



Inaugural Address

Of Rats and Brands: A Learning-and-Memory Perspective on Consumer Decisions

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**Of Rats and Brands:
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on Consumer Decisions**

Inaugural Address

Address given in shortened form at the occasion of accepting
the appointment as Professor of Marketing (specializing in Consumer Behavior)
at the Rotterdam School of Management at Erasmus University
on October 29, 2004

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Abstract

When consumers evaluate or choose products, they rely on what they have learned and can remember about those products' characteristics, such as brand names, ingredients, or features. Several experiments suggest that even rather sophisticated patterns of product evaluation and choice can be explained by simple associative learning-and-memory processes, which show similarities to those found in rats, dogs, and other animals. Strategic implications for brand management and public policy, theoretical implications for the study of human learning and memory, and directions for future research are outlined.

Over Ratten en Merken: Consumentenbeslissingen Vanuit een Leer- en Geheugenperspectief

Consumenten beoordelen en kiezen producten op basis van wat zij geleerd hebben en zich kunnen herinneren over karakteristieken van die producten, zoals merknamen, ingrediënten, en andere kenmerken. Onderzoek besproken in deze oratie geeft aan dat zelfs gesofisticeerd beslissingsgedrag van consumenten verklaard kan worden door bijzonder simpele associatieve leer- en geheugenprocessen. Opmerkelijk is dat deze processen gelijkenissen vertonen met processen die ook bij ratten, honden en andere dieren voorkomen. Naast theoretische implicaties op het gebied van de menselijke geheugen- en leerpsychologie worden ook strategische implicaties en voorschriften voor brand management en de bescherming van het consumentenwelzijn belicht. De oratie eindigt met een beschouwing van toekomstig onderzoek en een dankwoord.

*Mijnheer de Rector Magnificus,
Geacht College van Decanen,
Distinguished Colleagues,
Ladies and Gentlemen,*

It is with honor and pleasure that I accept the appointment as Full Professor of Marketing (specializing in Consumer Behavior) at Erasmus University by giving this inaugural address entitled “Of Rats and Brands: A Learning-and-Memory Perspective on Consumer Decisions.”

“Of rats and brands,” when you read this title, what do you think? You might expect a story about how primitive consumers are, or perhaps a story about how consumers are unfairly being manipulated by evil, rat-like companies. Don’t worry, my message today is a lot less pessimistic, both for people and for rats.

What I would like to do this afternoon is to give you an overview of the research I have been doing, am doing, and plan to do in the near future. That research does start with rats, pigeons, and other animals. Not that I’ve ever done experiments with animals myself – I’m way too scared of animals – but I found they certainly can teach us something about brands and how consumers make decisions. In fact, studies of the way animals learn and remember provide simple rules for predicting sophisticated patterns of consumer decisions and brand valuations.

Examples of Drooling Dogs and Anxious Rats

You might think, what can we possibly learn about brands from experiments about animals? Animal experiments on the psychology of learning, isn’t that passé, behaviorist psychology from the first half of the previous century. What could they ever tell us about how modern consumers deal with modern brands? Let me give you some examples.

Cue Competition

In his 1927 book, Pavlov reports some experiments in which dogs learn about the relationship between two tones and the appearance of food. For example, Pavlov would present two distinct but simultaneous tones followed by the appearance of food. He would do this repeatedly and, after a while, the dogs would start to salivate as soon as they heard

the two tone-combination. Interestingly, if he then presented each of the tones separately, on its own, the amount of salivation decreased dramatically. In addition, salivation in such test situations with a single tone after training with two tones was much less than if he had tested and trained with a single tone. Thus, training with two tones prevents dogs from fully learning the relationship between each of the two tones separately and the appearance of food.

What could these drooling dogs possibly tell us about brands? What is the relationship between dog learning and selling groceries or cars? Here is the analogy. When brand managers decide how to communicate about their brands, they can choose to use just the brand name or to “support” the brand name with information about an attribute or ingredient. For example, a brand manager at Unilever can try to teach consumers that Calvé peanut butter tastes great, or that Calvé peanut butter contains 93% peanuts and tastes great. We tend to teach our students that brand managers should use such supporting attributes, that if people think 93% peanuts is a good thing, we should use this information in our advertising to make our claim that Calvé tastes great more credible. So what would Pavlov have to say about this? Well, probably nothing directly as the USSR wasn’t really into brands in the 1920s, but Pavlov’s research on dogs suggests the credibility boost may be true, but there’s a downside too. Instead of strengthening the link or association in consumers’ heads between Calvé and great taste, inclusion of the 93% peanuts attribute could weaken the association between Calvé and great taste. Let me show you how the Calvé example and the salivating dogs relate. Basically, tones on the one hand and brands and product attributes on the other hand, are cues that allow human or nonhuman animals to predict outcomes, such as the appearance of food or the great taste you experience when consuming Calvé. Thus, learning to predict food based on hearing two tones is like learning to predict great taste based on seeing Calvé and 93% peanuts. In sum, Pavlov’s work inspires the prediction that teaching consumers about a brand and an attribute at the same time in relation to a consumption outcome, weakens the association between the brand and the outcome. It’s as if part of your “brand equity,” or value of the brand is not in the brand at all, but has shifted to the attribute. This is a problem when you then use the brand to introduce a new product in a product category in which you cannot use the attribute, for example, when you introduce Calvé ketchup, which obviously does not contain 93% peanuts. In that case, you would have been better off promoting just the Calvé when you promoted the original peanut butter. Using different stimuli, this is exactly what Joe Alba and I showed in the lab using human participants, as documented in our paper “Locus of Equity and Brand Extension” that was published in 2003.

