THE ROLE OF MUSIC IN PERSUASION: AN EVOLUTIONARY APPROACH

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Müziğin İkna Sürecindeki Rolü: Evrimsel Yaklaşım

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TABLE OF CONTENTS

ABBREVIATIONS

CP	Consumer Psychology
DV	Dependent Variable
ELM	Elaboration Likelihood Model
EP	Evolutionary Psychology
I-SP	In-group Social Proof Appeal
MR	Musical Reactivity *(Subjective)*
NoH	No Heuristic Cues
SC	Scarcity Appeal
SMR	Subjective Musical Reactivity
SSSM	Standard Social Science Model

LIST OF SYMBOLS

R : Random Assignment

O_i : Observation or measurement

X : Treatment

LIST OF TABLES

LIST OF FIGURES

Abstract

Caner Çeşmeci, "The Role Of Music In Persuasion: An Evolutionary Approach"

The aim of the study was to examine the role of musical reactivity as an individual personality trait on the effectiveness of specific heuristics (e.g., social proof versus scarcity) used in marketing messages. Drawing upon modern evolutionary approach, heuristics literature and scrutinizing the studies on the origin of music, a set of hypotheses were developed that social proof appeal would be more persuasive for individuals with high musical reactivity than low musical reactivity, however the effect of scarcity appeal would backfire for individuals with high musical reactivity due to possible fitness-enhancing role of music and hence the associated psychological trait musical reactivity to solve specific recurring adaptive problems in our evolutionary history which is social bonding. An experimental study was designed to test our hypotheses. Two hundred three people participated in this experiment. Persuasiveness was assessed both as an attitudinal response and as a behavioral intention. Findings revealed that social proof appeal is more persuasive for individuals with higher musical reactivity than lower musical reactivity in terms of behavioral intention, whereas no significant effect was found with respect to attitudinal response. We, on the other hand, failed to identify a meaningful relationship between scarcity appeal and musical reactivity. The importance of this study is that it is the first empirical study that examines the link between human musicality and heuristics adopting the evolutionary approach. Furthermore, this study also contributes to the growing literature on the theoretical and practical benefits of applying evolutionary psychology to consumer behavior.

Keywords: Evolutionary approach, music, musical reactivity, persuasion, social proof

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Özet

Caner Çeşmeci "Müziğin İkna Sürecindeki Rolü: Evrimsel Yaklaşım"

Bu çalışmanın amacı, müzikal tepkisellik kişilik özelliğinin pazarlama mesajlarında kullanılan belirli zihinsel kısa yollarının ikna ediciliği üzerindeki etkisini göstermektir (örn., sosyal kanıt ve kıtlık-azlık). Evrimsel psikoloji ve yargısal kestirmeler yazını ve müziğin evrimsel kökenlerine dair yapılan çalışmalar ışığında, sosyal kanıt kısa yolunun müzik ve müzikal tepkiselliğin evrimsel geçmişimizde karşılaşılan sosyal bağ adaptif sorununa yönelik çözüm sağlayıcı fonksiyonel ve seçilim değerini arttırıcı olası rolü nedeniyle, ikna ediciliğinin müzikal tepkiselliği yüksek olan bireylerde, düşük olan bireylere göre daha fazla olacağı, kıtlık-azlık zihinsel kısa yolunun ise müzikal tepkiselliği yüksek bireylerde bunun tersi etki göstereceği hipotezi geliştirilmiştir. Hipotezlerin test edilmesi için deneysel çalışma yapılmış olup, deneye 203 kişi katılmıştır. İkna düzeyi, tutum ve davranışsal niyet olarak iki ayrı seviyede değerlendirilmiştir. Sonuçlar, evrimsel perspektif ışığındaki ana hipotezimi destekler bir biçimde, sosyal kanıt kısa yolunun müzikal tepkiselliği yüksek olan bireylerde düşük olan bireylere göre davranışsal niyet olarak daha ikna edici olduğunu göstermiştir. Ancak tutum seviyesinde anlamlı bir fark bulunamamıştır. Öte yandan, kıtlık-azlık kısa yolunun etkinliğinin de bireylerin müzikal tepkiselliğine göre anlamlı bir şekilde farklılaştığına dair bir sonuca ulaşılamamıştır. Çalışmanın önemi, insanların müzikal eğilimleriyle zihinsel kısayollar arasındaki ilişkiyi evrimsel yaklaşımla inceleyen ilk ampirik çalışma olmasından gelmektedir. Çalışma, evrimsel psikolojinin tüketici davranışları ve pazarlama alanındaki uygulamalarının kuramsal ve pratik gücünü de gözler önüne sermiştir.

Anahtar kelimeler: Evrimsel psikoloji, müzik, müzikal tepkisellik, ikna, sosyal kanıt

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CHAPTER ONE

INTRODUCTION

> "I love science, and it pains me to think that so many are terrified of the subject or feel that choosing science means you cannot also choose compassion, or the arts, or be awed by nature. Science is not meant to cure us of mystery, but to reinvent and reinvigorate it."
>
> Robert M. Sapolsky, 2004

In parallel with the latest developments of World Wide Web (WWW) and mobile technologies, marketing communications has evolved significantly over the past three decades. Despite such dramatic changes on consumers' world, hidden forces that shape our attitudes and behaviors has still been the same since the beginning of the time. In consideration of this fact, evolutionary psychology and its implications on marketing realm may bring a new perspective to consumer research.

Persuasion is a major research area that has long been examined in the context of social psychology, marketing and advertising literature. It is, at heart, a communication process that aims to change attitudes, beliefs and behaviors of a target person. What is in common between a crying infant in need of care, an adolescent trying to attract the opposite sex, a political group in an effort to influence people, a master student defending his/her thesis, a sales person trying to sell a

product, and a charity's efforts to fundraise? Although some scholars do not term all these instances as persuasion process, it is obvious that they all share similar dynamics, broadly.

Despite the pervasiveness of persuasion phenomenon in our lives, people rarely focus deeply on messages in the environment (Simon, 1957). Instead, people rely on the mental shortcuts called as heuristic cues that have a prominent impact on our attitudes and behaviors (Kahneman, Slovic, and Tversky; 1982). When crafting advertising messages several specific types of heuristic cues are widely used as persuasion tactics. The present study focuses on one of these heuristic cues called social proof and relates it with the individual trait musical reactivity on the basis of evolutionary perspective.

Human beings are social creatures and communication is at the center of our lives. This deliberate activity of exchanging information and meaning appeared in different forms that might be divided into two types as verbal and non-verbal. Music, in its many forms, is a one of the type of "non-verbal" communication that is conveying messages (Ritt, 2004), triggering moods (Bruner, 1990), and a well-known persuasion tool as well (Kellaris and Cox, 1989). There are numerous studies with respect to music and consumers (see Kellaris, 2008). The literature is abundant with philosophical debates concerning the evolutionary function of music, and human musicality and numerous theories have been developed (see Wallin et al., 2001). Majority of these theories propose that music is evolved as a function to create and enhance social bonds (for detailed overview, see Fitch, 2006). Hence,

musical reactivity (hereafter, MR), as an innate trait that comprises individuals' response and reactivity to musical information in the environment (Loersch and Arbuckle, 2013) constitutes the main construct of the present study.

Evolutionary approach suggests that social proof signals safety of group and group action. Music also helps to mold individual beings into a coordinated group, such as creating social bonds through ritualized drumming (Loersch and Arbuckle, 2013). It is suspected that human musicality and group living, intrinsically, serve the same evolutionary adaptive problem and build our hypotheses upon this theoretical groundwork.

The aim of the study is to examine the role of musical reactivity (MR) as an individual personality trait on the effectiveness of social proof cues used in marketing messages, and aim to establish a link between this effect and musical reactivity of the consumer. Drawing upon modern evolutionary approach and heuristics literature, it was hypothesized that social proof appeals are more persuasive for individuals with high MR than low MR. In this thesis, the conceptual framework and experimental research findings with our offering of theoretical and practical implications and further research directions were presented.

CHAPTER TWO

CONCEPTUAL BACKGROUND

> "Character may almost be called the most effective means of persuasion."
>
> Aristotle, 384-322 B.C.

2.1. PERSUASION

The etymological origin of the word "*persuasion*" can be traced back to Latin word "*persuasionem*" (nominative persuasio) and it is adapted to Middle French as "*persuasion*" around 14th century (Online Etymology Dictionary, 2017).

History of persuasion is the history of human being. Persuasion phenomena that have been examined by many philosophers, dates back to the Ancient Greece. The art of persuasion and rhetoric have been discussed since "*Gorgias*", Plato's Dialogue (approximately 380 BC). Aristotle, however, put forth the first theory of rhetorical discourse in the 4th century (Hogan, 2013). According to Aristotle, persuasion comprises some components that can be divided into two, as artistic and inartistic in terms of the type of proofs used in the process. In addition, success of a persuasion process based on three fundamental elements that comprise *ethos*, *pathos*, and *logos*. In brief, while ethos is related to source

credibility, pathos emphasizes the emotional appeals, and logos, hence the name, is in relation to using rational and logical appeals in persuasion.

Persuasion is at the center of our entire life. Since increasing diversified medium with the developing information technologies and information load faced by modern man on a daily basis and decreasing time resources taken into consideration, persuasion phenomena, which has been examined for many years in marketing communications, consumer behavior, and social psychology literature, is becoming more and more crucial. In other words, the issue of persuasion will have had an increasing importance, as the time becomes an even more limited resource for the modern people. On the other hand, the increasing competition in the market place due to globalization, the developments in the information technologies, the use of various digital media in social life, and the increasing size of information load of consumers in daily life are the other factors that raise the importance of persuasion. Under all these conditions, today's consumers become less sensitive to messages, and particularly under certain conditions, the relation that they establish with the content of the message is getting weaker and weaker. Within this information complexity, there have been radical changes in people's decision-making processes.

2.1.1. The Definition of Persuasion

In order to comprehend persuasion phenomenon thoroughly, it is crucial to consider other related terms and which distinctive features persuasion has, as compared to other type of influence.

Persuasion is an essential phenomenon for human being. Many theorists, however, have advocated that it is not only peculiar to human. Upon observing chimpanzees in a Dutch zoo, Frans de Waal published his observations in a book called Chimpanzees Politics (1982) and he inferred from this journey that chimpanzees also use some techniques to influence other members of their group. Furthermore, they form groups, coalitions and have an awareness of reciprocal behavior and even deception (Perloff, 2010). To some scientist, these all can be viewed as some sort of persuasion attempts, while others posit that persuasion should involve awareness of the process for both persuader and message recipients' and more importantly, persuasion should involve moral components. Considering this latter perspective, that type of attempts to influence others in animal kingdom cannot be entitled as persuasion. Instead, social influence or coercion is better term to describe this situation (Perloff, 2010). Although different views as to whether persuasion should involve moral aspects and conscious awareness of the process, the importance of the notion of free will is indisputable in the distinction between persuasion and coercion.

Persuasion is, at heart, a communication process that involves a source, message, channel, and recipient or target. However, the aim of this special communication process is to change or form the target's attitude. It can be found numerous definitions of persuasion in different ways. The differences between the definitions mostly depend on the approach of relevant literature. However, common points of all definition might be classified as follows (Perloff, 2010):

1. The purpose of persuasion is to change or form a target's attitude (Brinol and Petty, 2012; Maio and Haddock, 2007; Perloff, 2010).
2. Persuasion involves an endeavor to influence (Andersen, 1971).
3. Persuasion is a symbolic process (Smith, 1982).
4. Persuasion involves the conveyance of a message (Smith, 1982)
5. Persuasion requires free will and free choice (O'Keefe, 1990)

All these definitional components of persuasion considered, Richard M. Perloff described persuasion phenomenon in his book called "The Dynamics of Persuasion" as follows:

> *"Persuasion is a symbolic process in which communicators try to convince other people to change their attitudes or behaviors regarding an issue through the transmission of a message in an atmosphere of free choice. "* (Perloff, 2010, p. 12).

