AN EVOLUTIONARY PSYCHOLOGY APPROACH TO CONSUMER CHOICE

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ABSTRACT

Human behaviour can be explained not only through experience and environments but also by incorporating evolutionary explanation. Consumer behaviour could not be understood accurately without infusing Darwinian evolutionary theory which has contributed in the knowledge of human nature. Evolutionary psychology revolves around the human's evolved mental and the impact on human's traits and behaviour where the influence of the environment to our genes would determine our individual behaviour and traits, resulting in variation among us. Foraging which is a part of behavioural ecology involves many sequences or repetitions of animals' activities and decision making which is useful to relate these patterns of activities to the decisions made in human consumption. The aim of this research is to investigate the similarities of human consumption and ecological behaviour by employing interpretative and comparative approach. It is hoped that by applying the evolutionary theory in explaining consumer choice, this study is able to contribute to the development of behavioural ecology in human consumption. The analysis of the data is done aggregately for 200 consumers and individually for 20 consumers, who have purchased four product categories over a year. This study concludes that the theories of evolutionary psychology can fit to the consumers' buying behaviour implicating its usefulness in explaining the consumers' choice.

Keyword: Evolutionary psychology, foraging, brand choices, brand choice

1. INTRODUCTION

The study of consumer behaviour has been the focus of interest of many scholars over the past decades. Consumer behaviour itself can be defined as the acquisition, consumption and disposition of products, services, time and ideas by decision-making units (Jacoby, 1976). It involves the study of how humans use scarce resources and the science of behaviour. In psychology, the concept of the consumer refers to "the recipient and user of services and goods" (Reber, 1995). The study of consumer behaviour attempts not only to understand consumers' needs but also to evaluate the influences borne upon them in making decision. It helps to understand both the psychological and environmental elements involved in customers' choices between available alternatives. It is essential to understand not only the psychology behind how consumers think about, feel or react towards different alternatives, but also the psychology underlying consumers can be influenced by the environment. Therefore, a marketer needs to recognise consumers' limitations in processing information, which affects their decision making, and how they are motivated differently when making decisions. Consumer behaviour needs to be understood not only through the cognitive elements but also by understanding other external influences. Thus, it is beneficial to elucidate consumer behaviour by applying insights from psychology to economic models as they offer unique and intellectual tools to study the forces behind human action, particularly when dealing with variety of choice.

An in-depth understanding of consumer behaviour should therefore underpin all marketing activities. For decades, studies of consumer behaviour have been developed in many different streams. The study of consumer behaviour has been approached from different philosophical and contextual perspectives, with psychology, sociology and philosophy being the main fields (O'Shaughnessy, 1992). Studies conducted have mainly assumed

that consumer behaviour involves cognitive processes. Hence, it is said that consumers' purchasing behaviour is a function of internal attributes and influences. Emotions, feelings, opinions, attitudes and beliefs are claimed to be some of the major forces in many consumer choice models. Principles of behavioural analysis have been applied to consumer behaviour but this work has also tended to lack theoretical coherence and has focused largely on attempts to produce reflexive conditioning in consumers exposed to advertising stimuli or to modify discrete consumer choices (Hantula et al., 2001a). The fascination of consumer research lies in its capacity to open doors to the different theories, principles, philosophies and viewpoints, thus helping us to understand and eventually learn about the complexity of human behaviour, particularly in terms of purchasing. Darwinian insights of natural selection in analysing consumer behaviour is adapted in this study, as this offers a promising way in which to analyse and predict by recognizing the mechanisms of the human mind.

The explanatory power of evolutionary psychology comes from the fact that its underlying ideas relate to the basic design of our brain and thus, can form the basis on which fundamental explanations of behaviour can be developed (Tooby and Cosmides 1990). Evolutionary psychology studies the human nature by making predictions on the human's behaviour by recognizing the human's mind mechanisms. Darwinian insights and theory of the natural selection are applied as it provides an explanation for many aspects of life. Darwin recognized that humans are both biological as well as cultural beings, as evidenced by the gene-culture co-evolution approach, which explicitly recognizes the importance of both factors in having shaped the phylogenetic history of humans (Richerson and Boyd 2005). Hence, our behaviour is the result of both adaptations and adaptability. The behaviour of individual organism is caused by the structure of their adaptations and the environmental input to them (Tooby and Cosmides 1992). Different cultures emerge from different contingencies of variation and selection and differ in the extent to which they help their members solve their problem where those members who solve them are more likely to survive and with them survive the practices of the culture' (Skinner 1990, pp 1207). Our genes have survived, in some cases for millions of years; in a highly competitive world. The genes' objective is to leave copies of itself by leaving maximum number of viable offspring in the population. Hamilton (1964) introduces the inclusive fitness theory where according to this theory, a gene is able to leave its copies not only by producing own offspring, but also by promoting the survival and reproduction of closer and related relatives as they share some identical genes. *Survival, mating, kin selection* and *reciprocity altruism* are the evolutionary systems or modules in human mind (Saad 2007) which evolved since million years ago. The survival activities of our past hunter-gatherer, for instance, could bring valuable insights and similarities to the modern human consumption.

2. EVOLUTIONARY PSYCHOLOGY

> *'Evolutionary psychology is the long-forestalled scientific attempt to assemble out of the disjointed, fragmentary and mutually contradictory human disciplines a single, logically integrated research framework for the psychological, social and behavioural sciences- a framework that not only incorporates the evolutionary sciences on full and equal basis, but that systematically works out all of the revisions in existing belief and research*
> *practice that such a synthesis requires* '.
>
> *(*Tooby and Cosmides 2005, p. 5)

The idea behind evolutionary psychology studies is to understand the human nature and to make predictions about human's behaviour by recognising the mechanisms of the human mind. In doing so, Darwinian insights and the theory of natural selection are applied, as these provide an explanation for many aspects of life, although Darwin's ideas have aroused considerable controversy. His statement that human beings descended from apes and his 'blending' theory of inheritance whereby an offspring is said to be a mixture of the parents, have been objected to and argued against, particularly by biologists and religious creationists (Buss 1999). Nevertheless, Darwin's theory of evolution,

particularly the gene transformation, is almost universally recognised and accepted and has been fruitfully applied in many research disciplines.