Another problem when equity shifts from brands to attributes is what happens when others start imitating your attributes. If what makes people predict good taste is not Calvé, but 93% peanuts, what happens when Aldi introduces a no-name peanut butter that also contains 93% peanuts? Clearly, consumers would not continue to pay that extra euro for a jar of Calvé.

Blocking

Luckily for Calvé, some experiments on rats by Kamin in the 1960s suggest things may not always be that dramatic. Kamin took one group of rats and showed them a combination of a tone and a light followed by an electric shock. As expected, when he did this a number of times, the rats began to show signs of distress as soon as the tone-light combination occurred. If he then tested with the tone separately, the rats responded to the tone much less than if he had trained the rats with just the tone, without the light. Thus, exactly the same scenario as with Pavlov's dogs, adding the light to the tone inhibits learning of the relationship between the tone and the electroshock. Or, stressing 93% peanuts on the Calvé peanut butter jar weakens the association consumers learn between the Calvé brand name and great taste. Kamin, however, also tried another scenario. Another group of rats first heard only the tone, no light, followed by the shock a few times and only then were exposed to learning trials in which the tone-plus-light combination was coupled with shock. What he found when he then tested the rats with the tone on its own, was that responding to the tone had hardly been hurt by the presence of the light in the second set of training trials. He also found that learning about the light had been "blocked." That is, the rats hardly responded to the light when it was tested on its own. The implication should be clear. When consumers learn to associate a brand name with an outcome before being exposed to the attribute, attribute information is much less damaging to the equity of the brand. That is, as long as consumers learn that Calvé tastes great before learning Calvé has 93% peanuts, they will continue to value Calvé and their learning that 93% peanuts predicts good taste will be blocked. Thus, they may not think much of the new, generic peanut butter with 93% peanuts at Aldi. This is what Joe Alba and I show in our article "Consumer Learning and Brand Equity" published in the year 2000.

Conditioned Inhibition

Pavlov (1927) also introduced the following phenomenon. If you first repeatedly pair one cue, say a tone, with an outcome, say the appearance of food, animals learn to predict the

appearance of food on the basis of the tone, as evidenced by salivation or some other response. Next you start alternating learning trials in which the tone appears by itself and is followed by the appearance of food with trials in which the tone appears together with a light, and the combination is followed by nothing. What happens? Do you expect that if you would now test the tone by itself, you would find a severely decreased response because the tone is not followed by food in half the cases – those cases in which the tone was coupled with a light? That does not happen. What happens is that the tone remains just as powerfully associated with food as in the first phase, where there was only a tone and that tone was always followed by food. At the same time, the light develops a very strong negative association with the appearance of food. That is, animals learn that the light prevents the appearance of food. This phenomenon is called conditioned inhibition.

What does this tell us about brands? This effect has clear implications for managers trying to brand a portfolio of products. For example, a number of years ago, the high-end Marriott chain of hotels decided to introduce a number of lower-end hotels. Managers at Marriott basically had three options, they could call the new hotels Marriott, give the new hotels a new name, for example Courtyard, or use both the family brand name and a sub-brand name, Courtyard by Marriott. Which one would you choose? Based on the rat-learning literature, it is quite clear. If you use a new name, few people will try the new Courtyard, because they know nothing about it. Courtyard has no strong associations in consumers' heads. If you use Marriott for both the old, high-end, and new, lower-end, hotels, the strong positive associations many consumers have with the Marriott brand name will make it more likely that consumers will try the new hotels. However, the not-so-good experiences they may have at the new, lower-end, hotels may severely weaken Marriott's positive associations, even if consumers continue to visit regular Marriotts every once in a while. Thus, you're trading off positive initial expectations, and hence many people trying the new hotels, with long-term damage to your core brand and, hence, core business. Pavlov's work suggests a much better option – just replace tone with Marriott and light with Courtyard. If you call the new hotels Courtyard by Marriott, initial expectations will be based on the positive associations consumers have with Marriott, but if their experience at the new hotels is sub-par, the Marriott associations will be protected while the Courtyard name picks up the negative associations. In a way, the sub-brand name, Courtyard, takes the blame and protects the family brand name, Marriott, and the higher-end hotels from damage. In sum, as Chris Janiszewski and I showed in 2000, if you introduce a new product, it is a good idea to sub-brand the new product.

