14 Consumer involvement: review, update, and links to decision neuroscience

*Judith Lynne Zaichkowsky*

14.1 CONSUMER INVOLVEMENT: THE BIRTH IN CONSUMER BEHAVIOUR

The date was October 1980, the place was Arlington, Virginia, the venue was the eleventh annual conference of the Association for Consumer Research. It was 8 a.m. and the first session of the conference was entitled: “Emerging Issues in Low Involvement Theory”, a special session involving the who’s who of consumer behaviour researchers of the era. The chairs for the session were Rich Lutz of the University of California, Los Angeles and John Cacioppo of the University of Iowa. The goal of the session was to clarify the conceptual properties of the low involvement construct and to provide direction for future research.

Four papers were presented to address the implications of involvement for understanding consumer behaviour:

(1) “What is Low Involvement Low in?” by Clark Leavitt, Anthony Greenwald and Carl Obermiller, Ohio State University
(2) “Issue Involvement as a Moderator of the Effects on Attitude of Advertising Content and Context” by Richard Petty, University of Missouri and John Cacioppo, University of Iowa.
(3) “The Dimensions of Advertising Involvement” by Andrew Mitchell, Carnegie Mellon University
(4) “Reconceptualising Involvement” by Richard Lutz, University of California, Los Angeles.¹

The discussant was Hal Kassarjian of U.C.L.A. who, a year later, became the co-editor of the *Journal of Consumer Research*. The room was packed and there was nary a place to stand.

The papers inspired great debate and interest from the audience about the theoretical issues and implications for consumer behaviour thought. As the discussion raged, and it actually raged, new doctoral students wondered what all the fuss was about. At that time the literature was heavily

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¹ Presumably this refers to Richard Lutz's work, not University of California, Los Angeles. This note is inserted to correct the reference to the university.
influenced by work in the 70s which focused on information processing. Tangible elements like pricing were the focus of good PhD efforts.

Many found the session both amusing and puzzling in the debate to define and capture a theoretical construct. It seemed these people were talking in circles. In their theoretical review, Leavitt, Greenwald and Obermiller (1981) stated there was no agreement in what constituted high involvement, therefore low involvement was ambiguous. They offered a three stage processing model, with one type of high involvement (elaborated encoding) and two types of low involvement (attentive and inattentive).

Petty and Cacioppo (1981) reported results of an experiment which manipulated the personal relevance of the message, quality of arguments, and the source of the message. They hypothesized “involvement” accounted for the influence of the different factors for persuasion. Andrew Mitchell (1981) then offered yet another conceptual model, of how involvement affects information acquisition, resulting in three different types of information acquisition patterns. His conceptualization was close to Leavitt et al.’s and Petty and Cacioppo’s in that he offered a high involvement process, where individuals devote all their attention to advertising and brand strategy and then two low involvement conditions. His first low involvement condition stated that consumers used a brand strategy with reduced attention, whereas in the second low involvement condition consumers had a non-brand strategy or severe attention deficit.

In the summarization and discussion of these papers, it was clear that low involvement decision making seriously challenged the cognitive orientation of present thinking of consumer research which developed in the 1970s. Kassarjian (1981) stated that it was “unfortunate that a simple instrument or tool has not yet been developed to measure the concept of involvement but if ‘necessity is the mother of invention’ that will come in time – for the measure of levels of involvement is unquestionably a necessity – one that can no longer be ignored” (p. 31).

He further predicted that the simple concept of involvement, introduced in the television advertising domain by Krugman in 1965, may be one of the more important scientific ideas to emerge in consumer behaviour. The topic would alter many, if not most of the conceptions of cognitive theory in consumer behaviour dominant at that time and this was indeed a great turning point in consumer behaviour and marketing research.

The starting point of Zaichkowsky (1985) was to read every academic publication in advertising, marketing, and consumer research containing the construct of involvement. The contribution was not to create something new, but more make sense and order, and link together what was already written in the literature. This reading created a theoretical structure of the
Antecedents of Involvement
Derived from the Literature

Person Factors
- needs
- importance
- interest
- values

Objects or Stimulus Factors
- differentiation of alternatives
- source of communication
- content of communication

Situational Factors
- purchase/use
- occasion

Involvement
with advertisements
with products
with purchase decisions

Possible Results of Involvement
- elicitation of counter arguments to ads
- effectiveness of ad to induce purchase
- relative importance of the product class
- perceived differences in product attribution
- preference of a particular brand
- influence of price on brand choice
- amount of information search
- time spent deliberating alternatives

Note: Involvement = f (Person, Situation, Object). The level of involvement may be influenced by one or more of these three factors. Interaction among persons, situations and objects factors are likely to occur.

Source: Zaichkowsky, 1986b.

Figure 14.1 A framework for the involvement construct

Antecedents and consequences of involvement (see Figure 14.1). It covered products, advertisements, and purchase situations. It was a conclusion of all previous research using the term involvement as applied to consumer behaviour.