'Evolutionary theory views the development of biological and social systems as occurring through a process of variation, selection and retention – occurring through a slow process of small incremental improvements, rather than through a priori design' (Colarelli and Dettman 2003, p. 838). Darwin (1872) recognised that evolutionary thinking could be applied to human behaviour where over the years of human history, natural and sexual selection have shaped our biology. He recognised that humans are both biological as well as cultural beings, as evidenced by the gene-culture co-evolution approach, which explicitly recognises the importance of both factors in having shaped the phylogenetic history of humans (Richerson and Boyd 2005). Evolutionary processes are adaptations to an organism's ecological situation, existing to guide survivability and reproductive success where those individuals who succeed best may be expected to produce the most viable offspring for the next generation and are thus the most fit (Garcia and Saad 2008, p. 400). Therefore, it can be said that human behaviour is the result of both adaptations and adaptability. The behaviour of individual organisms is caused by the structure of their adaptations and the environmental input to them (Tooby and Cosmides 1992).

Cosmides and Tooby (1997) can be said to be responsible for initiating adaptationism in the modern approach of evolutionary psychology. The authors present 5 principles to define evolutionary psychology. First, the brain is a physical system and functions as a computer therefore, our mind is designed to generate behaviour that is appropriate to the environment. Secondly, the neural circuits in our minds were designed by natural selection to solve our ancestors' problems during evolutionary history. Thirdly, our conscious thinking could mislead our decisions, therefore complex problems require us to have complicated neural circuitry. Fourthly, different neural circuits are specialised in solving different adaptive problems and finally, our mind is adapted to deal with problems faced by our hunter-gatherer ancestors in the Pleistocene period.

Many attempts have been made to apply Darwinian thinking to analysing the human behaviour. Skinner himself drew some interesting similarities between Darwinian's natural selection theory and his operant conditioning idea where he pointed out that as well as natural selection being important for survival, operant conditioning is necessary for one to learn and that 'operant conditioning is a second kind of selection by consequences' (Skinner 1984, p. 477). In his article on 'Phylogeny', Skinner tells us that fishermen do not cast fishing nets just because of their intention or need to catch fish, but that their net-casting behaviour has been reinforced and naturally selected and evolved from the past, just as spiders spin their webs because of a biological trait that they inherited from their ancestors (Skinner 1953). Skinner(1984) in his article entitled "Selection by consequences" stated that human behaviour is the result of three types of variation and selection, which are *reproduction, operant conditioning* and *cultural evolution*. According to Skinner (1984) the first selection, *reproduction* which was led through natural selection, is responsible for the evolution of the organism's species and behaviour. The second kind of selection is *operant conditioning* 'through which variations in the behaviour of the individual are selected by features of the environment' where behaviour is reinforced by certain kinds of consequences (Skinner 1990, p. 1206). *Cultural evolution,* which is the third kind of selection, is described by Skinner as not a biological process but a kind of selection and variation to resemble the world in which culture evolved through the evolution of social environment. 'Different cultures emerge from different contingencies of variation and selection and differ in the extent to which they help their members solve their problems, where those members who solve them are more likely to survive and with them survive the practices of the culture' (Skinner 1990, p. 1207). Acquired characteristics, behaviours and values are culturally selected and retained through cultural evolution (Colarelli and Dettman 2003). Humans maintain a culture that accumulates information over time where valuable knowledge that humans gain during

their lifetime does not die with them and each new generation can benefit from the experience and ideas of their ancestors (Lea and Newson 2006).

Thus, human behaviour is the 'joint product of (i) the contingencies of survival responsible for the natural selection of the species, (ii) the contingencies of reinforcement responsible for the repertoires acquired by its members and (iii) the special contingencies maintained by an evolved social environment' (Skinner 1984, p. 478). Skinner also points out that traits are usually transmitted from generation to generation; however reinforced behaviour is transmitted only in the sense of remaining part of the repertoire of the individual. The human species has been going through evolutionary change where human traits and behaviour are adapted from the past and can be said to be the result of natural selection. However, the species goes through another evolutionary change under the control of operant conditioning, where behaviour is shaped and moulded by its reinforcing consequences (Skinner 1990). According to Skinner, the process of natural selection where evolution occurs could take millions of years; however, operant conditioning is a selection in progress as it occurs at a rate that can be observed from time to time. Advice, rules, imitation, past experiences or even religious belief could add reinforcement to human behaviour. 'Like water running downhill, over generations organisms tend to flow into new functional designs better organised for effective propagation in the environmental context in which they evolved' (Tooby and Cosmides 1992 p. 51). As Lea and Newson (2006, p. 4) state, 'all organisms that are alive today are the descendants of other organisms that thrived and reproduced in past environments where these organisms were able to solve problems posed by the environment in which they lived, but when the environment changed, different characteristics were selected' as individuals interact, communicate, exchange information, knowledge and ideas and observe throughout their lives.

Richard Dawkins (1976), an evolutionary biologist, has contributed to creating a wide understanding of how natural selection works through his well-known metaphor of the 'selfish genes'. According to him, since genes need to survive for generations, it is essential for them to adapt to the environment even if they need to 'exploit' and 'deceive' and those that are able to adapt to the changing environment successfully will survive and pass on to the next generations, while those that failed would be obliterated completely. The most important objective of a living being is survival and reproduction. 'Our genes have survived, in some cases for millions of years in a highly competitive world and a predominant quality to be expected in a successful gene is ruthless selfishness where this gene selfishness will usually give rise to selfishness in individual behaviour' (Dawkins 1976, p. 2). Dawkin's gene-centred view of evolution brought up the suggestion of the selfless behaviour or altruism of two genetically-related individuals. Altruistic behaviour has been noticeably shown by some animals such as birds giving alarm calls to the others when seeing a predator, thus taking the risk of drawing the predator's attention to themselves. Human altruism is shown widely by the parents' or siblings' responsibility in taking care and helping each other whilst at the same time fulfilling the purpose of life, which is survival and reproduction.