Sophisticated Rats

This is nice. Rats, pigeons, and dogs can tell us something about consumers' responses to brand names. Is this the great contribution to the study of consumer psychology, just re-doing Pavlov with peanut butter? Can we say something more general about how consumers make decisions? Maybe the conclusion is, consumers are like animals, hence primitive. Well, not quite. Humans are somewhat like animals, but you could also say animals are like humans, and quite sophisticated.

Let's go back to the animal learning phenomena I just discussed. In 1997 and 2004, Patricia Cheng at the University of California at Los Angeles published articles explaining some of these animal learning phenomena from a rational perspective. Let us look at Pavlov's example of the two simultaneous tones or at the simultaneous exposure of consumers to Calvé and 93% peanuts. If there is just one tone, or just Calvé, it is quite clear what causes the appearance of food or the great taste, it has to be the tone/Calvé. However, when you have two tones, or Calvé and 93% peanuts, things are not that clear. Is it the Calvé that makes this peanut butter taste great, or is it the 93% peanuts? This uncertainty decreases the value of the Calvé brand. Thus, there is nothing irrational about cue competition.

Now, let's look at blocking. Initially, the tone appears without the light and it is quite clear to the rats what causes the electroshock. It must be the tone. Later the tone and light appear together, followed by the electroshock. The light, thus, never occurs without the tone, so it is impossible to figure out if the light by itself causes shock. Also, if a rat can already perfectly predict the shocks based on the tone, why learn about the light, it's redundant. A similar story can be told about initial exposure to Calvé and later exposure to Calvé and 93% peanuts. Thus, according to Cheng's theory, a rational thinker would be confused about the importance of the peanuts too.

Finally, let us consider conditioned inhibition and the Marriott example, where Marriott hotels were good quality, and Courtyard by Marriott hotels did not quite reach the same quality level. By using the sub-brand name, consumers can easily learn to distinguish between the two types of hotels and quickly learn to correctly predict each type's quality level. The same goes for animals with a tone, a light, and the appearance of food. This behavior is not stupid or primitive.

The high level of rationality and efficiency of complex consumer behavior might be taken to suggest that this behavior is governed by sophisticated reasoning processes about what causes what. However, the fact that consumer behaviors are consistent with what you would find if consumers would think hard, and think rationally, about brands does not necessarily mean that the behaviors are actually the result of such rational, high-level reasoning processes. In fact, rational and complex behaviors could be caused by simple associative-learning processes. This is a question Joe Alba and I researched in our 2000 paper. Surprisingly, our findings did not suggest that consumers' sophisticated behavior in our experiments was driven by sophisticated reasoning processes. Instead, presumably like the rats, our findings suggested consumers' sophisticated behavior was driven by a simple associative learning process.

Simple Sophistication

Thus, consumers are indeed like rats, but you could just as well say that rats are like consumers, and both are quite sophisticated, and quite efficient too. One nice thing is that this whole set of examples can be explained in terms of associations in people's or animals heads that are changed in parallel according to a very simple learning rule. In other words, quite complex and sophisticated behavior by humans and animals can be explained in terms of very basic connections in a human or nonhuman animal's head that are formed and changed by a simple learning process. No deep strategic thinking needed.

Let us take the blocking example. It is too unpleasant to talk about electroshocks, so let us look at the Calvé situation. A consumer shopping for peanut butter and deciding whether or not to buy Calvé for the first time, would have to make a prediction about the taste of this product. There are two cues that the consumer could potentially use to predict taste, the Calvé brand name, and 93% peanuts. Thus, taste has to be predicted based on one or both of two associations or links in the consumer's head, between Calvé and taste, or $s_{\text{Calve-taste}}$, and between 93% peanuts and taste, or $s_{\text{93\%peanuts-taste}}$. These associations are combined according to the following rule:

$$\text{Predicted taste} = (a_{\text{Calve}} * s_{\text{Calve-taste}}) + (a_{\text{93\%peanuts}} * s_{\text{93\%peanuts-taste}})$$