14.2 THE PII MEASURE OF INVOLVEMENT

The original published measure of involvement, by Zaichkowsky (1985), continues to be used successfully by researchers looking to capture and categorize motivations to explain differences in individual consumer behaviour (e.g., Peck and Wiggens Johnson 2011). However this measure contained a questionable aspect that was not recognized during the
completion of the dissertation by the author or by any of the PhD committee. There were 20 semantic differential items in the original measure. These items had been carefully screened and tested for validity and reliability over many different subjects and many different contexts. However, upon publication of the article, it was clear that there was imbalance and redundancy in the 20 item scale.

While all the literature on test development at that time suggested a minimum number of items, these procedures were rooted in psychology and education (French and Michael 1966; Nunnally 1978) and pertained to IQ tests or measures of personality traits. Churchill (1979) had also published an article on developing better measures for marketing and there were no insights to the potential overkill measurement problem in his writings. The construct which was conceptualized, and was trying to be captured, was a little different than the constructs for which the education test taking, personality trait, or marketing construct measure guidelines were developed. The involvement construct was fleeting, variable, and meant to capture a motivation, not an innate personal trait.

Another point was that many of the techniques, at that time for measurement of traits, only became quite feasible with the development of computers and computer aided statistical procedures, such as factor analyses (e.g., Cattell et al. 1970). These rules were published for IQ tests and personality traits, which had many different possible facets, and the involvement concept was actually much narrower than the broad test scales developed for education or psychology.

The dissertation stated that a fewer number of items might be appropriate, but deciding which of those 20 items would stay and which would go seemed to be yet another dissertation at the time. The decision to create the scale with 20 items was based on the ability to make fine distinctions between individual levels of involvement and also, on a practical level, to have the measure fit on one page. However, 20 items were really an overkill of reliability, not to mention the broader and more recent identification that involvement could be more cognitive or affective in nature (Park and Young 1986), and the individual PII items were not defined nor selected along those two dimensions.

Some years later the original Personal Involvement Scale which was published in the *Journal of Consumer Research* in 1985 was improved upon, and a 10 item scale (Revised Personal Involvement Inventory: RPII) was published in the *Journal of Advertising* (Zaichkowsky 1994). This new scale had a balance of cognitive and affective items and was easily applied to measuring involvement with advertising, products, or purchase situations. The RPII measure now corresponded to and linked the published ideas of the advertising industry in the Foote, Cone, and Belding Grid.
Consumer involvement: review, update and links to neuroscience

To me XXXXX is

- Important (1) Unimportant (2)
- Boring (1) Interesting (2) (R)
- Relevant (1) Irrelevant (2)
- Exciting (1) Unexciting (2)

Means nothing to me (1) Means a lot to me (2) (R)

- Appealing (1) Unappealing (2)
- Fascinating (1) Mundane (2)
- Worthless (1) Valuable (2) (R)
- Involving (1) Uninvolving (2)
- Not needed (1) Needed (2) (R)

Note: (R) reverse coded (7–1); 1 indicates a cognitive involvement measure; 2 indicates an affective involvement measure.

Figure 14.2 Revised Personal Involvement Inventory

(Vaughn 1980, 1986) of high versus low involvement and affective and cognitive types of products. So ideally the type and the amount of involvement could be measured at the same time (Zaichkowsky 1986a). The items are randomly reversed and also randomly interspersed with one another. This randomization is important for the reliability and validity of the test taking (see Figure 14.2). Respondents are less likely to blindly tick down a column, they are led, by the random format, to actually think and register the word they are responding to. Granted that there is likely more measurement error in data using randomly reversed items, but this type of error is more desirable than error due to validity.

An example of the plot of the affective scores and cognitive scores to the rated involvement of an English print ad for trousers (Figure 14.3) evaluated by native Danish speakers is in Figure 14.4 (Norgaard 2011). The reader can see that while the scores are generally correlated, one can identify a couple of individuals who are quite affectively involved with the advertisement, but rated it very low in the cognitive descriptors. Then there are a group of respondents for whom the cognitive items are rated much higher than the affective dimension. And furthermore, there is a group
for whom the total scores on both dimensions were much higher than another group that was generally very low in both types of involvement. Depending upon the objective of the study, one might be able to identify segments of consumers on how differentially involved they are with the stimulus in question, as there are some obvious individual differences.

### 14.2.1 Issues of Scale Modification

Some readers of Zaichkowsky (1985) also identified the flaw of item redundancy and published many variations of the measure with fewer items (e.g., McQuarrie and Munson 1987, 1992). Other authors still pick and choose among the individual scale items of the RPII and also add other items when they want to measure involvement. For example, Xue and Zhou (2011) only used one item from that scale: important–unimportant,
then added four other totally different items (convincing/unconvincing; reasonable/unreasonable; useful/useless; likely/unlikely), and they say they have used the RPII measure of involvement. These five items were never tested to the 10 item RPII (which balances affect and cognition), so the validity or reliability to the motivational construct of involvement might need to be checked. It may be unclear what kind of construct their findings refer to and if they are really capturing product involvement as a motivational construct. Convincing, reasonable, likely, and useful may not be so motivational.