To sum up, despite the abundance of views, it is obvious that persuasion is somewhat different phenomena from coercion. While coercion often involves forcing and lack of free will, on the other side, persuasion, at least to some extent, should embraces the notion of free will and reasoning. Yet, despite seemingly obvious difference, due to the fact that there is no dichotomy between coercion and persuasion, it is very hard to recognize a certain influence attempt whether it is truly persuasion or not. In this context, it is also possible to classify an influence attempt under both persuasion and coercion or somewhere in between (Perloff, 2010). After this brief introduction, in order to comprehend persuasion thoroughly, an examination of attitude and its theoretical background are essential.

2.1.2. Attitude Change / Formation

The importance of attitudes in our entire life is unquestionable. In every social and individual context, our behaviors are mostly shaped by our attitudes. A thorough examination of the theoretical background of this important concept will help us to better understand the issue of persuasion. The definition of the concept of attitude is a difficult goal to reach with a few sentences. Therefore, studying the concept of attitude in contexts of content, structure and function will give us deeper insights about the subject.

2.1.3. Content of Attitude

It is possible to divide the dominant models in the literature on the contents of the concept of attitude into two as three-component model and the expectancy-value model (Maio and Haddock, 2007). While three-component model considers the components of the content of the attitude with feelings, beliefs and behaviors about the attitude object (Zanna and Rempel, 1988), the expectancy-value model, on the other hand, focuses on the level of beliefs of attitude content (Wyer, 1970). To clarify the three different components of attitude content within the context of the three-component model, let us consider the day-zone marriage programs on TVs. As often expressed, the contents of these programs are boring to most people (affective component). Besides, many people think that the things happening in these programs are not suitable especially for family structure of Turkish society (cognitive component). However, when ratings are taken into consideration, these programs

still maintain their place in the category of the most watched (behavioral component). If the views expressed by people about these programs are thought to reflect the reality, it can be clearly seen that these three elements of attitude can in fact be counterproductive. These inconsistencies of the constituent components of the attitude are called "inter-component ambivalence" in the relevant literature (Maio, Esses, and Bell, 2000). On the other hand, these components generally tend to be in the same direction as one another (Eagly and Chaiken, 1993). This consistency bias among the components of attitudes arises from avoidance of cognitive dissonance in our nature (Festinger, 1957).

The expectancy-value model is particularly based on the "belief" component. This model suggests that the attitude towards an object is the sum of our evaluative beliefs about it. But these beliefs are rarely precise. For example, one could have a certain degree of belief about whether a high-caliber burger is healthy or not, he/she could also believe that the same burger has a perfect taste or that burger will make him 100% happy (Maio and Haddock, 2007). The theoretical support of the three-component model is very important, since it cannot be thought apart from the affective and behavioral elements of the belief. Therefore, both models have strengths and weaknesses. (Maio and Haddock, 2007). The appeals that better match the contextual attributes of the target's "attitude" are more effective in the persuasion process. For instance, emotional-based attitudes in the persuasion process can be more easily shaped by affective methods (Fabrigar and Petty, 1999).

2.1.4. Structure of Attitude

When it comes to the structural features of attitude, most people heuristically think that if the contents of attitude (i.e. cognitive, affective or behavioral components) have structurally positive valence, then it must impede the negative valence of the same component. In other words, negative and positive structure of a component is two opposite edge of the one dimension. This view labeled as one-dimensional perspective in the relevant literature (Maio and Haddock, 2007). On the other hand, two-dimensional view suggests that both positive and negative valence can be present in the human mind at the same time. (Cacioppo, Gardner, and Berntson, 1997) More specifically, while one-dimensional viewpoint address attitude toward an object as either positive or negative (i.e. zero-sum), bi-dimensional perspective, however, evaluate attitudes held by an individual in the light of ambivalence, that contain the both dimension of positive and negative valence simultaneously. Note that, in the view of one-dimensional perspective there is a neutral position, which is positioned between positive and negative (Maio and Haddock, 2007). Although single-dimensional scale was used in this study to measure attitudinal outcomes, (see Griskevicius et al. 2009), scales derived from bi-dimensional perspective could also be used in order to deal with the meaning of neutrality (Kaplan, 1972).

In the context of persuasion, the notion of ambivalence is crucial, due to its valuable potential to predict attitude change. In line with matching principle,

individuals who are ambivalent may be persuaded more easily, when a message is presented with bidirectional arguments (Maio and Haddock, 2007).

2.1.5. Function of Attitude

The most basic function of the attitudes is the valuation-evaluation function for the attitude object. This basic approach takes place as object-appraisal in the literature (Smith et al., 1956). Individuals pay more attention to mentally accessible attitudes (Fazio, Blascovich, and Driscoll, 1992). In this context, easily accessible attitudes require less arousal and mental burden, so they can be processed more easily in the decision making process (Maio and Haddock, 2007).

The second important function of attitudes is to provide emotional experiences in people (Maio and Esses, 2001). As it is known that emotions respond to many psychological needs (Damasio, 1994), people are constantly looking for affectivity experiences. People do not stay away from watching the horror films, especially in spite of the negative feelings they have experienced. Another example is that people can exhibit hatred in different groups (e.g., out-group hatred) to meet their emotional needs (Maio and Haddock, 2007). It has been shown that those who have a tendency to need for affect, which is a personality trait, have extreme attitudes in many subjects (Maio and Esses, 2001).

On the other hand, it can be categorized the other functions that the attitudes have, according to whether they are positive and/or negative in terms of the structure of attitudes (see Table 2.1), (for detailed review, see Maio and Haddock, 2007).

People shape their attitudes in the direction of their beliefs, feelings and behaviors related to those attitudes. The most important reason for this is the psychological tension created by cognitive dissonance (Festinger, 1957). From this point of view, it can be asserted that the most basic function of attitudes is the effort to eliminate this discrepancy (Cialdini, Trost, and Newsom, 1995).

As an end, attitudes interact with one another in the context of content, structure and functions (Maio and Esses, 2001). Therefore, in order to understand the concept of attitude change, it is necessary to approach this theoretical construct with a holistic and dynamic viewpoint.

Table 2.1. Theoretical Foundations of Attitude

ATTITUDE		
CONTENT	**STRUCTURE**	**FUNCTION**
Beliefs (Cognitive)	Single-dimensional	Object-appraisal function (Smith et al., 1956)
Feelings (Affective)	Bi-dimensional	Need-for-affect function(Maio and Esses, 2001)
Behavior (Behavioral)		Utilitarian function (Shavit, 1989)
		Social adjustment function (Smith et al., 1956)
		Value-expression function (Maio & Haddock, 2007)
		Ego Defensive function (Katz, 1960)
		Others (Maio &Haddock, 2007)

2.1.6. Models of Persuasion

Having been discussed the theoretical foundations of attitude, in line with attitude change and formation literature, the models of persuasion were briefly and chronologically addressed under this heading.

The theoretical foundations of Yale Model, one of the earliest persuasion models, were taken by Carl Hovland and his colleagues in the Yale research programs which he founded immediately after his important work on the influence of war propaganda (Hovland, Lumsdaine, and Sheffield, 1949) in World War II. This model especially focused on the source of the message, the recipient of the message, and the message itself. In short, it is possible to define the model by "who said what to whom" (see Lasswell, 1948). In addition, the model emphasizes that the effective persuasion process can occur as a series of sequential events such as attention to the message, grasping the message and acceptance of the message (Hovland et al., 1953). The change of attitude according to this model depends on the learning of the message. In this context, reinforcement plays an important role in the persuasion process.

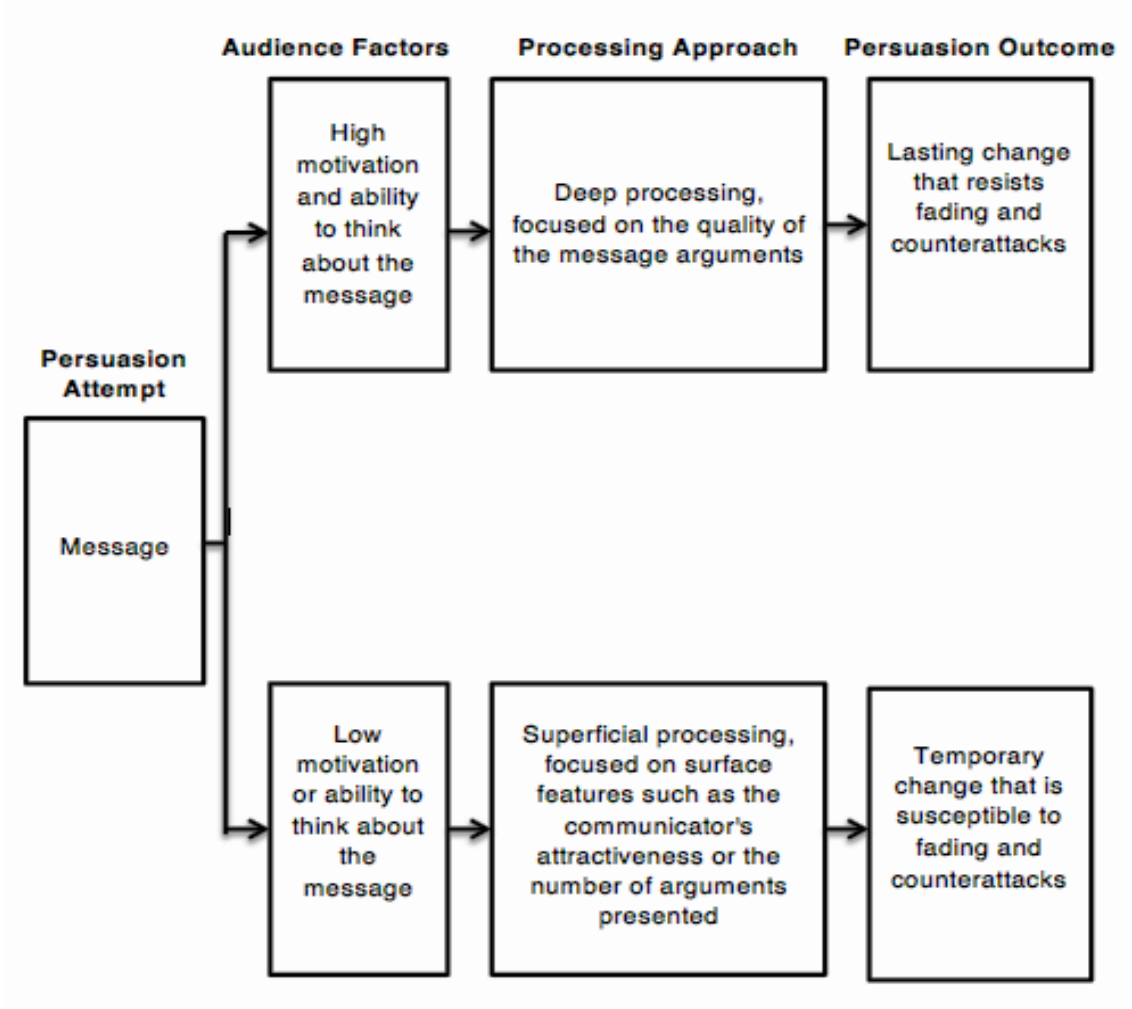
On the other hand, McGuire proposed the Information-Processing Paradigm in his work. This approach has suggested that all steps in information processing must be successfully completed in order for the persuasion process to be successful and to provide behavioral output. McGuire examined the persuasion process in his model in two steps as reception and yielding. For instance, the intelligence factor has a positive effect on the perception step of the message, but has an adverse effect on the acceptance of the message. In this regard, the model has improved the simpler predictions of the Yale model by making significant contributions (Maio and Haddock, 2007).