William D. Hamilton (1964) introduced his idea of inclusive fitness to expand on the earlier theory of natural selection, specifically the Darwinian classical fitness (personal reproductive success). The passing on of genes, he claimed, can be done not only by producing our own offspring but also by supporting others in our family members to survive and produce their own offspring. Our relatives are said to be carrying the same copies of genes. Thus, inclusive fitness can be viewed as 'the sum of an individual's own reproductive success plus the effects the individual's actions have on the reproductive success of his or her genetic relatives' (Buss 1999, p. 13). Hamilton's (1964) theory of inclusive fitness contributes answers to the questions that have been puzzling evolutionary psychologists. Why would monkeys be seen giving alarm calls to warn others of the presence of a predator even though the monkey is risking its own life by risking being attacked by the predator? Why would a person risk his own life in saving his brother from drowning in a river? Hamilton (1964)

asserts that the answer to the altruistic behaviour that can be found in both human and non-human species is gene-transformation, which explains why one would sacrifice his own well-being for the benefit of others.

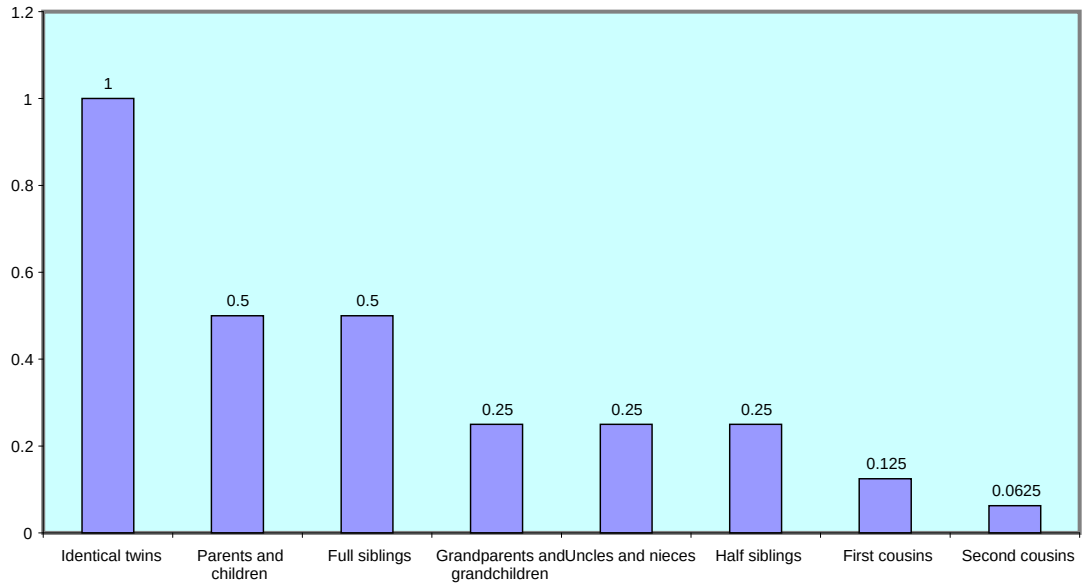

Figure 3.1: Genetic relatedness among different types of relatives (Hamilton 1964).

The general rule of inclusive fitness (refer to Figure 3.1) is that we are related by 50 percent to our parents, children and siblings; 25 percent to our grandparents and grandchildren, half-siblings, uncles, aunts, nieces and nephews; and 12.5 percent by genes to our cousins; hence, we are genetically unrelated to strangers (Buss 1999). As genetics is the cornerstone of evolution, it is acceptable that the genes' objective is to leave copies of itself by leaving maximum number of viable offspring in the population. However, Hamilton (1964) has proven that a gene is also able to leave its copies by promoting the survival and reproduction of closely-related individuals as they share some identical genes, which leads to the concept of inclusive fitness. Genes are said to be selfish and an individual is just a gene's 'survival machine' (Dawkins 1989). As the gene's intention is to be passed on, this can be fulfilled not only when the individual reproduces but also when the individual's relatives who carry the same genes survive to reproduce. This concept explains how altruism is brought about in natural selection. As relatives tend to share some genes inherited from the same ancestors, there is a great possibility that the altruism genes stay in the individuals, which lead them to be helpful and protective to each other and their offspring. Hence, natural selection is said to favour altruism at the level of blood kin.

The idea that concern about the fate of others who are related or kindred is a key of the inclusive fitness in neo-Darwinian theory (Hamilton 1964). Fitness according to the classic Darwinian Theory refers to the individual's reproductive success (Burnstein et al. 1994). Hamilton's insight in his inclusive fitness notion is that the amount of surviving and replicating genes would increase when the survival of the close family is taken into consideration for reproduction. 'For a gene to receive positive selection it is not necessarily enough that it should increase the fitness of its bearer above the average if this tends to be done at the heavy expense of related individuals, because relatives, on account of their common ancestry, tend to carry replicas of the same gene; and conversely that a gene may receive' (Hamilton 1964).

Inclusive fitness might explain the altruistic behaviour among family members. However, there are many examples of altruistic behaviour that involve individuals who are not genetically related, which led to the *reciprocal altruism* idea of Hamilton's student, Robert Trivers in the late 1970s. He states that 'whenever the benefit of an altruistic act to the recipient is greater than the cost to the actor, then as long the help is reciprocated at some later date, both participants will gain' (Workman and Reader 2004, p. 52). Blood donation is one of the obvious examples of self-sacrificing behaviour towards non-relatives. The uniqueness of human species where unrelated individuals or complete strangers cooperate and assist each other can also be related to the evolution of culture. Humans can be seen sharing and owning information, skills, rules, values and beliefs that are characteristics of the culture (Lea and Newson 2006). This cooperation is particularly relevant in trading where even in a competitive market, cooperation between all parties (buyers, dealers, seller, distributor etc) is essential for trade. Members of societies that participate in the global economy were among the most cooperative (Henrich et al. 2004). Reciprocal altruism can be found in humans, but does it exist in the animal kingdom? According to Trivers (1971), reciprocal altruism in animal society exists based on the fact that the cost to the recipient should be lower than the benefit to the actor; animals can recognise each other and these animals have a reasonably long-life span which enables them to encounter individuals in the future so as to have the possibility of reciprocation. However, it was argued that it is rare to find altruistic behaviour among animals.