, where a reflects the activation of a cue, which is determined by whether the consumer sees that cue or not. Thus, $a_{\text{93\%peanuts}} = 1$ if, for example, the peanut butter jar mentions that it contains 93% peanuts, and $a_{\text{93\%peanuts}} = 0$ if it does not. $s_{\text{Calve-taste}}$ is the strength of the

association between Calvé and taste, or how strong the link in people's heads is between Calvé and good taste. $s_{93\%peanuts-taste}$ is the association between 93% peanuts and great taste. How, then, is the s determined? Basically, it depends on how close your predicted taste is from the actual taste you experience when you eat the peanut butter. For example,

$$\text{Change in } s_{\text{Calve-taste}} = 0.2 * (\text{actual taste} - \text{predicted taste}) * a_{\text{Calve}}$$

, where the 0.2 determines how fast people learn. Depending on the situation, this number could be higher or lower. The next term is the difference between actual taste and predicted taste, or actual taste minus predicted taste. If the actual taste when you take a bite of the Calvé peanut butter is better, or higher, than the taste you predicted, this term is positive and, therefore, you change the association between the Calvé brand name and great taste in a positive way. Calvé tasted better than you expected so you need to increase your predicted taste next time. If, however, the actual taste was worse than predicted, the difference is negative, and you have to weaken the association between Calvé and great taste so that your next prediction is lower, and more correct. The inclusion of the a means that there is no change if the Calvé cue is not present. This makes sense. How can I learn about Calvé if the word Calvé is not mentioned on the jar?

Error-driven Learning Rule

These two simple equations are referred to as the Rescorla-Wagner model in the animal learning literature, but also exist in the literature on neural networks in engineering and cognitive psychology. These equations encode a few important characteristics. One is that rats and consumers learn to reduce prediction error. That is, they try to reduce the error in their prediction, or the difference between actual and predicted taste. Learning takes place only insofar as predicted outcomes do not match actual outcomes. This characteristic plays an important role in blocking. In the first phase of a blocking experiment, one cue, say the Calvé brand name, is presented on its own. Thus, the consumer has to learn to predict taste quality based on that cue, Calvé, alone, or

$$\text{Predicted taste} = (1 * s_{\text{Calve-taste}}) + (0 * s_{93\%peanuts-taste})$$

Now let's say that the peanut butter tastes great and that great actual taste is represented as a 10 on the taste quality scale. The learning rule will make sure that (actual taste - predicted taste) = 0, that is, that predicted taste equals actual taste. The only way in

which the predicted taste can come to 10 in the first phase of a blocking experiment, is when the association between the Calvé brand name and taste is strong and positive, equal to 10, or

$$\begin{aligned} \text{Predicted taste} &= \text{actual taste} = 10 = (1 * s_{\text{Calve-taste}}) + (0 * s_{93\% \text{peanuts-taste}}) \\ \Rightarrow \text{Predicted taste} &= \text{actual taste} = 10 = (1 * 10) + 0. \\ \Rightarrow s_{\text{Calve-taste}} &= 10 \end{aligned}$$

In the second phase of a blocking experiment, we add a second cue, let's say 93% peanuts. Let's assume that the consumer doesn't know yet how good or bad 93% peanuts is. Thus, the initial association strength between 93% peanuts and taste quality is equal to 0. As a result, the first time the consumer encounters Calvé with 93% peanuts, the predicted taste is as follows:

$$\begin{aligned} \text{Predicted taste} &= (1 * s_{\text{Calve-taste}}) + (1 * s_{93\% \text{peanuts-taste}}) \\ , \text{ where we know that } s_{\text{Calve-taste}} &= 10 \text{ and } s_{93\% \text{peanuts-taste}} = 0, \text{ hence} \\ \text{Predicted taste} &= (1 * 10) + (1 * 0) = 10 \end{aligned}$$

The actual great taste of the peanut butter has not changed and is still a 10, therefore predicted and actual taste are the same and no learning takes place. Learning about 93% peanuts is blocked. Basically, the consumer has already learned that the Calvé brand name perfectly predicts the great taste of Calvé peanut butter, so why learn anything about the 93% peanuts. It makes you buy needlessly expensive peanut butter, but you do save the neurons in your head quite a bit of work. In sum, the first main characteristic of rat and consumer behavior alike is that it is adaptive, it is geared at reducing prediction error and little learning takes place once prediction is correct.