The theory of social judgment is based on the idea that people need a reference point when deciding on the social field (Sherif and Sherif, 1967). When people are confronted with a message, they compare this message to their previous attitudes and place them in certain conceptual areas. These are latitude of acceptance, latitude of rejection and latitude of non-commitment. In the social judgment theory, the importance of the mentioned areas has also been emphasized in the perception of the message. Individuals perceive messages falling within their latitude of acceptance as closer to their own attitudes, while those perceived as latitude of rejection perceive them more distantly (Maio and Haddock, 2007). Another important aspect in the model is the personality trait called ego-involvement (Sherif et al., 1965). The higher the personality trait of a person is, the possibilities of changing attitudes towards an object will also become difficult at that time (Barker, 1990).

Elaboration Likelihood Model (ELM) is, perhaps, the most-known persuasion model. Briefly, this model proposed central and peripheral routes with respect to attitude change. In the central route, people process information regarding the argument content more deeply. While powerful arguments lead to positive cognitive responses, weak arguments, however, lead to negative cognitive responses. In the peripheral route, on the other hand, people process information regarding the message content more shallowly. Instead of focusing the message content, they rely on other cues as source attractiveness, or affective aspects of the message (Petty and Cacioppo, 1986). This model also proposes that people with low ability and low

motivation are more likely to use peripheral route. Therefore, it also acknowledges the message recipient's characteristics (Maio and Haddock, 2007).

Figure 2.1. Central and Peripheral Routes in ELM



Note: Adapted from "Central and peripheral routes to advertising effectiveness: The moderating role of involvement." by Petty, Richard E; Cacioppo, John T; Schumann, David, 1983, Journal of Consumer Research, 10, 135–146.

The heuristic-systematic model (Chaiken et al., 1989) has numerous common points with ELM. According to this model, individuals are more likely to use simple persuasive cues (i.e. heuristics), when their ability and motivation is low (Maio and Haddock, 2007). However, major difference between the heuristic-systematic model and ELM is that, the former emphasizes "if-then" procedures, when describing heuristic routes. This model also proposes that systematic and heuristic routes can occur at the same time. Therefore it differs from ELM with its opposition to this zero-sum view. More specifically, if systematic route does not sufficient, people can also use heuristic routes.

The other models are unimodel (Thompson, Kruglanski, and Spiegel, 2000) and cognition-in-persuasion model (Albarracin. 2002). Both models share the notion of other dual-process models with respect to the role of motivation and ability. They, however, differ in some respects. For instance, while unimodel emphasize the information relevancy to the persuasive conclusion, cognition-in-persuasion model, on the other hand focuses on the notion of processing order (Maio and Haddock, 2007).

Table 2.2. Models of Persuasion

MODELS OF ATTITUDE CHANGE
1. The Yale Model of Persuasion (Hovland et al., 1953)
2. The Information-processing Paradigm (McGuire, 1968)
3. The Social Judgment Model (Sherif, 1980; Sherif & Sherif, 1967)
4. The Elaboration Likelihood Model (Petty & Cacioppo, 1986)
5. The Heuristic– systematic Model (Chaiken et al., 1989)
6. The Unimodel (Kruglanski, Fishbach, Erb, Pierro, & Mannetti, 2004)
7. The Cognition-in-persuasion Model (Albarracin, 2002)

2.1.7. Emotion and Persuasion

Some theoretical models provide us with important predictions on how emotions increase the effectiveness of persuasion heuristics (further discussed in the subsequent parts). Among these models, the arousal-based model suggests that arousal enhances the effectiveness of heuristics (Sonbonmatsu and Kardes, 1988). The affective-valence based model suggests that this activity change depending on

the positive and negative emotions, positive emotions lead to more superficial processing, thus increasing the effectiveness of heuristic appeals (Mackie and Worth, 1989; Schwarz and Bless, 1991).

On the other hand, the modern evolutionary approach (Griskevicius et al., 2006; 2009; Saad, 2007) suggests that people's thinking and behavior patterns in specific cases or situations are related with the underlying fitness-enhancing function (Nesse, 1990, Keltner et al., 2006). According to this model different emotions increase the effectiveness of different heuristics due to fitness-enhancing function (Griskevicius, et al., 2009).

2.2. EVOLUTIONARY PSYCHOLOGY

> "In the distant future I see open fields for more important studies. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation." (p. 488)
>
> Charles Darwin, 1859

Evolutionary psychology is an approach that examines psychological structures in the light of modern evolutionary perspective. Since the fully establishment of the evolutionary psychology discipline in the late 1980s, the practices on behavioral sciences and the pace of development have steadily increased. This relatively new discipline has been applied to a wide range of disciplines (see, Lopreato & Crippen, 1999).

In fact, it is crucial to comprehend the basics of evolution phenomena in order to fully understand what evolutionary psychology is, and how it expands the theoretical groundwork of consumer psychology by providing novel explanation of today's consumer psychology literature.

2.2.1. Darwin's Theory of Evolution

Since Charles Darwin's two revolutionary books, "*On the Origin of Species" and* "*The Descent of Man and Selection in Relation to Sex*" which are published in 1859 and 1871, after his voyage as a naturalist on the *Beagle* ship; two basic

concepts underlying the evolutionary dynamics that shape species have been well documented; those are natural selection and sexual selection.

2.2.1.1. Natural Selection

Natural selection is a process that generates adaptations that are useful and helpful for a particular species to survive in a specific environmental condition. Given that a particular environment in which nut-bearing trees are major food supplier for the bird, then birds having sharp beak might be reach higher survival rate than birds with more curvy type of beak. As may be conferred upon this basic example, some types of traits that provide a survival advantage to the species are naturally selected. In addition, there are three major means by which natural selection works. Those are *variance*, *selection* itself, and *inheritance* (Buss, 2014). However, when it comes to inheritance, no specific explanation is arisen within scope of natural selection. It requires another conceptual support to fully understand the evolution process. In this point, the second prominent drive in the evolutionary process of species comes into play.

2.2.1.2. Sexual Selection

Even though, sexual selection, at heart, is strongly related to natural selection, it is, however, differ greatly in favor of the adaptations that have genetically accumulated as a result of successful mating (Buss, 2014; Saad, 2011). Sexually selection may be divided into two types as intersexual and intra-sexual selection.

Intersexual selection favors desired traits that members of opposite sex prefers in mating choice, while intra-sexual selection refers to sexually selected trait that is favorable in physical combat in same-sex competition setting. To given an example, while birds' songs and peacock's tail to attract a mate are two of well-designed product of intersexual selection, stags' antlers, on the contrary, is intra-sexual selected trait (Buss, 2014; Saad, 2013). It is also important to note that both sexual selection and natural selection are not necessarily correlated each other, positively, nor do corroborate one another. In other words, one sexually selected trait might be disadvantageous for a certain species in the natural selection process, despite of the fact that it is very beneficial and favorable in terms of sexual selection. Although, for instance, peacocks' colorful and flashy tail provides advantage for successful mating, it is, in other respects, a drawback for camouflage and hiding from predators and is also the case for the songbirds to sing for mate attraction at the expense of the risk of being spotted by potential predators (Buss, 2014).

On the other hand, other causes of evolutionary transformation should be mentioned such as *genetic drift*, which is related to genetic mutation that occurs in the organism at the cellular level. However, it will not investigated further as this is irrelevant within the context of our study.

2.2.1.3. The Inclusive Fitness

Despite important position of natural and sexual selection in order to comprehend theory of evolution, another revolutionary change in the field of biology came up with Hamilton's theory of *Inclusive Fitness* (1964). Within the scope of this

theory, in contrary to classical explanation of natural and sexual selection, Hamilton's understanding with respect to successful reproduction is more broadly than merely gene transfer to the one's offspring. He, instead, suggests that all favorable traits that enable an organism's genes to be transferred, regardless of whether this organism have a baby directly. Since it is also possible for the organisms to transfer their genes by means of parental care (Buss, 2014; Hamilton, 1964). Providing that an organism assisted their close relatives (e.g., brothers, sisters, or nephews) to survive and to reach to an age and a level at which they could reproduce successfully, there would be better chance to transfer their genes indirectly. Genetic closeness among different types of relatives gives rise to this trade-off strategy. To make it clear, while identical twins share one hundred percent same genetic pools and full siblings, grandparent-grandchildren share 50 percent, 25 percent, respectively; cousins for example share only 12.5 percent of common genes (Buss, 2014). Without ignoring classical fitness, it is certainly that Hamilton's inclusive fitness theory has broadened the nomological foundations of the field.

Table 2.3. Three Products of Evolutionary Process

Product	Brief Definiton
Adaptations	Inherited and reliably developing characteristics that came into existence through natural selection because they helped to solve problems of survival or reproduction better than alternative designs existing in the population during the period of their evolution; example: umbilical cord.
By-products	Characteristics that do not solve adaptive problems and do not have functional design; they are "carried along" with characteristics that do have functional design because they happen to be coupled with those adaptations; example: belly button.
Noise	Random effects produced by forces such as chance mutations, sudden and unprecedented changes in the environment, or chance effects during development; example: particular shape of a person's belly button.

Note: Three products of Evolutionary Process. Adapted from Evolutionary Psychology: The New Science of the Mind, *Fourth Edition*. (p. 38), by D. Buss, 2014, Great Britain, Pearson Education Inc.

2.2.2. Foundations of Evolutionary Psychology

Upon understanding the concept of biological evolution in Darwinian perspective, these selections are also valid for and applicable to the human mind. Scientific fields that investigate the biological origin of behavior are called as evolutionary behavioral science. However, origins of EP might be traced back to the ethology discipline founded by the Nobel Prize winner physiologists Nikolas Tinbergen, Konrad Lorenz, and Karl von Frisch won (Saad, 2013). After foundation of this novel discipline in 1970's, evolutionary origins of human behavior dynamics were documented. For instance, infant's innate predisposition to cry, and their ability to find exact location of her/his mother's breast (Saad, 2013).

Second milestone in evolutionary behavioral science is the emergence of behavioral ecology discipline. Since it includes culture phenomena within scope of the term "*behavioral plasticity*" (Cosmides, 1989), in other words, innate predisposition enabling human behavior to be shaped by environmental influence; and it, on its own, is an adaptation (see Brown, Dickins, Sear, and Laland, 2011; Winterhalder and Smith, 2000). Considering human mind had had innate inclination to be shaped by environment in which it operate to find solutions to recurrent adaptive problems. Hence, this discipline especially would be very beneficial for consumer psychology and related studies, due to its structural advantage to explain learned behavior in the evolutionary perspective (Saad, 2013). After these disciplines that can be classified under the stream of evolutionary behavioral sciences, EP has recently emerged novel and independent discipline.