3. METHODOLOGY

Data were taken from the A.C Nielsen Company which consists of 10,000 respondents randomly-selected from UK households representative of population. A total of 1600 panellists who made purchases of four fast-moving consumer products; baked beans, yellow fat, fruit juice and biscuits purchased within a year (17th July 2004 to 15th July 2005) is analysed in this study.

Product	No. of households	Total number of purchases	Mean number of purchases
Baked Beans	*1639*	*16203*	*10*
Yellow Fat/Butter	*1817*	*32468*	*18*
Fruit Juice	*1542*	*23339*	*15*
Biscuits	*1594*	*75847*	*48*

Table 1:General information on the purchases

The initial idea of this research is to analyse each of the 1600 panellists . As such, the analysis was begun by analysing all 1600 panellists who have purchased baked beans products. However, it was later recognised that not all the panellists bought each of the four product categories. As this study attempts to study the pattern of consumers' buying behaviour across products, the data have to be sorted accordingly, and only panellists who have purchased all the four product categories were chosen. Therefore, 200 panellists were chosen randomly and calculations were made for the descriptive analysis.

Ultimately, from the 200 panellists, another discrepancy was acknowledged, as some of these panellists were found to be extremely 'light' buyers; with only one or two purchases recorded within a year, which contributes to the lack of data points. Hence, these 'light' buyers had to be rejected as this research attempts to employ an individual analysis. It was then decided that only 20 panellists who had purchased all the four products and made at least 5 purchases for each products would be selected and analysed individually. The products for each category vary in terms of weight and pack size. The basic units are mostly in grams, kilos or litres. In order to obtain to desirable weight in order to be able to obtain precise ratio calculation, each item is calculated in a basic unit of comparison for each product category. For example, a pack of 6 X 415g of baked beans stands for a six-can pack of

baked beans that weigh 415gm each. Therefore, to make it possible to add up the total amount bought for each panel, the weight for this pack is calculated as 2490grams.

There are no general units in measuring the levels of both the informational and utilitarian reinforcements. Hence a ranking system is applied wherein three informational levels and two utilitarian levels are allotted to each product category. The utilitarian reinforcement level, particularly for FMCG is identified based on the attributes of the product brand. Additional attributes increase the level of utilitarian reinforcement (e.g. Level 1 for plain baked beans , Level 2 for baked beans with sausage). Informational reinforcement, on the other hand is related to the brand differentiation where well known brands are usually associated with prestige and social status which in turn conveyed by the price differentiation (Foxall et al 2004). The informational level of each brand is analysed by using a simple questionnaire as used earlier by Foxall and colleagues (see Foxall et al 2004, Oliviera-Castro et al 2005). Respondents selected to answer the questionnaires were those who had been living in UK for all or most of their lives and were required to answer two questions:

1. Is the brand well known?
   Answer: 0 – Not known at all
   1- Known a little
   2- Quite well known
   3- Very well known
2. What is the level of quality of the brand?
   0- Unknown quality
   1- Low quality
   2- Medium quality
   3- High quality

Mean scores for knowledge and quality was calculated for each brand and respondent.The average of the mean values was then computed for each brand across all respondents.

4. Human Consumption: Food Preferences and Advertisements

Consumers engage in numerous kinds of behaviours in making buying decisions and it is difficult to understand these complex behaviours accurately. Products are purchased for a variety of reasons. Some are needed to make us beautiful or attractive. Most are consumed to satisfy our taste preferences. Others might be bought as gifts to strengthen family or friendship ties. Biological heritage could also influence our buying behaviour and so does the appeal in advertisements. 'In a sense, even if we ignore animals and plants, consumer research encompasses almost all human activities, regarded from the viewpoint of consummation… In other words, our lives comprise one constant and continual quest for consummation' (Holbrook 1987, p. 131).

Why do most of us prefer foods that are sweet and have high fat contents such as those found in Starbucks and Mc Donald's? Our food preferences can be related to the fat and sugar content in meat and fruit which were crucial for the survival of our past ancestors. People during the Pleistocene era, who lived as hunter-gatherers, consumed food that was high in nutritional values. Foods that are high in fat and sugar such as meat and ripe fruits were essential for the nutrition and health of our ancestors. Meat was the most efficient form of receiving calories and protein, while foods that were sweet such as ripe fruit generally indicated high levels of nutrients (Colarelli and Dettman 2003). These food contents were believed to enable our ancestors to survive and reproduce. In the modern era, humans still have the preference for the same nutrition. The difference is of course, it is readily available for purchase from the supermarket or grocery store. Sweets and fats are staples of the consumer food market where expenditures on oils, fats, sugar, confectionary and soft drinks remain a significant portion of our total food expenditure (Colarelli and Dettman 2003). The food purchasing from the data in this research displays the respondents' preferences for fat and sugar contents. The

craving for sugar for example, can be seen in Table 2, as on average, each respondent purchases an amount of 56 packs of fruit juice and 46 packs of biscuits for their sugar content, whereas 38 packs of yellow fats are purchased for their fat and salt content. An average of 37 cans of baked beans or what used to be known as 'sugary-tasting brown beans once baked' are purchased by each respondent as canned beans in tomato sauce contain both fat and sugar. Although a different range of a healthy option version of baked beans has been introduced, the preference for baked beans is still in line with the preference for the fat and sugar nutrition of our ancestors. Even in the countries as yet untouched by fast food such as Mc Donald's and Starbucks, the preference for foods that are high in such substances has been observed, lending further support to the notion that our evolutionary heritage plays a crucial role in determining what is reinforcing and to what extent; a not insignificant observation for social marketers seeking to modify eating behaviour in pursuit of public health goals (Nicholson and Xiao 2007). The strategies of reducing the amount of fat or sugar in food are said to be ineffective as consumers do not like the taste of low-fat foods and finding sugar and fat substitute that taste like the real thing has proven elusive (Colarelli and Dettman 2003).

	Biscuits	Yellow Fats	Fruit Juice	Baked Beans
Packs bought	916	749	1123	730
Average	45.8	37.5	56.2	36.5

Table 2: Average packs of biscuits, yellow fats, fruit juice and baked beans purchased by each respondent.