Other research may just cite the Zaichkowsky (1985) paper and then ask respondents “Are you involved with XXX?” (e.g., Delezie et al. 2006). This procedure may seem fine and easy to use by researchers, but all the theory to affective and cognitive motivation is blurred. The attention to content validity to the theoretical construct of involvement remains at the integrity of the measure. If researchers are going to shorten the 10 item scale or convert it to a one item Likert scale, then there needs to be some investigation to reliability and validity of their adapted measure before use. In many ways researchers are reverting back to the single item untested measures used in the 1970s. Their reasons may be the perceived
unimportance of the measure; their belief that this type of single item measure is just as “good” as a multiple measure (e.g., Bergkvist and Rossiter 2007); the desire to be as terse as possible, without believing there are measurement consequences; or they are sure their adapted measure is better in some way than the RPII.

Besides reducing the scale length, other changes to the scale use include transforming the semantic differential measure to a Likert scale with one direction. Or, in other words, taking one end of the bi-polar semantic scale and then asking the extent to which a respondent agrees or disagrees on a seven or five point scale to a statement like “watches are important to me”. This form of a question is great for measuring opinions, but may not be so suitable to measure a motivation. One thinks about opinions, but motivations might be more subconscious and not get the same careful thought. Motivations may be hard for the individual to define and grasp. Perhaps they need to be reacted to, not necessarily thought about in the way a Likert scale is prone to probe. Making all the questions positive, when trying to measure a motivation, is also not very conducive to getting a respondent to pay attention to the task. Especially when their “involvement” level may be very low to begin with, or they are just filling out the questionnaire to receive a reward for their participation.

In addition to only giving one end of the scale to measure amount of the construct, Bian and Moutinho (2011) used five of the items from the McQuarrie and Munson (1992) measure to investigate behaviour towards purchasing counterfeit products. They then repeated some of these five items and added other items to make a 10 item measure. Their research found no significant effects for involvement with the product category of watches to the intended purchase of a counterfeit Rolex watch. Because the measure on involvement used in their study is on a Likert scale; (one sided; all positive; and has adapted items rather than items already tested for validity), it may be their hypotheses are not supported because of the measure. One cannot tell. Unsupported hypotheses are due to something about the theory, the data, or the measures.

14.3 THE SCOPE OF APPLICATION

In the 1980s, and before, researchers used to keep the letters they received from other researchers which asked for a copy of their work. That’s how researchers knew the scope of their academic impact and level of interest other people had in their work. This, in addition to the lagged citation counts which were looked up in a heavy book in the library, was crucial information for promotion and tenure. The internet has changed research
and science forever, and for the better. Exchange of information and the growth of new ideas and applications are now almost instantaneous. The internet keeps track of the network and history of thought. One can see where information came from and where new ideas are spreading. Many of the cites of Zaichkowsky (1985) are not in English publications, but are represented by scholarly publications from all over the world, e.g., Japan, Korea, Turkey, Germany, Spain, Austria, Brazil, and Taiwan. This motivational construct called involvement seems to be easily understood and the measure has been translated to many different languages for data collection.

Since the publication and subsequent papers on conceptualizing and measuring involvement there have been well over 2,000 citations of the Zaichkowsky (1985) article noted by Google Scholar, but only about 600 in the Business Source Complete data base. The concept and construct of involvement and its applications seem to know no discipline boundaries. For example scholarly researchers are using it to study innovative behaviour (“Characteristics and Values of Innovative Consumers: A Case from the Music Industry”, Katsumata and Ichikohji, 2010); understand how consumers buy sports products on-line (Kim et al. (2010) Journal of Sport and Leisure Studies); and even what accounts for different approaches to meat consumption and catching poultry (Verbeke and Vackier 2004; Delezie et al. 2006) published in Poultry Science and Meat Science. A master’s student in the English department, at the Copenhagen University, is asking “Are advertisements which contain English more involving than those which do not?” So students who were yet to be born when the 1985 JCR piece was published, are still finding the construct of involvement interesting and useful to their current research questions. It appears to be timeless and widely applicable.

The last time a meta analysis was carried out on the construct of involvement was in 1988 by Carolyn Costley. She looked at publications from 1976 to 1986 in Advances in Consumer Research, Journal of Consumer Research, Journal of Marketing and Journal of Marketing Research. Her total sum of published papers to work with was 18. From the analyses, a chart was prepared which summarized relationships and constructs in the literature. The object of involvement under investigation was always an ad, product or situation. The nature of the response was always affective, functional (cognitive) or both. Furthermore, the intensity of the affective response was high, low or continuous and allowed for classification of individuals. Significant relationships for the intensity and affective and cognitive involvement were undisputed. Therefore the literature was unequivocal that no matter what the context (stimuli/object), the response always could be functional (cognitive) and/or affective (emotional) in nature.
A new meta analysis on the over 600 citations in business journals or the over 2,000 citations by Google Scholar may be a challenge for today’s researcher. This work would likely be difficult as the individual papers and authors do not always use the construct and measures as they are proposed. Researchers are a little entrepreneurial in their approach and even though papers use the same broad constructs, sometimes they are applied differently. The accurate documentation of the flow and spread of ideas and information about the construct of involvement in the published literature to show where the construct is applied may be a bit easier with content analysis software. These might be good ideas for a doctoral student project.