Of note, in tandem with the disciplines aforementioned above, EP emerged as the newest link within the context of evolutionary behavioral sciences (i.e. after ethology, sociobiology, behavioral ecology, Darwinian anthropology, and memetics, respectively) (Saad, 2011). The literature is abundant with respect to conceptual framework, and epistemological groundwork of EP (in order to find detailed overview, see Barkow, Cosmides, and Tooby, 1992; Buss, 2014; Crawford and Krebs, 2008; Cosmides and Tooby, 1992).

Two main premises of EP is *functionality* and *domain-specificity*. It is very crucial for thorough understanding of the capacity of EP in generating novel hypotheses. Detailed investigations of these concepts are needed.

To reiterate, EP, that examines the psychological structures in the light of modern evolutionary perspective. In this approach, the human mind and its psychological mechanisms are considered as having modular structure just like the organs in the body, each have been adapted to fulfill different functions (Buss, 2014).

EP emerged is an attempt to understand the human mind in the light of the idea that our minds were designed by natural selection and that they were designed to operate in an ancestral environment of an hunter-gatherer society (Tooby and Cosmides, 2005). In other words, the human mind is a product of the natural and sexual selection (e.g., mate selection, hunting, cooperation, helping, raising children, protecting from predators) in the environment of their hunter-gatherer ancestors.

2.2.2.1. Functionality

The postulation of functionality is that each psychological mechanism is a product of selection processes that has a function to solve recurrent adaptive problems (Buss, 2014). Natural selection yields complex traits that are functionally necessary in a particular environment in which given organism live. In other words, human mind (i.e. psychological mechanisms) is shaped by selection processes so as to function properly as a consequence of adaptive pressures. While these selection processes operate in this way, innumerable alternative designs are also arise to solve the same adaptive problem. However, an alternative traits designed by natural selection can come into play only if this trait solves the adaptive problem in question better than the other one. Note that, random genetic mutations almost have no effect in functionality. Instead, selected traits in an effort to meet the requirements of a

specific environment accumulated between generations (Cosmides, Tooby, and Barkow, 1992).

Briefly, functionality denotes the scheme of psychological mechanisms (e.g. behavior, attitude, cognition, emotion) might have served to solve repetitive adaptive problems that humans faced in the environment of their hunter-gatherer ancestors (Griskevicius et al., 2009). For instance, keeping themselves safe from predators, mate attraction, gaining status, kin investment, finding allies, gaining friends *(non-genetic allies)*, reciprocal altruism, keeping disease away, avoiding food toxins (see Buss, 2014, Kenrick, Li, and Butner, 2003; Saad, 2013).

From this perspective, main questions pertaining to functionality should be, what adaptive problems might a psychological mechanism (e.g. emotion, cognition, personality traits) have assisted to find an answer for our hunter-gatherer ancestors. And how might these psychological mechanisms have promoted solutions to these issues (Griskevicius et al., 2009).

2.2.2.2. Domain Specificity

As frequently stated in this study, human beings confront various challenging issues, such as self-protection, finding food, make friends, child upbringing, finding a mate etc. These different problems however require different strategies. Nobody can expect that the way an individual finds a mate is also suitable for protect themselves from predators or potential enemies, nor is it possible to devise one-size-fits-all solution in such complex environment. From the perspective of EP,

psychological mechanisms involve different domain-specific components. Each component is designed to solve specific adaptive problems (Griskevicius et al., 2009; Saad, 2013).

Standard Social Science Model (SSSM) has been prevailing in psychology realm for decades. According to this view, human mind is a "*blank slate*" and only may be shaped through socialization process. Within the basic framework of classical conditioning (Pavlov, 1927), and radical behaviorism with B. F. Skinner (1953), social scientists evaluated human mind as context-independent and domain-general. Indeed, this is still the case for the majority of today's consumer psychologist. On the other hand, the latest advancement in cognitive psychology posits that human mind is strongly context-dependent. (see Tooby and Cosmides, 1992; Pinker, 2002). In line with Noam Chomsky's famous assertion, Steven Pinker also emphasizes the innate capacity of human beings for language acquisition and acknowledges the evolutionary forces that create language, in his book called "Language Instinct" which is published in 1994. In contrary to the tenets of SSSM, very young children's toy choice is strongly related to the biological factors, even if they are so young to learn through socialization process (Alexander & Hines, 2002; Hassett, Siebert, & Wallen, 2008). Furthermore, some endocrinological disorders can reshape children's predisposition in toy preference. (Berenbaum & Hines, 1992; Hönekopp & Thierfelder, 2009).

To reiterate, in contrast to a large number of psychological models (e.g. the models fell under SSSM) that consider human mind, consisting of single and domain-general mechanism, domain-specificity approach of EP suggests that human

mind are composed of different set of mechanisms, each of which is an ultimate product of selection process. In other words, EP address human mind as a modular structure, each module is assigned to solve specific problem.

There are numerous studies that support domain-specific feature of human mind, great deal of those based upon a wide range of findings, in particular from neuroscience and the psychology of learning (Kenrick et al., 2013; Schmitt and Pilcher, 2004). To give an example, human beings particularly have innate ability to identify and discern a great number of different faces, without an effort (Boyer and Barrett, 2005). Having high ability to notice and detect human faces, but lower ability to distinguish individual facial differences of other species is a good example of a specialized system of human mind. This instance also sheds light on the innate predisposition to specific learning process at the cost of losing others (for detailed overview, see emerging neuroplasticity literature in neuroscience).

As known, humans have instinctual reactions to certain universal stimuli that generate fear response, such as snakes and spiders. In today's modern world, although people rarely encounter such stimuli, many have phobias against snakes, spiders, etc., but there can be hardly anyone who has a driving phobia. Seligman (1971) stated that the reason for this is our instinctive predisposition (i.e. domain-specific nature of our minds) for conditioning against some certain stimuli.

Furthermore, in the light of the modern evolutionary approach, some domain-specific mental mechanisms that promote specific type of behavior and cognition that are contributive to solve specific adaptive problems (*e.g. self-protection)* might repress or counteract another *(e.g. attention to attract a mate*) (Brendl, Markman,

and Messner, 2003). In line with this perspective, according to the empirical study of Griskevicius et al. (2009), mental mechanisms that make "social proof" heuristic cues more persuasive might affect the effectiveness of "scarcity" appeals negatively and vice versa, due to firing different set of mental modules.

Even though the question regarding how many domains human brain has is not conclusively listed as a neural structure of human mind. Consumer psychologist, however, does not necessarily list exact enumeration of these domain-specific modules. Hence, in consideration of domain-specific structure of human brain, numerous empirical questions can arise in consumer psychology realm, regardless of having definitive consensus with regard to an exact classification of the modules (Barrett and Kurzban, 2006; Saad 2013). There are two well-known classification list can be seen in the literature (see Table 2.4).

Table 2.4. Evolutionary Modules in Human Mind

Saad	Survival
	Reproduction
	Kin Selection
	Reciprocal Altruism
Griskevicius & Kenrick	Self-protection
	Disease-avoidance
	Affiliation
	Status
	Mate-acquisition
	Mate-retention
	Kin Care

2.2.3. Evolutionary Consumer Psychology

Recently, a new approach has been introduced for the adaptation of evolutionary psychology to consumer psychology and behaviors. This novel approach is entitled "*evolutionary consumer psychology"* by some marketing scholars and it is defined as not an alternative, but complementary to the fundamentals of consumer psychology realm (Saad, 2013). Although they are relatively scarce, important studies have been made in the light of this novel approach in the field of marketing (see Griskevicius et al., 2009; Monga and Gürhan-Canli, 2012; Saad and Stenstrom, 2012; Saad, 2013; Durante et al., 2011, 2014).

Consumer psychology has mainly been focused on social psychology, behavioral decision theory, and cognitive psychology as theoretical paradigms over the last four decades (Pham, 2013). Most used concepts in consumer psychology include but not limited to, memory, attitude formation/ change (i.e. persuasion), emotions, perception, sensory elements, personality and individual differences, and decision-making (Saad, 2013). Evolutionary lenses in consumer psychology Examining these concepts in question in the light of EP, we could easily reach substantial insights at a broad epistemological level that, otherwise, would be impossible task.

Prior to specific examples as to how evolutionary psychology broaden theoretical and epistemological groundwork of consumer psychology the levels of proximate and ultimate explanation need to be addressed. Model of Tinbergen in ethology discipline proposed different explanatory level of a behavior (i.e. animal, behavior, causation, development, evolution, function), (Tinbergen, 1963). In the

light of this model wide range of consumer-related topics can be discussed. While most of consumer scholars address consumer-related topics in causation level, evolutionary approach focuses on evolution and function aspects of a given topic (Saad, 2013). Given that the findings of a study with regard to conspicuous consumption and individuals' materialistic personality traits (e.g., Richins, 1994; Wong, 1997), this explanatory level only focuses on the causation (i.e. proximate explanation). On the other hand, evolutionary approach, for example, address the same issue asking questions so as to understand the underlying motives of conspicuous consumption rituals within broader framework (Kenrick, Saad, and Griskevicius; Saad, 2013). Succinctly, the question why consumer are the way they are is the main goal of evolutionary approach in consumer behavior realm (influenced from Robert Wright's book "The Moral Animal"). More specifically, for example, the relation between men's testosterone levels and conspicuous consumption (see Saad and Vongas, 2009) is one of the ultimate explanation levels, which are directly focus on evolution and function aspects of a phenomenon. (see Table 2.5 and 2.6). Note that, proximate explanation in consumer behavior is also critical as in every branch, an evolutionary approach, on the other hand, extends epistemological, theoretical, and methodological toolbox of consumer psychology.

Consumer research regarding memory demonstrated that women have higher recall rate regarding status-related products while they are in the most fertile period of their ovulatory cycle due to relevant evolutionary-driven biases related to a specific period of time on attention (Lens et al., 2012). Along these lines, when men are primed with visual sexual stimuli (e.g. a naked woman body), their recall rates of status-related products increase (Janssens, et al., 2011). These all evidences indicate

that memory does not works in a domain-general manner. Contrarily, in parallel with evolutionary relevant mechanisms, recall biases may operate highly context-dependent. When it comes to attitudes, sexual dimorphism provides us fruitful research area. There are significant difference between men and women in terms of product favorability (e.g. pornography and cosmetic products, respectively), (Nepomuceno et al., 2016).

Another important construct for consumer behavior is emotions. There are a large number of studies related emotions conducted in consumer psychology realm. However, emotion studies from evolutionary approach are still relatively scarce. According to EP, individuals' attitudinal and behavioral patterns in specific cases are related with the underlying fitness-enhancing function (Nesse, 1990; Keltner et al., 2006). Accordingly, regardless of emotion valence different type of discrete emotions increase the effectiveness of different heuristic appeals in advertising setting (Griskevicius, et al., 2009).

Personality is another essential research domain in consumer psychology. As known, personality traits constitute an important part of psychographic segmentations. Hence, as is in our study, psychographic segmentation suggestions based on evolutionary lens may provide us valuable insights, and bound for managerial implications. From evolutionary perspective, personality and individual differences may be addressed in different explanatory levels. For instance, men have more strong tendencies to join an extreme sport (e.g. skydiving) than women. This example can be explained by selective traits that are favorable in our evolutionary background. Other level accounts for individual difference between first-borns and

later-borns, that is, for example, later-borns' greater susceptibility to product innovations than their older siblings (Saad, 2013).