Advertisements generally use our evolved preferences in creating awareness of and interest in the product. The pictures on the packaging are often targeted to evoke positive emotional responses. People have strong preferences for ancestral cues such as 'water sources, oasis, flowers, ripe fruits, savannah, growth and leaf patterns of healthy savannah trees, closed forest canopy, caves and mountains (Thornhill 1998, p. 562). The packaging of Del Monte orange juice seen in Figure 1 for instance, incorporates visuals of mouth-watering, fresh, sun-ripened oranges and droplets of dew on the leaves, which have successfully attracted consumers to purchase it by evoking their evolved preferences for the sweet taste of ripe fruits and natural sources of ingredients.

Figure 1: Del Monte orange juice packaging

Products and packaging in the market are mostly designed to reflect our evolved human nature. Saad (2007) points out that a majority of advertisements focus on masculinity and feminity in marketing products to consumers, which according to the evolutionary framework, can be seen as identifying mating preferences. These can be clearly seen from the slogans on most of the advertisements which represent the four Darwinian modules; mating, survival, kin selection and reciprocal altruism. One of particular evolutionary importance would be how a product influences one's social status (mating). Saad (2007) discusses how cosmetic companies always stress beauty in their slogans. As beauty is deemed an important criteria in attracting a mate, L'Oréal for example, came out with its well known slogan "*Because I'm worth it*" to represent the judgement of mate value in the reproductive module where appearance is seen to be the priority in mating preferences. Women are consistently concerned about clothing, body consciousness, dieting, cosmetic surgery, and salon usage, which is consistent with evolutionary predictions that concern for appearance is an innate disposition among women to increase their perceived mate value in the eyes of men (Saad and Gill 2000).

Feeding behaviour, including the recognition of safe foods that contain essential dietary compounds as determined by evolved taste perception has been essential to human survival (Boyd and Silk 2006) which this can be shown in advertisement slogans such as Twix's "*The longer-lasting snack*", representing the survival modules in natural selection, Kellogg's "*They're grrreat!*" for kin selection, whilst Nokia's "*Connecting people*" represents reciprocal altruism. As in this research, Tropicana fruit juice for example, has been using its slogan "*100% Pure and Natura*l" and Heinz Baked Beans with its "*Beans Means Heinz"* slogan, which both map onto the survival and kin selection modules. These slogans can be said to be targeted at parents, as they are always trying to provide the best possible food in terms of quality and nutrition to their family and are willing to spend more on these items. Parental investment refers to the effort and resources devoted to an offspring that improves its chances of survival (Colarelli and Dettman 2003). The slogans are successful as they play directly into our evolved strategies that have increased the survival and reproductive success of our ancestors throughout our species' evolutionary history (Saad 2007) and are used effectively in advertisements as they are effective in drawing attention, are long-lasting in consumer's mind and instil positive feelings towards the products or brands.

Kruger and Byker (2009) state that the hunter-gatherer society in the Pleistocene era is often associated with spear-wielding hunting activities; however the majority of their food consumption derived from gathering, as females made frequent daily trips searching for fruits and vegetables across general familiar locations where they may encounter a patch with not quite ripe food, in which case they would usually choose the ripe ones and leave the others to be harvested sometime later. The authors explain that these gathering skills and behaviours which are useful in vegetation foraging may also resemble modern women who, while shopping, are willing to make frequent shopping trips and engage in in-person examination of the quality, features and prices of items they want to purchase. Price, for example, plays an important part in their decision making, and many women are willing to wait and return to the same stores in order to purchase the item they want when it is on sale. Women have been reported to enjoy shopping activities more than men (Fischer and Arnold 1990) and men usually return home as quickly as possible after shopping. As reported by Dogu and Erkip (2000), women see shopping as a chance for them to have a break from the daily routine and as a time when they can relax either alone or with friends and family.

The sex of the respondents from the AC Nielsen panel data is unknown and is not a part of the information provided. Nevertheless, it can be concluded that the respondents are mostly females, as grocery shopping is usually done by women. Table 3 shows the frequency of shopping trips of Consumer 17 in buying yellow fats. Generally, this consumer prefers to buy yellow fats, choosing store brands such as Asda and Tesco for their lower prices. Asda Sunflower tub was observed as being the most purchased brand of yellow fats. However, it was observed too that other brands such as Stork were also bought by this consumer, even on the same shopping trip. As mentioned earlier, this

behaviour can be seen as analogous to the woman as a gatherer in the pre-historic period. Consumers will purchase a certain brand when the price is considered reasonable and affordable, just as a gatherer would visit the same patch to harvest the fruits or vegetables when they were ripe or good enough to be harvested.

BRAND DESCRIPTION	WEIGHT DESC	STORE DESC	YYWW DESC	TOTAL SPEND
ASDASUNFLOWER *TUB*	500 GM	ASDA	17-JUL-04	0.46
ASDA GOOD FOR YOU LIGHTSUNFLOWER SPREAD	500 GM	ASDA	31-JUL-04	0.46
TESCOSUNFLOWER *TUB*	500 GM	TESCO	14-AUG-04	0.46
TESCO HEALTHY EATINGSUNFLOWER LOW FAT SPREAD	500 GM	TESCO	21-AUG-04	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	28-AUG-04	0.46
ASDA GOOD FOR YOU LIGHTSUNFLOWER SPREAD	500 GM	ASDA	11-SEP-04	0.46
STORK SB* *TUB*	1000 GM	ASDA	11-SEP-04	0.89
ASDA GOOD FOR YOU LIGHTSUNFLOWER SPREAD	500 GM	ASDA	02-OCT-04	0.46
ASDA GOOD FOR YOU LIGHTSUNFLOWER SPREAD	500 GM	ASDA	09-OCT-04	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	23-OCT-04	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	06-NOV-04	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	13-NOV-04	0.47
ASDASUNFLOWER *TUB*	500 GM	ASDA	20-NOV-04	0.42
ASDASUNFLOWER *TUB*	500 GM	ASDA	11-DEC-04	0.47
ASDASUNFLOWER *TUB*	500 GM	ASDA	18-DEC-04	0.47
ASDASUNFLOWER *TUB*	500 GM	ASDA	25-DEC-04	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	15-JAN-05	0.47
TESCO HEALTHY LVNG OLV LTSPREAD	500 GM	TESCO	22-JAN-05	0.97
TESCO HEALTHY EATINGSUNFLOWER LOW FAT SPREAD	500 GM	TESCO	12-FEB-05	0.47
TESCO BUTTER ME UPSPREAD LIGHT	500 GM	TESCO	26-FEB-05	0.72
ASDASUNFLOWER *TUB*	500 GM	ASDA	12-MAR-05	0.46
TESCO HEALTHY EATINGSUNFLOWER LOW FAT SPREAD	500 GM	TESCO	19-MAR-05	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	02-APR-05	0.46
STORK SB* *TUB*	500 GM	ASDA	02-APR-05	0.45
TESCO HEALTHY EATINGSUNFLOWER LOW FAT SPREAD	500 GM	TESCO	09-APR-05	0.46
STORK SB* *TUB*	500 GM	TESCO	16-APR-05	0.45
ASDASUNFLOWER *TUB*	500 GM	ASDA	23-APR-05	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	07-MAY-05	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	21-MAY-05	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	18-JUN-05	0.46
ASDASUNFLOWER *TUB*	500 GM	ASDA	09-JUL-05	0.46