But it cannot be denied that involvement, as a motivational variable, predicts future behaviour. And predicting future behaviour is what everyone is interested in. Therefore the future of the involvement construct appears to be healthy. It should not die out soon.

14.4 EARLY LINKS OF BRAIN RESEARCH TO CONSUMER BEHAVIOUR

In the late 70s two European consumer behaviour researchers were focusing on the brain and psychobiological approaches to understanding consumer choice: Werner Kroeber-Riel (1979) of the Institute for Consumer and Behavioural Research at the University of Saarland, Germany; and Flemming Hansen (1981) of the Copenhagen Business School. Kroeber-Riel’s work focused on the relationship between behaviour and physiological processes of the nervous system, particularly those taking place in the brain. He speculated that, to a large extent, consumers respond automatically according to biologically determined patterns of behaviour.

Kroeber-Riel employed various physiological methods, such as EDR (electro dermal response), commonly termed GSR or galvanic skin response or SRR (skin resistance reaction) to measure arousal and also CLEM (conjunctive lateral eye movements) monitors to measure attention and information search. Using experimental settings to study the effectiveness of advertising, he postulated that advertising which does not arouse will have no effect because the information conveyed in the advertisement will not be processed. The questions that arose from his work were “How do you create a situation (advertising) that leads people to actively process what they are exposed to?”; or, “How do you involve people when they are exposed to advertising?”

Flemming Hansen’s work specifically focussed on the notion of high and low involvement being tied to right and left brain activity. At that
Consumer involvement: review, update and links to neuroscience

Time, the thought among brain researchers was that human right and left hemispheres of the brain had different functions. The left hemisphere was thought to be responsible for traditional cognitive activities relying on verbal information, symbolic representation, sequential analyses and the ability to consciously report on what is going on. The right hemisphere of the brain was thought to be mainly for processing of pictorial, geometric, timeless and non-verbal information, and was also subconscious.

Hansen (1981) hypothesized that in low involvement situations the right brain processes dominate while in higher degrees of involvement, the left brain is activated. Thus, under high involvement, information processing and deliberate choice occur. Under low involvement, information is received holistically and choices are made without awareness. He also speculated that under low involvement, the number of exposures needed before a sufficient amount of learning occurred may be greater due to the dominance of the right brain processes. Another aspect of the theory was that there were individual differences for right versus left brain dominance. That is, there are types of people for whom thinking dominates and there are other types of people for whom emotion dominates. And, therefore, different types of advertising messages would appeal to left brain or right brain dominated people. To my knowledge there has been no test of this proposition in the literature.

14.5 ADVANCES IN TECHNOLOGY AND UNDERSTANDING OF BRAIN FUNCTIONS

The 70s style brain research, or the separation of right brain and left brain as it leads to either cognitive or affective stimulation, has been replaced by updated theories. New technology has emerged and fields called cognitive neuroscience and affective neuroscience have been established. Consumer researchers have taken up decision neuroscience (Shiv et al. 2005) and the term to the lay person commonly used in the media is neuromarketing. However, the term neuromarketing is seen by some as “too commercial” and the preferred term among academics seems to be decision neuroscience.

There are various technical methods used in consumer/decision neuroscience. Brain activity can be measured by EEG (electroencephalogram), which documents the amount and pattern of electrical activity in the cerebral cortex (e.g., Thompson and Zola 2003). An individual might display changes in activation in certain parts of the cerebral cortex when looking at a picture they find very interesting over one they find bland or boring. With increasing attention, such measures often display faster (i.e., higher
frequency) and lower amplitude waves (beta waves) which are observed in the EEG. This indicates more frequent information transfer between neurons and may serve as an index of processing load (brain activity). When brain activities increase, there is also an increase in blood circulation of the active part, measured by the Emisionstomgraph technique (advanced computer imaging) (Lassen et al. 1978). The application of EEG in academic consumer behaviour research appears in the advertising domain (Rothschild and Hyun 1990). But its use applied to measuring effectiveness of advertising is limited because the technique needs to be carried out in a laboratory setting and involves some complex attachments to the subjects. One major drawback of any neuroimaging tool is mobility, as motion itself induces some activation that must be accounted for.