Conspicuous consumption is a popular research field in marketing. To reiterate, EP provides ultimate level explanations regarding the field (i.e., with Darwinian why). For example, the question as to why men like Ferrari, Porsche automobiles, while women have a strong desire to diamonds and hundreds of chic stilettos (Saad, 2011; 2013). Upon explaining the fitness-enhancing mechanisms in our evolutionary history provides us many fruitful insights with respect to our innate predisposition to specific products or consumption context. A product design process without taking into consideration of our consuming instinct (e.g., publishing a romance novel for men) is more likely to be a consideration of commercial failure (Saad, 2011).

People expose a large number cues that may prime some evolutionary relevant motivational mechanism. For instance, priming a mating mind-set leads men to be highly creative (Griskevicius et al, 2006) or to evaluate brand extension more favorably (Monga and Gürhan-Canli, 2012), to choose a automobile brand which makes them different from other (Griskevicius, Goldstein, et al., 2006).

Table 2.5. Examples of Explanatory Levels *(General)*

Example	Approach of Conventional CP	Approach of Evolutionary CP
	Proximate Explanation	**Ultimate Explanation**
	What? How?	***Darwinian Why?***
Women, generally, want to marry with older man (Kenrick and Keefe, 1992).	Norms of a given society give rise to that husbands must be taller, more powerful, and older than their partner (e.g., Cameron, Oskamp, and Sparks, 1977).	Since men above age 40 demonstrate a strong preference for younger partners, men in their 20s do not. And female fertility goes up until the twenties but then falls during the thirties In fact, it was found universally, in South America, Africa, and even on remote islands scattered around the globe (Kenrick and Keefe, 1992; Otta, Queiroz, Campos, daSilva, and Silveira, 1998).
Pregnancy sickness or nausea	Gynecologists' explanations about which hormones affect the manifestation of these symptoms (Saad, 2013).	It is an adaptation to protect the embryo from food-borne pathogens during organogenesis (i.e. gestational time period when a fetus' key organs are forming (Flaxman and Sherman, 2000; Pepper and Roberts, 2006; Profet, 1992; Saad, 2013).
Learning	Domain-general learning through classical or operant conditioning (Pavlov, 1927, Skinner, 1938).	Learning to avoid toxic foods versus learning to avoid physical dangers are two different domain (Griskevicius et al., 2009, Kenrick and Luce, 2004).

Table 2.6. Examples of Explanatory Levels in Consumer Psychology

Example	Approach of Conventional CP Proximate Explanation *What? How?*	Approach of Evolutionary CP Ultimate Explanation *Darwinian Why?*
Brand extension	If an individual were able to see a link between parent brand and the extension, their attitude toward this brand would be more favorable (Aaker and Keller, 1990).	Men in mating mind-set tend to perceive more relevancy between parental brand and extention, due to the activation of relevant motivational sub-systems (Monga and Gürhan-Canli, 2012).
A Message Persuasivenes	While positive mood leads to more heuristic processing, negative mood leads to deeper information-processing (Schwarz 2002).	Positive or negative valence is differentiated according to their adaptive function (e.g. Fear cause social proof appeal to be more persuasive, whereas romantic desire does vice versa (Griskevicius et al., 2009).
Conspicious Consumption	Relationship between conspcious consumption and materalism (Wong, 1997).	The link between men's testosterone level and conspicuous consumption. Men like Ferrari, Porsche automobiles, while women have a strong desire to diamonds and hundreds of chic stilettos(see Griskevicius et al. 2007; Lycett and Dunbar 2000; Saad and Vongas 2009; Saad, 2011; 2013 Sundie et al. 2010).

2.2.4. Seven Deadly Sins in Consumer Psychology

The title of this part is adopted from famous consumer psychology professor Michael Pham's JCR editorial (i.e., Journal of Consumer Psychology). In this article, Pham addresses a set of serious problems that consumer psychology has encountered in terms of both internal and external relevance. Although he acknowledged some developments in the field, he could not paint too rosy picture in general. Pham listed these seven mistakes that should be avoided by consumer behavior scholars (see Table 2.7). Recommendations of Pham's as to how to fix current problems of consumer psychology involved: wider theoretical lenses, less weight on micro-level explanations, broader epistemology, and consideration to content sides of consumer psychology (Pham, 2013).

EP can tackle most of challenges of consumer psychology faced (Saad, 2013). By providing ultimate explanations to consumer psychology and marketing realm, EP extends epistemological aspect of the field. On the other hand, by providing novel perspectives to the fundamental theories consumer psychology utilize including, but not limited to information-processing paradigm and behavioral decision theory, EP develops theoretical perspective of the discipline and brings macro-level explanations to marketing studies. Furthermore, EP makes use of a wide range methodological approach (Kenrick, Saad, and Griskevicius, 2013).

Table 2.7. Seven Sins of Consumer Psychology

Sin 1	Narrow scope
Sin 2	Narrow lenses
Sin 3	Narrow epistemology
Sin4	Disregard content
Sin5	Overgeneralization
Sin6	Research by convenience
Sin7	Confusing "theories of studies" with "studies of theories"

Note: Adopted From "The seven sins of Consumer Psychology" by Michael Tuam Pham, 2013, Journal of Consumer Psychology, 23(4), p.p. 411-423.

2.2.5. Common Misconceptions about EP

Due to its seemingly uncomplicated nature and simplicity, most people might think that EP can be conceivable after only concise exposure. This situation sometimes lays the ground for common misconceptions and misunderstandings (Confer et al., 2010). Even though its well-established epistemological and theoretical groundwork, and competence to posit falsifiable theories (Conway and Schaller, 2002; Ketelaar and Ellis, 2000; Saad, 2011), EP is occasionally criticized by scholars in various disciplines. On the other hand, almost all critics directed at EP are utterly devoid of any truth. Even many eminent consumer psychologists and marketing scholars fall into this trap. It is mostly because the misunderstandings associated with evolution phenomena and EP in general. First objective of this heading is to emphasize the common misconception concerning EP and what are the underlying premises that give rise to these fallacies.

To begin with, it is important to remember that over-attachment to a scientific approach as if it is an ideology is nothing to do with a given discipline, nor is the key tenets of it, but is more likely the maliciousness of an individual or a group who misuse them. Some movements (e.g., Social Darwinism) are simply the results of misuse of a scientific knowledge (Saad, 2011).

Some argue that the fundamentals of evolutionary psychology are a kind of a biological-deterministic view that implies our genes and the processes shaping them does not allow us to behave freely, besides, it makes the notion of free will totally useless. In other words, evolutionary approach does not acknowledge the importance of nature. However, that is not the case, on the contrary evolutionary psychologists support the "interactionism" which means environment in which people live has a prominent role to shape our psychological foundations. Of note, EP rejects the dichotomy between nature-nurture. By definition, evolutionary forces that shape us also operate in an environment. Accordingly, these formations take place by means of environmental factors (Saad, 2011, 2013). For instance, human beings have innate ability of language acquisition related to domain-specific mechanism of human mind, however, we are also subject to environmental feedbacks and stimulus in social setting and this is adaptable and elastic enough that a particular group of people speak a given language but others speak another (Kenrick, Saad, and Griskevicius; 2013). On the other hand, evolutionary psychologists completely reject "blank slate" opinion with respect to human mind. Instead, in order fully comprehend the link between our evolved nature and environmental influences, they

propose a striking metaphor that fits the evolutionary view flawlessly; that is a coloring book (Kenrick, 2011). Individuals can freely paint between the lines, but only in the custody of our biological limits.

Another misunderstanding regarding EP asserts that EP does not take into consideration individual differences. Instead, EP attempts to explain human universalities (Saad, 2011). However, substantial part of consumer behavior discipline is related to individual level. As it is mentioned previous paragraph, for evolutionary psychologists there is no nature-nurture dichotomy. In this perspective, considering people in the context of environment in which they live is also a subject of EP. With regard to consumption, spicy foods as a cultural consumption phenomenon and its relation to environmental food pathogens, is only one example about nature-nurture togetherness. Besides, substantial studies regarding personality in the context of EP, is one of the best instances that indicate individual based studies in the EP realm. Perhaps, the most famous research in this domain demonstrated, pervasiveness of infectious disease in a given society account for some personality traits such as socio-sexual orientation, extraversion and openness to experience (see Schaller and Murray, 2008). More specifically, these three traits are inversely correlated to historical rate of disease prevalence in a given society (Saad, 2013, Schaller and Murray, 2008). Note that, our study address individuals' musical reactivity as a predictor of predisposition to the social related messages, that is purely individual level research on its own.

Taken all together, despite all these faulty criticism induced by aforementioned misunderstandings, EP endures all attacks with its theoretical beauty and exploratory power (Saad, 2011; Tooby and Cosmides, 2005).

2.3. MUSIC AND CONSUMERS

The importance of the communication for the people is indisputable. This information and meaning exchange which serve specific purposes and which can be made in various forms can be classified roughly as verbal and nonverbal. The sound (except for the words) and the music, which is specific form of it, are of the non-verbal forms of communication that transfer messages (Ritt, 2004) as well as induce emotion and mood (Bruner, 1990). But that the music is far greater than just a means of communication for the people (at least in the context of difference from the other means of communication), this can be easily determined by considering its effect on the group identity and social dynamics since the early ages. Due to these reasons, the music is unsurprisingly one of the most important means of marketing and communication in various cases.

On the other hand, music is an important preference of the salespeople as a persuasion tool (Kellaris and Cox, 1989). The sound and the music have been the subject of many studies for many years in the field of psychology (e.g., Heinlein, 1928;; Henkin, 1955, 1957; Hevner, 1935; Rigg, 1940). The music has been examined in many studies, for example, its effects have been generally studied in the triangle of consumers, mood and marketing (Bruner, 1990), and its effects in the context of social psychology (Hargreaves and North, 1997), its role in the commercials (Gorn, 1982; Kellaris and Cox, 1989), its use in the stores (Kellaris and Kent, 1992; Knoferle et al., 2011), the background music's effect on the perception of the product (Zhu and Meyers-Levy, 2005), during the decision making process of the consumer (e.g., choosing wine) in the context of country origin (North et al.,

1999) have been examined. On the other hand, the response of the consumers to the music has been the subject of many studies also in the context of the structural features of the music. Some of these studies examined the structural features such as tempo (Holbrook and Anand, 1990), combinations of tempo and pitch (Kellaris and Kent, 1993), sonic branding (Jackson and Fulberg, 2003) and sonic logo (sogo) (Krishnan et al., 2012). In addition to these, there have been important academic studies on the music and ad message congruency in the advertising context (Ursavas and Hesapci-Sanaktekin, 2013).

2.4. ON THE ORIGIN OF MUSIC

> "As neither the enjoyment nor the capacity of producing musical notes are faculties of the least use to man in reference to his daily habits of life, they must be ranked amongst the most mysterious with which he is endowed."
>
> Charles Darwin, 1859

Music has always been at the heart of human life with many forms. Religious rituals, wedding ceremonies, social protests, and many other universal activities cannot be thought without musical elements. Pervasiveness of music in our lives is a stubborn fact. According to the Recording Industry Association of America, we still see the billion of dollars spent buying recorded music (as cited in Loersch and Arbuckle, 2013).

On the other hand, there are numerous evidences that the ubiqiutousness of music is not only peculiar to western societies but every known culture also has this phenomenon (Huron, 2001). Further, even our evolutionary relatives Neanderthals make music (Turk, 1997). Since the central role in human lives, music has enticed many philosophers and scientist for a long time.