Table 3: Consumer 17

Most of our purchasing is made by referring to both utilitarian and informational reinforcement and the aversive consequences. The pleasure of having a Rolex watch for example, is not only limited to the functional benefit of knowing the accurate time but also the feeling of satisfaction when receiving

compliments and admiration from family and friends. The same goes for the pleasure of consuming Del Monte fruit juice or Heinz baked beans, as consumers do not only have the aim of quenching their thirst or assuaging their hunger, but also of having the satisfaction feeling of knowing that the food consumed by themselves or by the family is the best in nutrition and taste. The aversive consequence of having a highly-differentiated brand is of course the money that is required to be spent on it.

The utilitarian reinforcement is clearly represented by the individual's achievement of *survival* and *inclusive fitness*. Foxall (2007) indicates that this form of reinforcement might be the less difficult and problematic to accomplish, particularly in purchasing fast-moving consumer goods such as food, as it is routine purchasing. He states that the rationale in an informational reinforcement is the notion of secondary reinforcement through *status* accomplishment. This has been shown by our ancestors, where competition among the males was common in *mating*. 'The male who gained access to the most fertile female was the one with the greatest potential for protecting his mate and providing the resources necessary to ensure that both she and any resultant offspring survived, reproduced and passed these "fit" genes on to a new generation' (Nicholson and Xiao 2010, p. 134). In human consumption, a consumer seeking high informational reinforcement can be clearly seen in those involved in conspicuous consumption where the consumption of branded and luxurious items is a part of displaying status symbols. A high price is often related to product quality; therefore, owning an expensive product can signal prestige and status (Colarelli and Dettman 2003). Conspicuous consumption or lavish spending on goods is said to be engaged in by people who need to be happy or are trying to be different or better than others, which is done from the need to attain and maintain one's social status (Saad 2007). These assumptions however, fail to elucidate the underlying reasons of why these consumers need to be happy or different from others in the first place and why gaining social status is important not only in a certain culture but in almost every culture in this world. Saad (2007) suggests that these manners are linked to the evolutionary theory in which our behaviour may be or at least in part, affected by our evolved human nature and that gaining status by spending on luxuries is similar to attracting mates in mating. Mate selection and mating behaviours are part of the area of evolutionary psychology that is useful to be applied to human consumption (Saad and Gill 2000). In summary, both utilitarian and informational reinforcement are consistent with the understanding of neo-Darwinian insights, particularly related to the *survival, inclusive fitness* and *status* attainment for mating by our ancestors

Foxall (1993) establishes four operant classes of consumer behaviour according to the high-low level of both the utilitarian and informational reinforcements:

Maintenance Shopping – Low in both utilitarian and informational reinforcement with routine or daily purchasing as an obvious example such as a weekly trip to buy groceries.

Accumulation shopping – Low in utilitarian but high in informational reinforcement. This can be associated with saving and collecting such as having a 'loyalty card' or 'vouchers/ coupons'.

Pleasure shopping – Low in informational but high in utilitarian reinforcement such as buying and collecting clothes as a personal interest.

Accomplishment shopping – High in both utilitarian and informational reinforcements where conspicuous or lavish spending can be seen as the most overt example.

CONSUMER	BISCUITS		CONS	CONTINGENCY
	UR	IR	GRP	CATEGORY
Consumer 1	LOW	LOW	1	Maintenance
Consumer 2	HIGH	LOW	2	Pleasure
Consumer 3	LOW	MIDDLE	3	
Consumer 4	LOW	LOW	1	Maintenance
Consumer 5	HIGH	LOW	2	Pleasure
Consumer 6	LOW	HIGH	5	Accumulation
Consumer 7	HIGH	MIDDLE	4	
Consumer 8	LOW	LOW	1	Maintenance
Consumer 9	HIGH	LOW	2	Pleasure
Consumer 10	HIGH	HIGH	6	Accomplishment
Consumer 11	LOW	HIGH	5	Accumulation
Consumer 12	LOW	HIGH	5	Accumulation
Consumer 13	HIGH	LOW	2	Pleasure
Consumer 14	HIGH	MIDDLE	4	
Consumer 15	HIGH	LOW	2	Pleasure
Consumer 16	HIGH	HIGH	6	Accomplishment
Consumer 17	LOW	MIDDLE	3	
Consumer 18	LOW	MIDDLE	3	
Consumer 19	LOW	LOW	1	Maintenance
Consumer 20	LOW	MIDDLE	3	

Table 4: Levels of utilitarian and informational reinforcement (biscuits) for each respondent

Table 4 displays the classes and group of consumer from the panel data in buying biscuits. Consumers in group 1 with low levels of both utilitarian and informational reinforcements are categorised as *maintenance shoppers,* as they can be said to choose biscuit brands as a routine or for *survival.* Hence, the preferred brands are mostly the cheaper ones with plain and simple formulations. Consumers in group 2, *pleasure shoppers*, purchase for personal interest, selecting brands with a high level of utilitarian reinforcement but a low level of informational reinforcement. In other words, biscuits are selected based on the additional formulation but within the low- differentiated brands so as to enable them to have more varieties with cheaper prices. Consumers in group 5 select brands with a low level of utilitarian reinforcement and a high level of informational reinforcement. Better known as *accumulation shoppers,* these consumers select biscuits brands based on saving or accumulation. Highly- differentiated biscuit brands are preferred but the most purchased are the ones that are offered at lower prices, probably after discounts or the ones with plain formulation in order to have well-branded biscuits but at cheaper prices. *Accomplishment shoppers* in consumer group 6 are consumers who prefer brands that have high levels of both utilitarian and informational

reinforcements. They are experienced consumers who have a level of product knowledge and expertise in consumption plus a degree of wealth (Foxall 1994). Therefore, brands selected are the ones that are highly differentiated with premium prices, mostly bought for satisfaction and the pleasure of consuming them.