Additive Prediction Rule

The second characteristic, the additive prediction rule, also plays an important role. As a refresher, I said that

$$\text{Predicted taste} = (a_{\text{Calve}} * s_{\text{Calve-taste}}) + (a_{93\% \text{peanuts}} * s_{93\% \text{peanuts-taste}})$$

, where a reflects the activation of a cue, which is determined by whether the consumer sees that cue or not, and s reflects association strength. The example I will use here is the

one in which consumers, from the start, encounter the Calvé brand name and 93% peanuts simultaneously. Thus, there is no learning about the Calvé brand name before being exposed to the combination of Calvé and 93% peanuts, which would be a blocking design. To correctly learn to predict the great taste of the peanut butter, a 10, the following again has to be true:

$$\text{Predicted taste} = (1 * s_{\text{Calve-taste}}) + (1 * s_{\text{93\%peanuts-taste}}) = 10$$

That is, the sum of the two associations has to equal 10. Because this time, Calvé doesn't have a head start, it will not pick up the whole 10. In fact, if Calvé and 93% peanuts are equally salient and consumers don't know anything about the two cues beforehand, you will find that

$$\text{Predicted taste} = (1 * s_{\text{Calve-taste}}) + (1 * s_{\text{93\%peanuts-taste}}) = (1 * 5) + (1 * 5) = 10$$

Thus, unlike when the brand is learned about before introducing the attribute information and unlike when no attribute information is ever introduced, the brand is hurt by the simultaneous presence of the attribute information. This is true because predicted taste quality is an addition, or sum, of associations.

General Implications

In addition to explaining the phenomena of cue competition, blocking, and conditioned inhibition I discussed at the beginning of this address, can the simple principles of additive prediction and error-driven learning be used to derive any more general implications? Without going into the math, can I say something general about the way consumers deal with brands based on these principles? The answer to this question is an emphatic yes.

Equity Is Not Just In Brands; Look At Attributes Too

Some general implications have already been covered implicitly. As shown in the very first Pavlov example of simultaneous exposure to Calvé and 93% peanuts, good attributes or ingredients, instead of strengthening a brand name, can actually compete with it. Marketers should be conscious of that and may mitigate the damage to their brands by reducing their stress on attributes or ingredients in communicating with consumers or

by trying to block learning about the attributes by making sure people learn about brands first. The general point that equity is not only in brands, and that brands and attributes may compete, does not only have implications for brand managers. Public policy makers should be conscious of competition between brands and attributes too. If it is the 93% peanuts that make the peanut butter taste great, public policymakers should want consumers to learn that and may try to make sure product packaging, for example, makes it easy for consumers to learn that it's the 93% peanuts that determine quality.

Don't Promise What You Can't Fulfill

Here is another general implication. Over time, the associations from brands and sub-brands, or brands and attributes, have to add up to the actual level of a consumption outcome. Thus, if those association strengths add up to a predicted level that is higher than the actual level, the association strengths have to come down. For example, as Chris Janiszewski and I confirmed in our year 2000 paper, if you start an ingredient- or co-branding strategy, you risk overprediction with negative consequences for both brands. Let me clarify. Let us say you have two brands that people already have strong positive associations with. For example, in the US, Kellogg's Pop Tarts, which are square pastries filled with jelly that you can heat up in a toaster, is a well-known brand associated with great taste. Smucker's jelly is also a well-known brand associated with great taste. Next, Kellogg's, without changing the taste of the product, decides to start mentioning on the Pop Tarts package that it contains Kellogg's Pop Tarts with Smucker's jelly. Consumers already associate both the Kellogg's brand name and the Smucker's brand name with great taste. Thus, each brand name by itself would be sufficient to predict great taste. Putting the two brand names together in an ingredient branding strategy, because association strengths are combined according to an additive prediction rule, leads consumers to predict a greater-than-great taste. If that greater-than-great taste does not materialize, the greater-than-great predicted taste is better than the just great actual taste. Here is where the error-driven learning rule comes in. Now, there is a negative difference between actual and predicted taste, and therefore the strength of both associations has to be reduced. That is, both brands lose equity. Thus, the specific implication for marketers is: Ingredient- or co-branding may lead to increased sales in the short run, but in the longer-term may dilute your brand's equity. On a more general level, the implication is, don't promote something you cannot make good on. Don't make promises or promote predictions you can't fulfill. In the end, rats, pigeons, and even consumers figure it out.

Consistency And The Single Best Predictor

For reasons that I will not discuss in detail, the combination of additive prediction and error-driven learning also gives a large precedence to the single best predictor of a consumption outcome. Here is an example of an experiment I ran with Joe Alba. Let us say there are four brands of orange juice. Two brands are made from concentrate. That is, the oranges are pressed, the water is taken out of the juice, and the resulting concentrate is transported and stored, after which water is added again to make “from concentrate orange juice.” The other two brands are fresh, that is not-from-concentrate. For each juice, consumers are simultaneously exposed to the brand name and whether it’s from concentrate or not from concentrate. They taste each juice several times and the not from concentrate juices taste better than the from concentrate ones. Let us assume the brands and the goodness or badness of being from concentrate or not, were unknown to the consumers prior to tasting. What do the consumers learn? They learn to value the single best predictor of taste quality, whether or not the juice is from concentrate, and do not place much value in the brands when buying orange juice.