As there seems no significant relation between music and survival or the strategies for the survivor of species at first glance, it is more likely that the music can be seen as a cultural phenomenon. However, many proofs obtained over the time

reveals that the music has innate universal characteristics in the organisms and is the result of certain evolutionary adaptations. Newborns in all cultures give the same responses to specific voices and even if these voices are not in their mother language, they keep on these universal reactions and they have ability to make a very clear distinction between language, music and other sounds (Molfese et al., 1975; Stager and Werker, 1997). On the other hand, the musical communication between a mother and an infant is also a phenomenon observed in all cultures (Trehub and Trainor, 1998; Dissanayake, 2000). Another universal phenomenon is that the music is used as an emotion regulator, on the infants by means of lullabies and other musical forms (Trainor and Schmidt, 2003). These features of the music, which basically improves the bond between mother and the baby, perhaps also become the basis for the function of the "social bond" which will be mentioned later. Also, the ethno-musicologists and psychologists who have conducted study on the issue have proposed arguments that support the universality of many aspects of the music and the emotions it induces (e.g., Balkwill and Thompson, 1999; Nettl, 2000, Balkwill et al., 2004; Laukka et al., 2013; Sievers and Polansky, 2013).

Important studies have been conducted on the evolutionary origins of the music in the disciplines of evolutionary musicology and biomusicology (e.g. Wallin et al., 2000). In addition, many studies in evolutionary perspective in recent years have provided important contributions to find a satisfactory answer to the mysterious questions such as *"What is music and what is it for"*, and *"Is music a cultural phenomenon that emerged later, or is it a form shaped by the nature?"* (see also Zatorre and Peretz, 2001; Avanzini et al., 2003; Peretz and Zatorre, 2003). There are two basic views proposed by the researchers on the issue, which have been supported

more than other alternative explanations (see also Fitch, 2006 for detailed comparison of the theories). Mentioned in Darwin's (1871) study and recently re-examined by Miller (2000), the first of these hypothesis proposes that the music is a "signal" to differentiate from competitors in the process of sexual selection and influencing the potential partner. However, the other view on the adaptive value of the music is group-based rather than having individual basis. This second view, which is dominant in the field, proposes that music contributes to improving social bond, harmony, group's coalitional quality and in-group coordination (Roederer, 1984; Brown, 2000, Freeman, 2000; Hagen and Bryant; 2003, Dunbar, 2012), (see also Boyd and Richerson, 1990; Wilson and Sober, 1994; Wilson, 1997). This view has been more prominent than the former, in recent years, and also made significant contributions to the studies that support the hypothesis with empirical findings (e.g., Dunbar et al., 2012; Hagen and Bryant, 2003; Loersch and Arbuckle, 2013).

Although the mechanism by which music functions as social glues among group members, biological, and neuro-hormonal mechanisms underlying music and social bond are well established by researchers. Some of those findings indicate the link between endorphin release and music (see the endogenous opioid system-EOS). When individuals take part in a musical activity, their level of endorphins increases. More interestingly it is the case even in passive listening (Tarr, Jacques, and Dunbar, 2014).

On the other hand, Freeman (1995), a neurophysiologist, has made a significant contribution to this view by revealing the relation between music and the hormone oxytocin. The link between oxytocin and social bond has been proven for

many times. Freeman suggested that music also raises the level of oxytocin hormones in his study. Also, studies on some mental disorders, such as Williams Syndrome, give rise to the thought of strong relation between sociability or social inclination and musicality (Ng et al., 2013). Individuals with Williams syndrome are pathologically social. In other words, they are "hyper-sociable" (Loersch and Arbuckle, 2013). On the other hand, from a perspective that supports this hypothesis, the music has an important structure as a means of communication and there are significant differences from the other means of communication. As compared to other communication methods, music is very effective and good at conveying social information regarding the community's behavior, mood and affect. Further, the messages conveyed by music affects many people behavior in a group via single medium (Loersch and Arbuckle, 2013). In other words, music eliminates the ineffectiveness of one-to-one communication in transferring emotion and thought (Allport and Postman, 1947; Schachter and Burdick, 1955) and it may convey the information with respect to the group's mood and behavior to many people through a single, common medium. Considering the dominant view that the musical characteristics of human beings evolve as a result of selective and adaptive pressures same with the inclination to live in groups, in other words, the predisposition to live in a community, it can be easily seen that music itself in the process of persuasion and to some degree emotions induced by the music and individuals' musical reactivity (MR) have significant effects on the effectiveness of social proof appeal.

2.5. HEURISTICS AND BIASES

> "Whenever there is a simple error that most laymen fall for, there is always a slightly more sophisticated version of the same problem that experts fall for."
>
> Amos Tversky

In today's world, time has become very scarce resource than ever before for modern man. With the latest development in the technology and information systems, it seems that modern man has partially overcame the issue of excessive physical workload and productivity problem. However, our mind designed by evolutionary forces to operate compatible with the environmental structure of hunter-gatherer societies (Tooby and Cosmides, 2005). Furthermore, daily information-load people faced has long gone beyond human evolved capacity of processing. With those in mind, since people's inferences and decision-making process are strongly limited by time constraints, available information, and cognitive limitations, they rarely process all pieces of information deeply (Griskevicius et al., 2009). Instead, they rely on the mental shortcuts in decision-making, called heuristic cues, which have a prominent impact on people' attitudes and behaviors (Kahneman, Slovic, and Tversky, 1982). Although mental shortcuts often lead to biased decision-making, of note, these biased information-processing may result in better inferences in a given context than fully logical and rational process (Gigerenzer and Brighton, 2009).

2.5.1. Human Rationality and Biases

The assumption of human rationality had been prevailing paradigm until the second half of twentieth century. To our knowledge, first study that acknowledges the limits of humans' rationality was published by American social scientist Herbert A. Simon in 1957. Simon coined both the term "*bounded rationality"* and *"satisficing"* (i.e. coined by merging the word satisfying and suffice), both of which refer to human beings' limited rationality and information seeking process. According to Simon's studies, in a decision-making process people seek information until they find satisfactory solution rather than optimal solution.

Prior to examination of heuristics, the concept of bias also must be highlighted. Bias, in a broad sense, can be described as deviations from the pure logistic inferential process. More specifically, the term cognitive bias is addressed as a systemic error of simple judgmental evaluations (i.e. heuristics) while people are handling with probabilities and making predictions (Kahneman, Slovic, and Tversky, 1982).

2.5.2. Heuristics and Less-is-More Principle

Heuristics have been one of the most prominent and hot issues on persuasion. As it is examined in the persuasion section of this study, majority of persuasion models acknowledge the dual-processing inclination of human mind (Maio and Haddock, 2007). These mental shortcuts, or diagnostic heuristics in other words, are the tools that are operative in judgment and decision-making process within time

constraints and the limitations of human brain's biological and cognitive ability. The term "*heuristics*" etymologically comes from Greek and it literally means and connotes "which serves to find out, reveal, or discover" (Online Etymology Dictionary, 2017). The term has attracted attention of the community of psychology, since it was first proposed by Newell and Simon (1972). As mentioned earlier, according to Simon (1991), the people tend to choose a superficial solution for the problem instead of the best one in judgment and decision-making processes. To reiterate, Simon argues that the effect of the environmental context of the problem-solving process, as well as the limitations of the cognitive capacities of humans have effect on this issue. However, one of the most groundbreaking research representing a paradigm shift in psychology realm was published by Nobel laureates Daniel Kahneman and Amos Tversky in 1974. This study examined information-processing shortcuts under the notion of cognitive biases. Since this study, the term heuristic has been mentioned together with the term bias and it has created negative connotations in this context (Gigerenzer and Brighton, 2009). However, contrary to popular opinion, it actually has been shown that in a given context, limited information, time and superficial information processing can increase the accuracy of the output (Gigerenzer and Brighton, 2009). The recent studies also support the idea of "less is more" (e.g., Gigerenzer et al., 1999; Hertwig and Todd, 2003). The reason for this is that heuristics or biases are an environment-oriented and efficient system as an "adaptive toolbox" that is formed by personal differences, nature-nurture collaboration, and of course particularly the evolutionary forces (Gigerenzer and Selten, 2001). Again similar with that, Gigerenzer and Brighton (2009) examined heuristics with the understanding of ecological rationality. Ecological rationality is a

notion that emphasizes its adaptive success in certain circumstances and environmental conditions rather than considering the heuristics to be good or bad, and correct or incorrect. Considering the current complexity of information, cognitive constraints in processing it, the time, other environmental conditions, and the innate predisposition resulting from the evolutionary history, it is not hard to imagine that consumers rarely analyze the information presented to them in depth. Instead, they determine their attitudes and behaviors by relying on heuristics cues (Kahneman, Slovic, and Tversky, 1982, Cialdini, 2007). The effectiveness of these heuristics can be subject to change in certain cases and contexts (Griskevicius, 2009). Considering that heuristics are also evolutionarily driven outcomes by an underlying adaptive process, it contributes to reveal why the effectiveness of these heuristics changes depending of the context and the individual differences. In the light of the term "adaptive toolbox" (Gigerenzer and Brighton, 2009), the roles and dynamics of heuristic approach are well documented.

In our study, social proof (in-group) and scarcity appeals, which are two of the most used and well-known diagnostic heuristics in the marketing communications, were examined.

2.5.3. Social Proof

In the marketing context, when crafting advertising messages several specific types of heuristic cues are widely used as persuasion tactics. Social proof is a heuristic cue that implies *if numerous people are doing, it must be good* (Cialdini and

Goldstein, 2004). Besides general effectiveness of this appeal, it may be more effective in the context of "similarity" (Cialdini, 2011). This particular type of appeal - *if many others similar to me are doing it, it must be better* - is considered as a subtype of a social proof (i.e. in-group social prof). Although this heuristic is conceptualized as "social proof", it is also called as "imitate the majority" by some other authors (e.g., Boyd and Richerson, 2005). The messages sent everyday such as "best sellers", "millions of people's preferences" or "all these people cannot be wrong" are the examples of social proof heuristics. On the other hand the message that conveys heuristic appeals is not necessarily presented by salient cues. Instead, for instance, a crowded café may be an implicit but strong indicator of social proof appeal.

In addition to in-group social proof, which emphasizes the similarity and intragroup aspect of general social proof, this appeal can also be divided into two subtypes as attitudinal and behavioral level (Griskevicius, 2009). While attitudinal social proof highlight what many people want and what they are talking about, behavioral social proof, on the other hand, emphasize the crowd's behavioral response (Griskevicius, et al., 2009).