On the other hand, arousal measured through the skin, phasic electrodermal reaction (EDR), continues to be a useful tool to understand consumer behaviour because it can easily be brought to the field and consumer arousal can be measured at the point of sale (Groeppel-Klein 2005). Consumer arousal is the precursor to the activation of buying behaviour, as it is an indicator of an affective reaction. It is the basis of emotions, motivation, information processing and finally behaviour. Arousal is the effect of emotional responses, in how the brain labels certain kinds of information as salient and important. This labelling of something as very relevant (both positive and negative) leads to higher arousal, more attention (bottom-up driven) and through this, increases in information processing. So arousal comes some place in the midst of the process, not in the initiation. Nevertheless, arousal measures during exposure to choices can predict subsequent choice behaviour, even if there is a long delay between exposure and choice (minutes, hours, days) (Falk et al. 2011). The measurement of arousal through skin reactance tells us there are hypothalamic reactions and some activity in the amygdala, which processes emotions. The reason this stream of research relates to involvement is motivational. Humans need to be aroused before they behave in a certain manner, and that emotional arousal can be linked to the activation of thought and subsequent decision making. Hence the link between cognition and emotion is almost inseparable.

Research on store atmosphere tells us that sensual cues have a significant impact on consumer’s perception and buying behaviour (Donovan and Rossiter 1982). Kroeger-Riel (1979) identified three types of arousal inducing stimuli in the shopping environment: (1) innate stimuli, such as scents, colours, or plants; (2) intense stimuli controlled by the retailer such as intense lighting, motion, contrasting colours, music; (3) unusual and appealing decorations. These types of hedonic or highly affective shopping
environments are said to increase arousal, heighten involvement, and create a valuable and entertaining shopping experience (Babin et al. 1994).

Using an experimental approach of a control (low aesthetic) situation and a second shopping environment following spatial layout, lighting, and colours to a highly aesthetic shopping experience, Groeppel-Klien (2005) found EDR arousal measures to be twice as strong in the highly aesthetically designed experimental condition. Also twice as many purchases were made in the aesthetic store environment over the control store. In addition, a triangulation of a paper and pencil measure of “joy” while shopping correlated .46 with the amplitude of EDR and .42 with its frequency. Hence, store aesthetics were a critical stimulator of good feelings, emotional response, arousal, and finally purchase behaviour. So the atmosphere with good aesthetics created more arousal, or more emotional involvement, and resulted in more purchases (cognitive response). It is clear the various aesthetics stimulate our senses and then activate the emotional arousal and hence the objects within the aesthetic environment become more “involving”.

Other research documenting the impact of aesthetic displays on consumer purchase in shopping environments shows that a highly aesthetic display will help an unknown brand outsell a known brand, especially with an “emotional or affective” type of product like chocolate (Esch et al. 2003). Using coffee and chocolate as stimulus products, the researchers found the greatest increase in sales with the aesthetic displays, and the most increase in sales with the product category of chocolates. Therefore good aesthetics and design can be said to stimulate the brain into activation, which then can lead to a positive response toward the object around or in the aesthetic stimuli.

One of the current trends in decision neuroscience is the discussion about “common currency” in the brain. That is, to what extent is there a common valuation system that labels options using a similar metric across different domains? Sometimes diverse rewards such as food, money and even sex tap into the same reward mechanisms of the brain (Plassmann et al. 2011). This could mean that a positive aesthetic experience will affect the subsequent responses to a product/brand the aesthetics are attached to. It might be called a “contagion effect”, where high reward expectancy leads to a positive shift in evaluation of images, and image evaluation is positively related to reward expectancy. This seems to be modulated through the basic parts of the brain’s reward structures such as the striatum (Ramzoy and Skov 2010).

Perhaps, now, the most frequently used technique to research brain activity in consumer behaviour research applications is functional magnetic resonance imaging (fMRI). The procedure involves sampling signal
intensities from thousands of voxels (three-dimensional boxes) in the brain every two seconds or so. For each measured voxel, comparisons are made between conditions (often through univariate analyses), and these statistical values are plotted onto a heat map in 3D. Thus the display from fMRI is a statistical representation of the univariate analysis for each of the thousands of voxels. This measurement allows the researcher to generate statistical representations of the underlying intensities and processes during perception, affect and cognition related to various stimuli. A detailed review of the fMRI and its applications to consumer research can be found in Reimann et al. (2011).

Through the use of the fMRI, one actually sees the processes of the brain as they are happening. This leads to a situation where “seeing is believing” in terms of brain activity. However “seeing is only believing”, and the understanding of what is seen and documented through the fMRI technique, and its relevance to consumer reactions/decisions, is still in its infancy. For example, one might say fMRI is “just” another way to statistically test a priori hypotheses whether stimuli/products are processed differently through emotional responses or attention aspects. General and explorative brain mapping are not really telling us much, and trying to interpret reasons for brain activation after doing the analyses leads to logical fallacies or reverse inference (Plassmann et al. 2011).

