 8 PM. Those examples show that the impact of superstition in economic contexts such as good consumptions, travelling, sports or games is still very high, despite the power of rationality in occidental culture. This is why further research is needed.

Superstition, decision making and counterfactual thinking

From a more theoretical standpoint, superstition could be linked to the decision making literature and more precisely to the field of counterfactual thinking (Kahneman and Miller, 1986). Superstitious choices are often interpreted as irrational. The reality of the irrational nature of a superstitious choice depends on what the person is trying to maximize through his behavior. If a person tries to maximize profit then superstition is probably not the best way to achieve his goal. However, if the person tries to maximize psychological well-being, it might be goal-relevant to act in a superstitious way (Miller and Taylor, 1995). Let's go back to the sailors Alex Thompson and Mike Golding. What was the benefit of their decision to lose the prologue race? Did they really think it would increase their probability of winning the final race? Or did they anticipate that not respecting the superstition that it is bad luck to win the prologue would give rise to higher levels of dissatisfaction in case of a failure? As Miller and Taylor (1995) state it, superstitions could be respected, not because people think they work, but because people anticipate that in case of a failure or an ill-fated event they would "kick themselves" for not having respected the superstition. The psychological discomfort associated with a negative event following a violation to a superstitious belief is anticipated as being higher than the discomfort associated with the same negative event following a decision to respect the superstition. As people try to avoid psychological discomfort, they might decide to respect superstitions. Alex Thompson and Mike Golding probably felt that in case they lost the race, they would at least not suffer from the psychological discomfort associated with "If only I hadn't won the prologue" counterfactual thoughts. The same applies for someone who always bets the same numbers when playing the lottery. The person probably does not associate a higher probability to win to those numbers. It is more likely that he or she anticipates greater regret if those numbers were to win than if other random numbers won. The person would rather lose with other numbers than with his own preferred numbers, even if the loss in both cases is exactly the same.

References

- Ang S.H. (1997), Chinese consumers perception of alpha-numeric brand names, *Journal of Consumer Marketing*, 14,3, 220-233.
- Campbell C. (1996), Half Belief and the Paradox of Ritual Instrumental Activism: A Theory of Modern Superstition, *The British Journal of Sociology*, 47, 1, 151-166.
- Case T.I., Fitness J., Cairns D.R. and Stevenson R. (2004), Coping with uncertainty: superstitious strategies and secondary control, *Journal of Applied Social Psychology*, 34, 848-871.
- Jahoda G. (1969), *The psychology of superstition*, London: Allen Lane.

- Kahneman, D. & Miller, D.T. (1986). Norm Theory: comparing reality to its alternatives. *Psychological Review*, 92 (April), 136-153.
- Kramer T. and Block L. (2008). Conscious and nonconscious components of superstitious beliefs in judgment and decision making, *Journal of Consumer Research*, 34, 783-793.
- Lindeman M., Aarnio K. (2006), Superstitious, magical, and paranormal beliefs: an integrative model, *Journal of Research in Personality*, 1-14.
- Miller D.T. and Taylor B.R. (1995). Counterfactual thought, regret and superstition: How to avoid kicking yourself. In N.J. Roese & J.M. Olson (eds), *What might have been: the social psychology of counterfactual thinking* (pp.305-331). Hillsdale, NJ: Erlbaum.
- Mowen J.C., Carlson B. (2003), Exploring the Antecedents and Consumer Behavior Consequences of the Trait of Superstition, *Psychology and Marketing*, 20 (12), 1045-1065.
- Phillips M.M. (2003), Superstitious abound at camp as soldiers await war in Iraq, *The Wall Street Journal*, Marsh 3, 1.
- Scheibe K.E., Sarbin T.R. (1965), Towards a Theoretical Conceptualisation of Superstition, *The British Journal for the Philosophy of Science*, 16 (62), 143-158.
- Schippers M.C., Lange P.A.M. (2006), The Psychological Benefits of Superstitious Rituals in Top Sport: A Study Among Top sportspersons, *Journal of Applied Social Psychology*, 36, 10, 2532-2553.
- Simmons L.C. and Schindler R.M. (2003), Cultural superstitions and the price endings used in Chinese advertising, *Journal of International Marketing*, 11, 101-111.
- Subbotsky E. (2005), The Permanence of Mental Objects: Testing Magical Thinking on Perceived and Imaginary Realities, *Developmental Psychology*, 41 (2), 301-318.
- Wiseman R., Watt C. (2004), Measuring superstitious belief: why lucky charms matter, *Personality and Individual Differences*, 37, 1533-1541.