Figure 2.2. An Example of Attitudinal Social Proof Appeal

Source: https://twitter.com/MarkaOkulu. Retrieved 10.05.2017

Figure 2.3. An example of Behavioral Social Proof Appeal

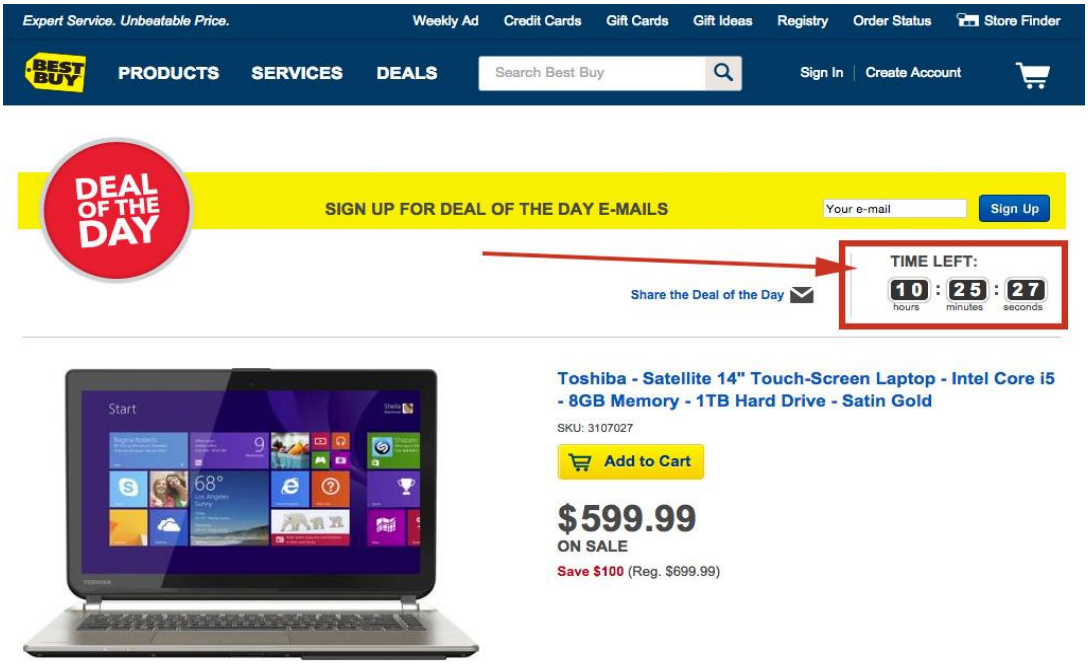
Source: https://www.crazyegg.com/blog/science-and-strategy-of-social-proof. Retrieved 04.04.2017

2.5.4. Scarcity

The second heuristic cue used in this study is scarcity appeal and it can be described as the heuristic decision model suggesting “if something is scarce, it is better and more valuable” (Cialdini, 2007). This cognitive heuristic is mostly seen in the form of messages as "limited edition", "limited in stock". On the other hand, scarcity appeal, likewise social proof, may be presented implicitly in some context. For instance, a time counter embedded in an e-commerce website right next to the commercial product that signals limited-opportunity. Note that this type of scarcity appeal does not convey any specific cues regarding consumer uniqueness. However it may be powerful as others.

Griskevicius et al., (2009) classified scarcity appeals as distinctiveness and limited opportunity scarcity. The main difference between these subtype of scarcity is that, while distinctive scarcity focus on the uniqueness aspect of appeal, limited opportunity scarcity appeals, on the other hand, may implies time limited buying opportunity (Griskevicius et al., 2009). However, a scarcity appeal may contain both features of these two types (e.g. limited edition).

Figure 2.4. An example of Limited Opportunity Scarcity Appeal



Source: https://selfstartr.com/persuasive-marketing-techniques. Retrieved 08.4.2017

Figure 2.5. An example of Distinctiveness Scarcity Appeal

Source: http://neilpatel.com/blog/how-to-leverage-the-power-of-emotions-to-improve-your-social-media-marketing. Retrieved 10.05.2017

CHAPTER THREE

HYPOTHESES DEVELOPMENT

The groundwork of this study is based on an attempt to find a plausible answer of the following research question, that is, in the light of evolutionary perspective, taking into consideration the origin of music, how individuals' musical reactivity (MR) trait does affect a) their attitudinal and b) behavioral responses to social proof and scarcity appeals embedded in a marketing stimulus.

In the light of the literature reviewed in chapter one, a possible answer for this research question emerges; that is, human musicality and group living, in other words social bond among the member of a specific community (i.e. in the level of intra-group), intrinsically, served the same evolutionary adaptive problem (Brown, 2000; Dunbar, 2012; Freeman, 2000; Hagen ve Bryant, 2003; Roederer, 1984), (see also Boyd ve Richerson, 1990; Wilson ve Sober 1994; Wilson, 1997). Empirical studies are also present concerning this relation. (e.g., see Dunbar et al., 2012; Hagen and Bryant, 2003; Loersch and Arbuckle, 2013; Tarr, Jacques, and Dunbar, 2014). Furthermore, this perspective was supported by neurological, and endocrinological studies. For instance, people having William syndrome tends to be hyper-social and as well as they are more sensitive to music as compared the others (Don, Schellenberg, and Rourke, 1999), in other words, they have high MR. With all those in mind, human musicality, which involves innate inclination toward a musical stimuli in the environment, both subjectively and objectively, should be strongly related to the individuals' attitudinal and behavioral response toward social proof

appeals embedded in a marketing message. Accordingly, our first hypothesis is as follows:

Hypothesis 1: In-group Social proof appeals (I-SP) should be more persuasive - in terms of **(a)** attitudinal responses, and **(b)** behavioral intentions - for the individuals with higher musical reactivity than the individuals with lower musical reactivity.

It is also expected that this significant difference should only be present in the social proof condition. In order to rule out possible bias of musical reactivity with respect to general persuasiveness, it is not expected to see any significant differences in NoH (*no heuristic*) conditions according to individuals' musical reactivity. Accordingly, our second hypothesis is as follows:

Hypothesis 2: Persuasiveness of a positive marketing message -both **(a)** attitudinal, and **(b)** behavioral level- without any specific heuristic cue should not differ in terms of individuals' musical reactivity.

In the study, functionality and domain-specificity that are two key characteristics of EP formed our theoretical direction. Considering the role of music in evolutionary history of human beings, not only was the function of music addressed in this study generally, but in the light of the explanatory level of domain-specificity, relevant hypothesis as to which domain-specific modules cause humans to be highly musical was also taken into account. In the chapter of conceptual background, the origin of music as a functional product, and possible domain-specific mechanisms underlying human musicality is addressed. On the other hand, the question regarding how social traits such as reciprocal altruism, kin selection, or

human musicality evolved as fundamental of human beings and the underlying selection process is still controversial. Neither has consensus emerged among the scholars. Some would assert that these selection processes can only be accounted for by a conceptual background in view of the multilevel selection (see Loersch and Arbuckle, 2013; Wilson and Sober, 1994 and Wilson and Wilson, 2007), while others propose that the kin selection domain is a veridical explanation of the selection processes (West, Griffin, and Garner, 2007). Within this context, when it comes to domain-specificity and human musicality relations, more plausible explanation is music may be processed in human mind in a way that other social traits do. In doing so human musicality may activate relevant motivational sub-systems that strengthen the ability to solve intra-group social bond and social coordination problems at the cost of backfire others. However, to reiterate, consumer psychologist does not necessarily enumerate domain-specific modules of human mind in order to generate testable hypothesis (Barrett and Kurzban, 2006; Saad 2013). With those in mind and by taking into account domain-specificity proposition of modern evolutionary approach, some mental mechanisms that leads to specific type of behavior and cognition that are beneficial to solve specific adaptive problems (e.g. self-protection, kin selection) might repress or counteract another *(e.g. attention to attract a mate*) (Brendl, Markman, and Messner 2003; Griskevicius 2009). In line with this perspective, according to the empirical study of Griskevicius et al. (2009), mental mechanisms that make "social proof" heuristic cues more persuasive might affect the effectiveness of "scarcity" appeals negatively and/or vice versa, due to firing different set of mental modules.

Even though domain-specific nature of human musicality is not very well

established and in-group social proof appeal used in our study is a relatively different subtype of general social proof appeal, in light of the study conducted by Griskevicius et al. (2009), mind-set that promotes specific psychological mechanism being activated by relevant overlapping fitness-enhancing cues that strengthen the effectiveness of social proof heuristic appeal, may backfire the information-processing systems which can be triggered by scarcity appeals that signal "distinctiveness from others". In the line of the argument a hypothesis can be generated as follows:

Hypothesis 3: Scarcity appeals should be more persuasive - in terms of **(a)** attitudinal responses, and **(b)** behavioral intentions - for the individuals with lower musical reactivity than the individuals with higher musical reactivity.

CHAPTER FOUR

RESEARCH DESIGN AND METHODOLOGY

4.1. PARTICIPANTS, DESIGN AND PROCEDURE

An experimental study was designed to test the hypotheses, which is conducted between December, 2016 and April 2017. Two hundred three (137 women, and 66 men), freshman undergraduate students from psychological counseling and guidance, business, and advertising major at three large foundation universities in Istanbul participated in the experiment (i.e. Bilgi, Bahçeşehir, and Kültür University). By conducting this research in three different universities we aimed to rule out potential biases peculiar to differences in the students profiles in universities. The ages of participants ranged from 18 and 28. As all participants were naïve freshmen, they had no priori knowledge concerning the study, nor had they competence to detect the objective of the study. Thus, potential demand characteristics in the study are minimized. The only information about the experiment was on the informed consent form saying that this study had been related to behavioral tendency of students, but no other explanations were given. Identities of participants were completely anonymous in order to make sure that they were comfortable with the questions.

Prior to the lab experiment, a pilot study was conducted with 14 participants via online survey tool powered by *freeonlinesurveys.com*. Although forward-translations and back-translations method carried out in order to adapt the original

scales into Turkish; the scale items were nevertheless checked in the pilot study in terms of wording, semantic structure and general adequacy. Several items revised upon collecting the data in the light of feedbacks from the participants.

The experiment design is between-subjects 2 (musical reactivity: high, low) × 3 (persuasion heuristic: social proof, scarcity, control) (see Table 4.1). Participants viewed scenarios (i.e. positive café reviews) that include in-group social proof appeals, scarcity appeals, or a review that contains no appeal- no heuristic (control), (hereafter NoH).

Table 4.1. Experimental Conditions

Persuasion Heuristic / Musical Reactivity (MR)	*In-group Social Proof (I-SP)*	*Scarcity (SC)*	*Control (NoH)*
Low MR	**1**	**2**	**3**
High MR	**4**	**5**	**6**

4.1.1. Sample Characteristics

Demographics of the subjects were addressed in five categories. Participants' demographics as gender, age, marital status, nationality and college can be seen as follows (see Table 4.2, Figure 6-10).