With these advances in technology to view brain activity came a rewriting of theory pertaining to the idea of an emotional versus a cognitive side to the brain. Work in the area of memory laid out two central memory networks that operate simultaneously and in parallel. One memory system was mediated by the hippocampus and dealt with facts or declarative knowledge. The second memory system was mediated by the amygdala and processed emotions or affect (Le Doux 1994). These two parts of the brain co-exist in an intertwined fashion as mirror images of each other in the center of the brain (limbic system) at the base of the skull, above the spinal cord. So the notion of left brain–right brain exists, but the emotional and cognitive memory systems of the amygdala and hippocampus are both on each side of the human brain.

Today this view is further complicated by the fact that emotional/saliency responses found in the amygdala, leads to stronger hippocampal memory (Murray et al. 2005). There still may be people who are more affective-emotional in their reactions to objects and people who are more cognitive and perhaps rational and hence look for information about the object. But this is not necessarily a right brain or a left brain activity.

In general, humans repeat behaviour that maximizes rewards or feelings of enjoyment. That is, we like when the reward center of our brain
is stimulated because dopamine is released by this stimulation and we feel a heightened feeling of pleasure. The current thinking is that reward expectancy and reward experience rely on separate systems in the brain. Neurally, reward expectancy seems to rely on increased activation in the striatum (and to some extent the amygdala), while the pleasurable experience of an outcome engages the medial orbitofrontal cortex (Berridge 2009). So the question as applied to consumer behaviour and marketing becomes “What products/brands/advertisements/purchase situations make the reward center of the brain release dopamine?”.

Early work using fMRI to understand consumer decision making was carried out at Social Cognitive Neuroscience Laboratory at the California Institute of Technology in Pasadena by Steve Quartz, a professor of Philosophy. Initial fMRI experiments (reported mainly through the media, e.g., Mahoney 2005) exposed subjects to 140 pictures of products and tried to answer the question: “Why are people willing to pay a premium for a product when that premium isn’t buying them anything extra in terms of functionality?” Personality tests were also administered to see if there was some segmentation of brain reaction by personality. Each subject generated several hundred brain maps over the products they were exposed to. The analyses of the data from scanning brains showed that different people reacted differently to different images/products, or they had different activity levels in the various brain regions associated with emotion and reasoning. Furthermore subjects were not always conscious of their preferences, which the brain activity seemed to indicate.

If researchers in the field of consumer behaviour had carried out the Cal Tech research they would have identified, a priori, a myriad of variables such as brand equity, peer influence, etc., to explain this basic question of “willingness to pay a premium”. Marketing academics know individual differences are the basic premise behind market segmentation. The marketing goal is to make sure that groups of consumers with similar responses are large enough to be a profitable segment. Then different stimuli and marketing techniques are targeted at each segment.

The interpretation of the picture of the brain provided by the fMRI scan may not be the same interpretation as the researcher theorizes. Current theory is that positive affect or positive emotions lead one to be able to be a more fluent processor. Thus the right and left brain are not separate systems but intertwined. FMRI may be an expensive method to study the effect of an ad or a package design. In some ways it is perhaps frivolous, when the medical applications to health of individuals are compared. However science knows no boundaries and as long as the technology is available, and there are people willing and able to studied, research funds, and trained researchers eager to carry out experiments, these types of
research studies with small samples will continue to flourish. This is the current future of understanding decision making.

14.6 RECENT THEORETICAL INVESTIGATIONS TO INVOLVEMENT

Basically the framework for involvement hypothesizes that there are inherent personal elements that attach the individual to the object. There can also be something about the object characteristics that causes the involvement, and additionally a situational effect may cause an involvement response to the object. Manipulating any or all of these aspects is what leads one to be more involved with an object. The first part of the structure, which just includes the link between the person and the object, has been termed enduring involvement in the literature (e.g., Higie and Fieck 1989; Richens et al. 1992). However, this early structure made no distinction for affective and cognitive involvement. Other researchers (e.g., Petty and Cacioppo 1986) developed the Elaboration Likelihood Model (ELM) where the role of emotion was only evident in the low involvement or peripheral route to persuasion. The simultaneous occurrence or emotion and cognition with a highly involving situation or object did not become the subject of many academic articles until well into the 90s (Chaudhuri 1993).

The inseparability, or high correlation, of cognitive and affective involvement was theorized in the literature by Buck et al. (2004). They state emotional reactions and rational cognition are two persuasion processes that take place simultaneously and interactively. Their conceptual model to understand consumer behaviour joins affect, reason, and involvement to a three dimensional diagram. The base of their model is an affective response upon which reason is built to a second dimension. The third dimension is involvement and is said to be a combination of affective and rational processing, or both thinking and feeling. This third dimension is a ratio of the affective and cognitive (reason) measure (Chaudhuri 2006). A final score for influence is calculated by adding the affect and the reason and dividing by two. Applying this model to many product categories provides a grid of high and low involvement products by affect to reason ratio (see Buck et al. 2004 for a diagrammatic representation). This approach explicitly considers emotion/affect to be a type of cognition different than analytical cognition, but the two are highly correlated (Buck et al. 2004).