And if the situation would be one in which there’s two brands, say Tropicana and Minute Maid, that both make from concentrate and not-from-concentrate juices, and all the not-from-concentrate juices are much better than all the from-concentrate juices, it’s even clearer. Consumers, or rats, would very quickly figure out the brands are meaningless.

Let me give you another example, the Chevrolet car brand. Chevy builds many different products, the Corvette sports car, big pickup trucks, small cars, large traditional American cars. These vehicles are built in the US Midwest, California, Korea, Japan, and Mexico, and have wildly different prices. If despite all these differences in attributes, consumption outcomes would be constant, for example if all Chevy vehicles all had the same high level of reliability, Chevy would be the most valued car brand in the world and people would be willing to pay thousands of dollars extra for a car that sported the Chevy brand. However, consumption outcomes such as reliability vary widely between Chevy products and consumers quickly learn that the Chevy brand name is meaningless. In this case, there isn’t another attribute that clearly predicts quality in Chevies, leaving consumer completely confused. The result is that consumers were willing to pay several hundreds of dollars more for a Toyota Corolla than a Chevy Prizm, despite the fact that these were virtually identical cars made on the same production line at Toyota and General Motors’ joint production facility in California.

Thus, make sure your brand is the single best predictor of specific, important, and positive consumption outcomes. This requires consistency. Let's look at Royal Philips Electronics. In their previous advertising campaign, Philips's slogan was "Let's Make Things Better." This is a typical slogan for a company whose products have nothing in common. Like Chevy, there were reliably and unreliably Philips products. There were products with cutting-edge design and products that were looked utterly undistinctive. There were complex products and simple products, and cheap and expensive ones. As a result, Philips means very little in particular to most people. It is to be hoped that Philips's new campaign, Sense and Simplicity, will help make the Philips name a brand. Of course, the success of the Sense and Simplicity campaign remains to be seen. Unless all Philips products consistently provide Sense and Simplicity, spending millions on an advertising campaign will do little more than tell consumers once again that the Philips brand means absolutely nothing.

Conclusion

In conclusion, a lot of my research suggests that consumers are like rats, but that rats aren't all that dumb. Quite sophisticated consumer behavior and sensible implications for marketing and public policy are explained by very simple associative learning processes. These simple processes work well for consumers most of the time, allowing them to figure out quickly and easily what product characteristics really determine product quality. However, care must be taken to help them avoid mistakes in the few situations where the simple processes are too simple, as when they fail to learn that it is the active ingredient, not the brand name, of a medicine that makes their headaches go away.

Two Learning-and-Memory Systems

The next question you might ask is, "are there any other processes that consumers use to evaluate and choose products, surely this rat thing is not the only thing we do?" You will be happy to hear Chris Janiszewski and I found another process and have, in collaboration with Marcus da Cunha, proceeded quite a ways in documenting the characteristics of this process. However, you will likely be unhappy to hear this process is even simpler than the previous one.

We found that in some situations, phenomena such as blocking don't occur. In those situations, the way consumers, and people in general, learn and make decisions was very different. Basically, the process I described above learns to determine the subjective value of

each product characteristic. When products then have to be evaluated, consumers just construct the evaluation of this product by adding up the values of their individual and separate characteristics. For example, consumers who have learned that Smucker's jelly and Kellogg's Pop Tarts are good things, can construct an evaluation of the new Kellogg's Pop Tarts with Smucker's jelly by adding up the separate values of Kellogg's and Smucker's. However, it turns out people can also evaluate new products by looking at the whole new product and simply judging how similar this whole product is to other whole products they have experienced in the past. Interestingly, this process does not lead to the Pavlovian effects I have just discussed, such as, in this case, overprediction, but also cue competition, blocking, and conditioned inhibition. Whereas the Pavlovian process leads to inflated expectations of the new Kellogg's Pop Tarts with Smucker's jelly, the similarity-based process does not. Thus, responses to branding strategies depend on which of two learning-and-memory systems consumers use, which in turn depends on a number of factors, most of which I won't bother you with. I would like to mention a few important ones. As Chris Janiszewski and I showed in our 2001 and 2004 articles, the similarity-based process is not much of an issue when consumers learn by experience and choose products themselves, but is strongly active when the product to be evaluated is highly similar or identical to products experienced before. The latter makes intuitive sense. Why would you build up an evaluation of a product from its individual, separate characteristics if you can just recall how much you liked the same product when you tried it before, which seems a much simpler operation.

On a theoretical note, I am particularly proud of this two-process theory because of its wider implications beyond the study of brands. It turns out our theory can explain a number of phenomena in human and animal associative learning that cannot be explained by single-process models of associative learning. It requires a redesign of the way we think about human and animal learning in general.