	UTILITARIAN		INFORMATIONAL		
CONSUMER	HIGH	LOW	HIGH	MID	LOW
Consumer 1	3	1	2	0	2
Consumer 2	2	2	1	2	1
Consumer 3	0	4	1	2	1
Consumer 4	1	3	1	1	2
Consumer 5	2	2	0	3	1
Consumer 6	4	0	2	1	1
Consumer 7	2	2	1	3	0
Consumer 8	4	0	1	1	2
Consumer 9	2	2	0	0	4
Consumer 10	3	1	1	3	0
Consumer 11	4	0	1	2	1
Consumer 12	4	0	1	2	1
Consumer 13	3	1	0	3	1
Consumer 14	2	2	1	3	0
Consumer 15	3	1	0	1	3
Consumer 16	1	3	2	1	1
Consumer 17	2	2	1	2	1
Consumer 18	4	0	0	3	1
Consumer 19	4	0	0	2	2
Consumer 20	4	0	0	4	0

Table 5: Numbers of utilitarian and informational reinforcement for baked beans, fruit juice, yellow fats and biscuits

Table 5 shows the combination of utilitarian and informational reinforcement of each consumer in purchasing the 4 product categories. Evidently, consumers seek different levels of both reinforcements for each product category. Consumer 20, for example, only purchased all 4 product categories based on high levels of utilitarian and informational reinforcements. Hence, this consumer can be seen as selecting product brands based on the *status* accomplishment which, according to Saad (2007), is done by people who need to be happy or are trying to be different or better than others ,which is done from the need to attain and maintain one's social status. On average, it can be said that most of the consumers prefer brands that are high in utilitarian reinforcement and have a medium level of informational reinforcement, which signals that consumers favour brands that have variety in formulation but at the same time, looking for reasonable and affordable prices.

Fruit Juice	Freq	Avg price
ALDI DEL RIVO PINEAPPLE JUICE DRINK	1	2.2
ALDI DEL RIVOAPPLE JUICE DRINK	3	0.76
ALDI DEL RIVOPURE ORANGE JUICE FRESH	2	0.92
ALDI RIO D'ORO PURE APPLE JUICE	39	0.45
ALDI RIO D'OROPURE ORANGE JUICE	38	0.36
DEL MONTE*CARTON* APPLE JUICE	1	0.85
DEL MONTEORANGE JUICE & BITS	1	0.89
JAFFRESHAPPLE JUICE	1	0.5
MORRISONS*CARTON* SPANISH ORANGE JUICE	1	0.7
MORRISONS*X 4* APPLE JUICE	1	0.55
MORRISONSAPPLE JUICE	1	0.45

Table 6: Fruit juice purchasing history of Consumer 8

Table 6 shows the summary of fruit juice purchases of Consumer 8, who has a wide range of her own repertoire of brand set. Her preferred brands, however, mainly the cheaper ones such as Aldi Del Rio D'Oro pure orange juice and Aldi Del Rio D'Oro pure apple juice, are bought along with other highly differentiated, heavily advertised and premium-priced brands, which is in line with Foxall (1998), who states that consumers do maximise, although not solely on the utilitarian reinforcement but rather on the combination of both the utilitarian and informational reinforcement. The multi-brand purchasing habit of this consumer indicates the substitutability of brands within his/her repertoire sets of brands. Consumers do maximise utility or inclusive fitness in their purchasing behaviour (Saad and Gill 2000). Purchasing for a family can be related to the *inclusive fitness* in the evolutionary theory as humans are said to be altruists when it comes to family. Furthermore, this kind of behaviour can be related to the *kin selection*, where it is said that individuals can augment their inclusive fitness by investing in and behaving altruistically toward their kin (Hamilton 1964). This can be clearly seen from the unconditional parental love and affection spent on the consumers' offspring. Love has evolved as an adaptation to guide mate choice as well as to maintain bi-parental investment for the successful rearing of viable offspring (Fisher 1994) and at the same time fulfilling the purpose of life which is *survival* and *reproduction*. Another possible scenario is that this consumer might be purchasing the product not only for the family but also for socialising with friends. In addition, buying premium-priced biscuits for socialising with friends could be associated with status symbols, which is reflected by the status attainment for *mating* through hunting in the hunter-gatherer society.

CONCLUSION

Evolutionary psychology is a relatively new field of research focusing on evolved mental traits and their impact on human behaviour as this field of inquiry builds on concepts and ideas related to human evolution, primarily human evolution during the period that goes from the emergence of the first hominids up to the present day (Kock 2010). We are problem solvers, decision makers and hunter-gatherers as the basic decision rules by which we live were shaped by natural selection (Hantula 2010). As consumers are known to be engaged in numerous and complex buying behaviours, the intention is more to discover to what extent our ancestors survival activities are mirrored in modern human purchasing. Humans as consumers in present-day society are born with the brains and behaviour of our past ancestors. Thriving in a modern economy requires very different behaviours but we manage as the human brains evolved to be flexible with the ability to form cooperative networks with other humans and to maintain the shared body of information, expertise and values which we call culture (Lea and Newson 2006). It is therefore reasonable to assume that this study can benefit from the insights from this field as it introduces notions that are yet to be explored and can become one of the pillars in elucidating the complex behaviour of consumers.

REFERERENCES

Boyd R, Silk J, 2006. How Humans Evolved. New York : W. W. Norton & Company.