Recent research has explored the roots of enduring involvement (Bloch et al. 2009). The research questions investigated were “What are the
origins of product involvement”, and “How do people become highly involved with a product category in the first place?” Furthermore, “What are the conditions under which high involvement with the product category thrives?” To answer these questions the authors undertook a qualitative approach with in-depth narratives of consumers and their autobiographical recollection of when their love, or high involvement, for certain products categories began. They chose four different product categories as stimuli: cars, fashion, photography, and jazz. The data was collected via the internet, and a total of 57 people recollected 292 different episodes of their first and enduring interactions with these products.

The attributions given to self-understanding of the respondents’ current involvement levels could be categorized into two major broad areas: (1) social influence and (2) exceptional product design. The social influence category contained four subsections: parents; extended family; close friends; and other peers. Parents were often the first influencers and the involvement around the object in question allowed a private bond between family members. For example if a father was a major car enthusiast, he was likely to pass that passion onto his sons. Very out of the ordinary behaviour was reported by those highly involved with the product, such as owning 20 plus automobiles, or allowing one’s child to purchase their first car at the age of 12.

Involvement in fashion was likely to come from a family social influence once removed, such as a grandmother or aunt. Members of the extended family were thought to be inspirational because they were close enough to be aspirational, but distant enough to be novel. Therefore special relationships were formed with objects based on influence from a family member who did not live with the individual, but was highly regarded and looked up to.

In addition to family members, close friends and other peers facilitated the development of involvement with products. They helped identify important brands and pointed out nuances and innovations in product categories. This product related enthusiasm provided a means of generating friendships and social connections for the individual. Therefore the involvement with the product may begin as a necessary adjunct to desired social rewards and only later evolve into a deeper interest in the product class (Bloch et al. 2009).

The second major creator of enduring product involvement was an exceptional product design. Exposure to a captivating product exemplar, one that triggers a deep interest or “love at first sight” was a dramatic and compelling causal influence in all four product classes investigated. This fits the Zaichkowsky (1986b) framework where the differences within the product were hypothesized to lead to involvement. However the fact that
these differences were based on exceptional product design adds an important link to emotional arousal and affect. Great aesthetics, functional superiority, and excellent craftsmanship all had the ability to differentiate the object from others and move the consumer from an uninterested state into a lifelong passion or enduring involvement with the product class. What is associated with this exemplar in aesthetic product design is strong emotion or excitement.

The final contribution of the qualitative research to understanding enduring involvement is the idea that the brain needs to be fed over time to sustain the high levels of involvement with the object. This means the individual needs and seeks exposure to new applications; receiving new information; or creative new product designs. It is like fuel for the fire.

14.7 LINKING QUALITATIVE, QUANTITATIVE AND DECISION NEUROSCIENCE RESEARCH PERTAINING TO INVOLVEMENT

The common element among recent quantitative research paradigms in the study of involvement is the link between aesthetics, emotional arousal in the brain and motivation or involvement, which leads to a behavioural response. The use of unusual and appealing decorations in a shopping environment leads to a higher emotional arousal (Kroeber-Riel 1979), which has been shown to lead to increased purchase behaviour (Esch et al. 2003). The highly aesthetic shopping environment not only leads to increased purchase behaviour, but an increase in electrodermal reaction (EDR), completing the cycle from creative aesthetics to stimulating the brain to purchase the object (Groeppel Klein 2005). Hence there is a physiological reaction to the pleasing environment activated through the senses.

The qualitative research by Bloch et al. (2009) explicitly confirms the importance of exceptional creative design (fashion) or a creative sensual experience (jazz) in triggering an enduring involvement with the product category. Strong emotions were activated by sight and sound which led to the experiences being recalled with not only great emotion, but also great detail by the respondents. This can be explained and linked to brain research of the amygdala which plays a primary role in the processing and memory of emotional reactions.

A basic question that arose when reading about the fMRI study from Cal Tech (Mahoney 2005) was “What would be the scores of consumer rated involvement with the object in question, and how would these scores correlate with the brain activity?”; “Would the affective items correlate with areas of the brain that indicate emotional response and would the
cognitive items correlate with a different area?” If the paper and pencil measure of involvement, as measured by the RPPI, correlates with certain brain activity, there may be much more confidence and also understanding of exactly what processes are at work when filling out the involvement measure in relation to an object.

To date research that explicitly measures superior design and involvement has not been carried out. However, Franke et al. (2009) carried out a study where consumers could actively custom design their own product, and they found involvement with the object to be greatly increased after the process. The relationship between aesthetically designed packages, brain activity and involvement is documented by Reimann et al. (2010). In experimental settings, decision making and choice among standardized and novel packages, within a series of low involvement product categories, were investigated. Known and unknown brands, as well as high and low price points, were manipulated. The results showed that a novel package with an unknown brand can be more attractive than a known brand with a standardized package. Furthermore novel packaging can lower price sensitivity.

The experiment was then repeated while subjects underwent fMRI scanning. After the scan participants filled out the RPII for the different products they were exposed to. Significant differences in brain activation were found between the aesthetic and standardized packaging. Significantly stronger brain activation was found in the ventromedial prefrontal cortex (vmPFC) for aesthetic versus standardized product packages, mainly for unknown brands.