Finally, it should be noted again that this similarity-based process is also super-simple, and there is some evidence that rats may be able to use this process too...

Present and Near Future

At this point, I think you have a good idea of what I have been doing. Next I would like to discuss some plans for future research and how I think these fit in at Erasmus. In the grand scheme of things, what I try to do is to bring the psychology, and especially the psychology of basic processes such as learning and memory, into the study of human decision making. After years in which human decision making has been looked at primarily in terms of demonstrating its deviations from the predictions of economic theory, researchers such as myself have started to focus on the psychological processes that underlie human decision making. Whereas others have begun to integrate the study of emotions with the study of human decision making, my focus has been on exploring the learning and memory processes involved in decision making. I believe a lot of important and interesting work is to be done investigating the roles of basic processes such as learning and memory, but also perception, motivation, and emotion, in human decision making.

The study of basic psychological processes such as learning increasingly involves formal modeling, the study of dynamics, and the application of neuroimaging techniques. I believe these developments have important implications and provide great opportunities for research. For example, because learning is a dynamic thing, our work has helped to bring about a dynamic view of consumer preferences, not just looking at what consumers' preferences are now, but also looking at where consumers' preferences came from and where they are likely to go under different scenarios. For example, instead of blindly choosing to call the new hotels just Marriott and measuring what happened to the Marriott brand name after the decision has been made, a dynamic model allows us to figure out in advance what the consequences will be of calling the new hotels Marriott, Courtyard by Marriott, or Courtyard.

I believe Erasmus is a great place to do research on the role of basic psychological processes in consumer decision making. Work by my colleague Ale Smidts and others evidences a strong tradition of research on decision making at Erasmus. We have some very talented memory researchers in our psychology department and my colleague Joëlle Vanhamme has a strong interest in consumer emotions such as surprise. I am especially excited about the possibilities in the areas of modeling basic psychological processes in decision making and of investigating the neuropsychological aspects of decision making. At Erasmus, we have a strong tradition in the empirical modeling of marketing phenomena and, maybe even more important, a tradition of multidisciplinary and a willingness to

look beyond the borders of our own subfields. Imagine an econometrician working with a psychologist on behavioral models of consumer decision making. In the area of neuropsychology, Ale Smidts and his team are pioneering the budding field of neuromarketing. Finally, when one looks at a map of the world, it is striking that quite a few marketing academics with interests in basic psychological processes seem clustered in Northwestern Europe, at places such as Insead, London Business School, Tilburg, and Leuven.

Let me talk a bit about one specific new project I am working on. This project nicely illustrates my interest in looking at the role of basic psychological processes in consumer decisions, making use of formal, dynamic models. Chris Janiszewski and I are working on a model of consumer decisions involving multiple outcome dimensions. For example, when people choose between cola and beer, their decision is not a function of a single consumption outcome, say taste, but of multiple outcomes, taste, but also whether the product wakes them up, helps them cool down, or helps them relax. This model involves (1) motivation –the outcomes function as goals that are differentially important in different situations –, (2) memory –because the choice of products depends on how easy it is to recall products and goals, (3) learning –because the choice depends on consumers learning of, for example, the relationship between cola and waking up –, and (4) decision making, because the end-result we look at is what product people choose. In addition this model is dynamic due to the learning, and formal, because it uses simple equations to describe all the operations in the model.

Some other projects I am working on also integrate the study of basic psychological processes with consumers evaluation and choice of products. For example, Wouter Vanhouche, Angela Lee, and I are investigating unlearning and how learned brand evaluations deteriorate over time. In another project, Wouter Vanhouche and I further explore the aforementioned two-process theory of consumer learning-and-memory, and its impact on consumer decisions. We find that product information that deteriorates consumers' ability to choose the products that are best for them through the first process, can actually improve consumers' judgments over time through the second process. Thus, information that marketers could give to make their products look better than they are, can actually come back to haunt those marketers by actually helping consumers recognize those products' inferiority. Finally, Steven Sweldens, Simona Botti, and I have started to investigate the relationships of our two learning-and-memory processes with the often-made distinction between more deliberative, thoughtful decision processes and more intuitive decision processes.

At this point, I hope you have an idea of where I've been, where I am, and where I'm going. I hope I've been able to communicate some of the excitement that makes this job feel so much like a hobby.

Concluding Remarks

At the end of this inaugural address, I would like to thank all those who contributed to my appointment at Erasmus and who helped me along on the road that took me here. I would like to thank the following persons:

Distinguished Board and President of Erasmus University, Distinguished Professor Verhaegen, Distinguished Professor van Dissel,

I am very grateful for the confidence and opportunity you have given me by offering me this appointment. It takes guts and vision to offer a full professor position to somebody who was merely 30 years old at the time the initial job offer was made. I look forward to many years of cooperation in a continued quest for excellence in research, teaching, and collegial service.