Burnstein E, Crandall C, Kitayama S,1994. Some neo-Darwinian decision rules for altruism: weighing cues for inclusive fitness as a function of the biological importance of the decision. Journal of Personality and Social Psychology, 67**:** 773-789.

Buss D. M, 1999. Evolutionary Psychology.Boston: Allyn and Bacon.

Colarelli SM, Dettman JR, 2003. Intuitive evolutionary perspectives in marketing practices. Psychology and Marketing, 20**:** 837-865.

Cosmides L, Tooby J,1997. Characterizing Human Psychological Adaptations.Edited by Bock GR, Cardew G. Chichester: Wiley.

Darwin C,1872. The Expression of Emotions in Man and Animals.New York:Philosophical Library.

Dawkins R, 1976. The Selfish Gene.Oxford: Oxford University Press.

Dawkins R. 1989. The Selfish Gene. Oxford: Oxford University Press.

Dogu U, Erkip F, 2000. Spatial factors affecting wayfinding and orientation:a case study in a shopping mall. Environment and Behaviour, 32:731-755.

Fisher HE, 1994. Anatomy of Love:The Natural History of Monogamy,Adultery and Divorce. New York: Norton and Company.

Foxall GR, 1993. Consumer behaviour as an evolutionary process. European Journal of Marketing, 27**:** 46-57.

Foxall GR, 1994. Consumer psychology and behaviour analysis. Journal of Economic Psychology, 15**:**5-91.

Foxall GR, 1998. Radical behaviorist interpretation:generating and evaluating an account of consumer behaviour. The Behaviour Analyst, 21**:** 321-354.

Foxall GR, Oliviera-Castro JM, Schrezenmaier TC, 2004. The behavioural economics of consumer brand choice: patterns of reinforcement and utility maximization.Behavioural Processes, 66:235-260.

Foxall GR, Oliviera-Castro JM, James VK, Schrezenmaier TC, 2007. Brand choice in behavioural perspective. In The Behavioural Economics of Brand Choice. Basingstoke,Hampshire: Palgrave Macmillan.

Garcia JR, Saad G, 2008. Evolutionary neuromarketing:darwinizing the neuroimaging paradigm for consumer behaviour. Journal of Consumer Behaviour, 7**:** 397-414.

Hamilton WD, 1964. The genetical evolution of social behaviour. Journal of Theoretical Biology, 7**:** 1-16

Hantula DA, 2010. The behavioural ecology of human foraging in an online environment: of omnivores,informavores and hunter-gatheres. In: Evolutionary Psychology and Information Systems Research. Edited by Kock N. New York: Springer.

Hantula DA, Diclemente DF, Rajala AK, 2001a. Outside the box : the analysis of consumer behaviour.In: Organizational Change.Edited by Hayes L, Austin J, Houmanfar R, Clayton M. Reno, Nevada: Context Press.

Henrich J, Boyd R, Bowles S, Camerer C, Fehr E, Gintis H, Mcelreath R, Alvard M, Barr A, Ensminger J, Henrich NS, Hill K, Gill-White F, Gurven M, Marlowe FW, Patton JQ, Tracer D, 2004. "Economic man" in cross-cultural perspective:economic experiments in 15 small scale societies. In: Foundations of Human Sociality: Ethnography and Experiments in 15 Small-Scale Societies. Edited by Henrich J, Boyd R, Bowles S, Camerer C, Fehr E, Gintis H. Oxford: Oxford University Press.

Jacoby J, 1976. Consumer psychology:a n octennium. Annual Review of Psychology, 27**:**331-358.

Kruger D, Byker D, 2009. Evolved foraging psychology underlies sex differences in Shopping experiences and behaviours. Journal of Social, Evolutionary and Cultural Psychology, 3**:**1-15.

Lea,SEG, Newson L, 2006. Prospects for an evolutionary economic psychology: buying and consumption as a test case. The Evolution of Consumption Workshop. Max-Planck-Institut fur Okonomik, Jena, Germany.

Nicholson M, Xiao SH, 2007. Darwin's ghost: evolutionary psycholoy consumer behaviour analysis. Durham University.

Oliviera-Castro JM, Foxall GR, Schrezenmaier TC, 2005. Patterns of consumer response to retail price differentials.Service Industries Journal, 25:309-327.

O'shaughnessy J,1992. Explaining Buyer Behaviour : Central Concepts and Philosophy of Science Issues. Oxford: Oxford University Press.

Reber AS, 1995. The Penguin Dictionary of Psychology. London: Penguin Books

Richerson PJ, Boyd R, 2005. Not by genes alone: how culture transformed human evolution. Chicago: University of Chicago Press.

Saag G, Gill T, 2000. Applications of evolutionary psychology in marketing. Psychology and Marketing, 17**:** 1005-1034

Saad G, 2007. The Evolutionary Bases of Consumption. Mahwah,New Jersey: Lawrence Erlbaum Associates.

Skinner BF, 1953. Science and Human Behaviour. London: Macmillan.

Skinner BF, 1984. The phylogeny and ontogeny of behaviour. The Behavioural and Brain Sciences , 7**:**669-711.

Skinner BF, 1990. Can psychology be a science of mind? American Psychologist, 45**:** 1206-1210.

Thornhill R, 1998. Darwinian aesthetics. In: Handbook of Evolutionary Psychology: Ideas, Issues and Applications. Edited by Crawford C, Krebs D L. Mahwah: New Jersey Lawrence Erlbaum.

Tooby J, Cosmides L, 1990. The past explains the present: emotional adaptations and the Structure of ancestral environments. Ethology and Sociobiology, 11**:** 375-424.

Tooby J, Cosmides L, 1992. The psychological foundations of culture. In: The Adapted Mind.Edited by Barkow JH, Cosmides L, Tooby J.New York:Oxford University Press.

Tooby J, Cosmides L, 2005. Evolutionary psychology:conceptual foundations. In: Handbook of Evolutionary Psychology. Buss DM. New Jersey: John Wiley and Sons,Inc.

Trivers RL, 1971. The evolution of reciprocal altruism The Quarterly Review of Biology, 46: 35-57.

Workman L, Reader W, 2004. Evolutionary psychology:An Introduction. Cambridge: Cambridge University Press.