To investigate the link between product involvement and brain activation during product perception, the affective and cognitive involvement scores (RPII) were triangulated with the beta value of brain activation. The scores were correlated with activation differences in the striatum, as the striatum is found to be important in goal directed evaluation of affective stimuli (Delgado 2007). There were strong positive correlations between the affective involvement items and activation difference between aesthetic and standardized packaging (r = .69). An opposite effect was observed for the cognitive involvement items (r = -.52). Further analyses did not reveal any other correlations between brain activation and the paper and pencil measure of involvement.

While this type of scale validation is in its infancy, some explanation is speculated. In terms of the concept or construct of involvement, as measured by the RPII, the affective items relate to feeling of emotional states. For example, this is captured by the reaction to and evaluation of the item “exciting-unexciting” which respondents cognitively appraise then remember when responding to the scale. The cognitive items are more
factual, e.g., “relevant-irrelevant”, and have little to do with emotion. There are many parts of the brain involved when one is exposed to stimuli and reacts to them. The amygdala plays a primary role in the processing and memory of emotional reactions. The ventromedial prefrontal cortex of the brain is an area to which dopamine (the rewarding neurotransmitter) is projected. The vmPFC is said to evaluate the emotional situation and subsequently give a “go” or “no go” signal for further action or behaviour. Thus a correlation between the affective items on the RPII and activation differences in the striatum would make sense, because respondents appraise “exciting” and the other affective word items as they relate to the stimuli. Also when our emotional reactions are heightened, events are remembered more vividly, especially when the emotion is negative (Kensinger and Schacter 2008).

The hippocampus area of the brain plays an important role in long-term memory and spatial navigation. A negative correlation for the cognitive items to this area of activation could mean that there is not a cognitive appraisal of emotional states as for the affective items, because the cognitive items are more factual i.e., relevant-irrelevant. Stimulation of the ventromedial prefrontal cortex was found to be positively related to the affective items.

14.8 SUMMARY

Historically emotion and cognition have been treated somewhat separately by academics. However current models and many researchers now question this assumption of separate areas of the brain for emotional and cognitive processes. Areas of the brain which are thought of as “emotional” or “motivational” are also engaged in cognitive tasks such as problem solving, memory, or attention (e.g., Pessoa and Adolphs 2010). It also may be difficult to find purely “cognitive” tasks that do not hold any emotional components. Therefore if these processes are intertwined, then perhaps the measurements of the emotional and cognitive responses to the stimuli in question should be simultaneously carried out. The results from various fMRI studies show the links between emotional responses found in the amygdala lead to stronger hippocampal memory. Or, in other words, good feelings (possibly from aesthetics) facilitate better information processing.

The different approaches to the study of involvement have nicely converged or triangulated in a way that leads to great confidence in the construct and measures. It has also created a different way of thinking about involvement and also measuring it. Instead of high and low involvement being one dimension and cognitive and affective being the other
dimension, the literature suggests thinking of involvement in terms of intensity (high versus low) on a continuum and simultaneously as cognitive and emotional/affective, also on a continuum. One might think of the possibility of four quadrants: low affective involvement and low cognitive involvement; low affective involvement and high cognitive involvement; low cognitive involvement and high affective involvement; and high cognitive involvement and high affective involvement. Therefore the cognition and affect may be activated together, rather than being one or the other. Perhaps as cognitive and affective involvement are measured together, the two dimensions can be plotted together (as in Figure 14.4).

From the initial framework for understanding of what causes involvement (see Figure 14.1), recent research has highlighted the importance of exceptional product design and aesthetics as the triggers for a more motivated behaviour towards the object. The importance of aesthetics for purchase intentions or actual behaviour is well documented in the consumer behaviour literature, and recent fMRI and EEG studies have supplied explanations for this behaviour through arousal and brain activation data. The notion that design and aesthetics create involvement that may be enduring in nature forms the basis for company product design strategy and consumer commitment in various retail establishments. Certainly hotels have embraced this differentiation to give guests an aesthetic experience above and beyond the usual. For example, Art’otel (www.artotels.dk) offers a unique total aesthetic experience that perhaps leads customers to be loyal. One can think of many more instances (such as Apple computers and phones) where good design has led to consumer commitment.

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NOTES

1. Richard Lutz did not publish his comments, so he is not referenced in the chapter.
2. Werner Kroeber-Riel passed away in January 1995 at the age of 65. His research is still relevant today; Andrea Groppel Klein has taken his place at Saarland.
3. Flemming Hansen passed away in June 2010 at the age of 72. His last endeavor at the Copenhagen Business School was to establish a neuroscience group, within the department of marketing, dedicated to studying the link between brain functions and consumer choice.

4. The author would like to thank Thomas Ramzoy for these words and thoughts.

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PART V

CONSUMER BEHAVIOUR
IN EVOLUTIONARY PERSPECTIVE