Distinguished Professors van Bruggen, Wierenga, and Smidts, dear Gerrit, Berend, and Ale,

Just a few years ago, we were relative unknowns to each other. I had had breakfast with Gerrit once in 1997 in State College, Pennsylvania, had shaken hands with Berend in 2000 at UCLA, and had been heckled once by Ale while presenting a paper in Wiesbaden in 2001. That was about it. Since arriving in Rotterdam, I have found you to be great colleagues. Gerrit, thanks for being an amazing head of department and a wonderful sounding board. Berend, thanks for your warm supportiveness and for creating, through the Erasmus Research Institute of Management, an environment that facilitates and rewards excellent research. Ale, thanks for keeping my feet firmly on the ground. It is nice and important to have somebody who sends the necessary "earth to Stijn" message every once in a while. Above all, I am extremely pleased that our department is managed in such a collegial and efficient way.

Distinguished Colleagues in the Marketing Groups at Erasmus University,

I am grateful for a wonderful set of colleagues in the Faculties of Business and Economics. Together, as Erasmus Marketing, we are already a top-three research group in Europe and top-20 world-wide. We do a good job on the teaching front. It is great to have such warm and constructive colleagues. You make it great fun to come to work every morning. I think we are on the right track and will do everything I can to make the place

even better – even more productive and excellent in terms of teaching and research, while enhancing and defending the warm and supportive atmosphere that allows us to live up to our highest potential. I would like to extend a special word of thanks to Anja Lakwijk and Jolanda Lenstra, who took care of almost all the logistics related to this inaugural address.

Distinguished Teachers and Mentors,

I would like to express my gratitude to those who have helped me along on the route to this glorious occasion. I would especially like to thank the late Mrs. Kragten and Mrs. Eckardt, inspiring teachers in grade school and high school, Paul De Boeck and Paul Webley, my mentors at Leuven and Exeter during college, my colleagues and friends at the University of Chicago, and especially my Ph.D. advisors and co-authors Joe Alba and Chris Janiszewski. It is impossible to overestimate the importance of great teachers and mentors. I will do everything in my power to make good on the time, effort, and trust you have invested in me. One way I will try to do that is by working very hard to become as good a teacher and mentor to my students as you have been to me.

Distinguished Co-Authors and PhD Students,

Over the years, I have enjoyed the collaboration and support of many co-authors. In addition to Joe Alba and Chris Janiszewski at the University of Florida, I thank Luk Warlop at the Catholic University Leuven, S. “Ratti” Ratneshwar at the University of Missouri, Marcus da Cunha at the University of Washington, Puneet Manchanda and Suresh Ramanathan at the University of Chicago, Wouter Vanhouche at the University of Florida, Angela Lee at Northwestern University, Simona Botti at Cornell University, Peeter Verlegh at Erasmus University, Tammo Bijmolt at the University of Groningen and several others. I would also like to thank my Ph.D. students, Valentina and Steven, for allowing me to look over their shoulder while they learn the trade. I look forward to a fruitful cooperation for years to come.

Distinguished Students,

During the past year, I have tremendously enjoyed teaching the second-year International Business students. Thank you for making the experiment with MBA-style teaching to a group of over 300 undergraduates a success. Thanks also to my thesis students and the students participating in the 2004 ERIM Honors Class. You are the best! Let us continue on the path of making our educational programs better, tougher, and more competitive with the best around the world.

Dear Family and Friends,

I am very grateful for your support and friendship, which have allowed me to become who I am. I would especially like to thank my mom and dad, my father-in-law, and my sons Willem and Johannes. Bringing our children and their grandparents together was an important reason to leave Chicago and return home. Mama, papa, and vake Paul, it is wonderful to see Willem and Johannes flourish in your presence. You give them a kind of emotional and intellectual attention that no amount of money can buy. I am happy that teary-eyed goodbyes at crowded airports are a thing of the past. Willem and Johannes, thank you for filling our house with smiles, hugs, laughs, and lots of animal sounds. There is no better stress reliever than pulling into the driveway, seeing the second-floor bathroom window open, seeing two little heads pop out, and hearing an enthusiastic “hi papa,” “papa is thuis,” and perhaps a “moo,” an “ee-oor,” or a “mèèèèèh” or two.

Dear Ineke,

I remember us arriving in Florida, not long after we met, with two suitcases and no real plan. Thank you for taking the plunge with me. Thank you for everything we have shared over the past ten-or-so years and thank you in advance for everything we will share in the future.

Ik heb gezegd.

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