Table 4.2. Sample Characteristics

Demographics	Item	Frequency	Percentage	Cumulative Percent
Gender	Female	137	67.5	67.5
	Male	66	32.5	100
Age	18	45	22.2	22.2
	19	52	25.6	47.8
	20	37	18.2	66.0
	21	32	15.8	81.8
	22	11	5.4	87.2
	23	15	7.4	94.6
	24	1	0.5	95.1
	25	5	2.5	97.5
	26	2	1.0	98.5
	27	2	1.0	99.5
	28	1	0.5	100
Marital Status	Single	202	99.5	99.5
	Married	1	0.5	100
College	Bilgi	8	3.9	3.9
	Bahçeşehir	75	36.9	40.9
	Kültür	120	59.1	100
Nationality	Turkish	189	93.1	93.1
	Foreigners	14	6.9	100

Figure 4.1. Gender Distributions of Participants

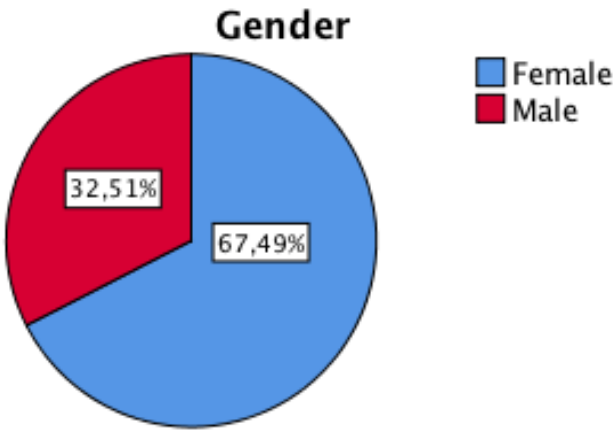


Figure 4.2. Age Distributions of Participants

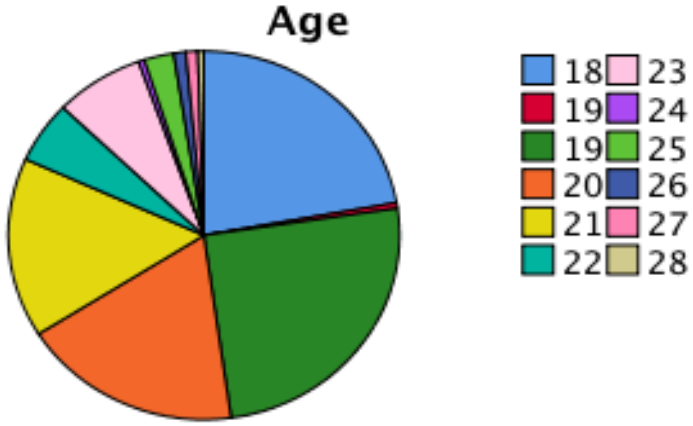


Figure 4.3. Marital Status Distributions of Participants

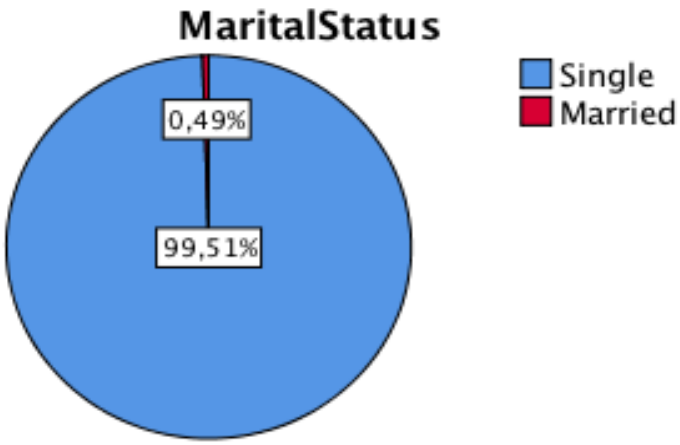


Figure 4.4. Nationality Distributions of Participants

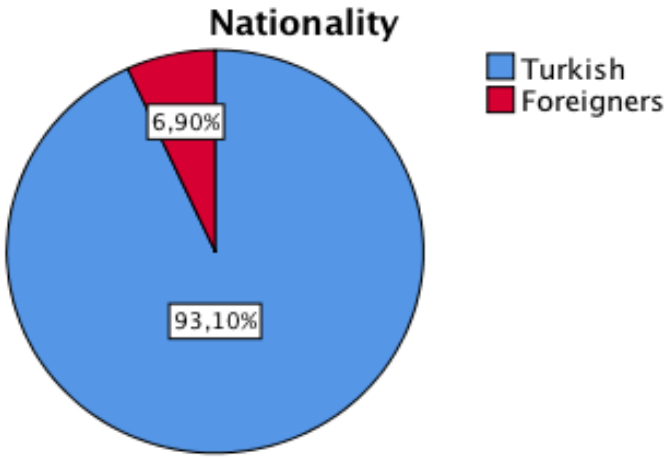
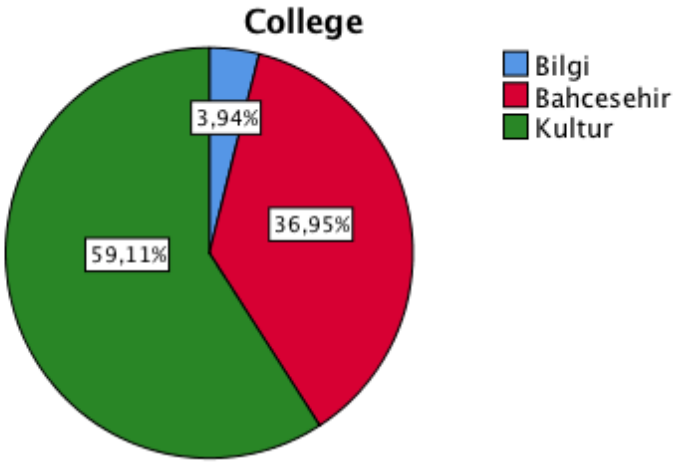


Figure 4.5. College Distributions of Participants



4.2. MUSICAL REACTIVITY

Since it was hypothesized that individuals' MR score would enable us to predict the effectiveness of particular heuristic appeals, upon entering lab participants first completed 15-item subjective MR assessment adopted from Loersch and Arbuckle (2013), which measures the subject's own judgment regarding their sensitivity to

music on a seven-point Likert-type scale ranging from 1 *(Not at all)* and 7 *(Completely)* (Cronbach's alpha = 0.85), (see Table 4.3). Upon completing a subjective musical reactivity assessment that helps us to determine their subjective musical inclination as high and low, participants were randomly assigned to each experimental condition.

4.3. PERSUASION HEURISTICS

In order to embed heuristic cues in a marketing message, a hypothetical café brand called "*Kırmızı Café & Bistro"* was generated. Then a positive customer review about the café was crafted and while doing that we tried to be as realistic as possible.

In the social proof condition, in-group social proof heuristic cues were inserted to the control scenario (NoH), stating that the café was the most popular among students in their university and it allowed them to share, socialize each other as a member of their university. Students' name and their university were also added to the bottom of the each review to signal that the review written by a student from the participants' university (i.e. an in-group social proof cue) (see Figure 4.6 and 4.7).

Figure 4.6. A Positive Café Review - In-group Social Proof Appeal (English)

Kırmızı Café & Bistro ||||||||||||

"I have found out about this place with a recommendation from a friend of mine from X University. This place has fascinated me not only because it has delicious recipes but also because whenever I go there I see many other X University students and alumni. It seems that it is a common stop for X students. This place gets us closer and helps us establish strong bonds and socialize with each other as X students. It just has a wonderful ambiance. You must come and see this place."

Anıl – ***X University Student***

"If you are a student in X University and have not visited this place, you must immediately do so. Food and atmosphere are pretty nice. It is impossible to come across with one of "us" at next table while drinking your coffee during lunch. It offers a great dining experience and it seems very popular."

Seda - ***X University Alumni***

Notes: According to students' college, relevant college name replaced with X symbol in the scenario.

Figure 4.7. A Positive Café Review - In-group Social Proof Appeal (Turkish)

Kırmızı Café & Bistro ||||||||||||

"X'den bir arkadaşımın tavsiyesiyle öğrendiğim bu mekan sadece lezzetli ve çok sevilen tarifleriyle değil, öğrenci ve mezunlarıyla birlikte tüm X camiası arasında en çok tercih edilen mekan olması sebebiyle de beni büyülemişti. Düşünebiliyor musunuz, ayda binden fazla X'li burayı ziyaret ediyor. Üniversitemize tutkuyla bağlıyız. Bu mekan da bizi X'liler olarak birbirimize kenetleyerek güçlü bağlar kurmamızı, sosyalleşmemizi ve ortak paylaşımlarda bulunmamızı sağlıyor. Tek kelimeyle muhteşem bir ambiyans. X'li ve kendini bu aileden hisseden herkesin gelip görmesi şart."

Anıl – Bahçeşehir Üniversitesi Öğrencisi

"Burayı henüz ziyaret etmemiş X'liler, acilen burayı görmelisiniz. Yemekler ve ortam çok güzeldi. Şehrin göbeğindeki konumu ve popülerliğiyle öğle arasında kahvenizi yudumlarken, yan masanızda "bizden" birini görmemeniz imkansız."

Seda - Bahçeşehir Üniversitesi Mezunu

Notes: According to students' college, relevant college name replaced with X symbol in the scenario.

In the scarcity condition, scarcity heuristic cues were inserted to the control scenario (NoH), stating that unique café that was not discovered by many people and still very few people knew this cafe. The same students' names were added to the text without any cue about their university (see Figure 4.8 and 4.9).

Figure 4.8. A Positive Café Review - Scarcity Appeal (English)

Kırmızı Café & Bistro ||||||||||||

"This undiscovered place has fascinated me not only because it has delicious recipes but also because of its distinctiveness and uniqueness as compared to other places. It just has a wonderful ambiance. You must come and see this one-of-a-kind place that is yet to be discovered by others."

Anıl

"Those who have not visited this place yet must immediately do so. Food and atmosphere are pretty nice. If you're looking for a great dining experience different from any other, you must visit here."

Seda

Figure 4.9. A Positive Café Review – Scarcity Appeal (Turkish)

Kırmızı Café & Bistro ||||||||||||

"Bu pek keşfedilmemiş mekan, sadece lezzetli tarifleriyle değil; farklı, kendine özgü ve diğerlerinden ayrılan bir mekan olmasıyla da beni büyüledi. Tek kelimeyle muhteşem bir ambiyans. Henüz çok az kişi tarafından bilinen bu mekanı gelip görmeniz şart."

Anıl

"Burayı henüz ziyaret etmemiş olanlar acilen burayı görmelisiniz. Yemekler ve ortam çok güzeldi. Farklı bir yemek deneyimi arıyorsanız burayı tercih etmelisiniz."

Seda

In the NoH condition a control scenario was used, that is, a positive review without any specific heuristic cues, on which we added ISP and SC heuristic cues in

order to craft ISP and SC scenarios (see Figure 4.10 and 4.11). In other words, this scenario was used in the control group.

Figure 4.10. A Positive Café Review – Control (English)

Kırmızı Café & Bistro ||||||||||||

This place has fascinated me with its delicious recipes. It just has a wonderful ambiance. You must come and see this place.

Anıl

Those who have not yet visited this place must immediately do so. Food and atmosphere are pretty nice. It offers a great dining experience.

Seda

Figure 4.11. A Positive Café Review – Control (Turkish)

Kırmızı Café & Bistro ||||||||||||

Bu mekan lezzetli tarifleriyle beni büyüledi. Tek kelimeyle muhteşem bir ambiyans. Burayı gelip görmeniz şart.

Anıl

Burayı henüz ziyaret etmemiş olanlar acilen burayı görmelisiniz. Yemekler ve ortam çok güzeldi.

Seda

4.4. DEPENDENT VARIABLES

Upon reading the café review, subjects rated six questions about their attitudes toward the café and their behavioral intentions to go to this café. The scale adopted from Griskevicius et al. (2009). Each question set consisting of three items and it is

expected to see positive correlations between these two constructs. To make it clear, participants first rated three nine-point questions related to their attitudes toward the café (Bad - Good, Unfavorable – Favorable, Negative – Positive), (Cronbach's alpha = 0.95), (see Table 4.3). After that subjects also rated three nine-point question regarding behavioral intentions to go to the café ranging from 1 *(Not at all)* and 9 *(Very much)*, (Cronbach's alpha = 0.85), (see Table 4.3).

Table 4.3. Scales used in the study

Measure	Items	Reference	Cronbach's Alpha
Subjective Musical Reactivity			0.85
	When I hear a fast song, I feel like becoming more active.	Loersch and Arbuckle (2013).	
	When I choose music, I select it based on how it will make me feel.		
	When I listen to music, I can feel it in my body.		
	When I listen to music, I can feel it affect my mood.		
	I feel a strong emotional attachment to my favorite songs.		
	When I hear a sad song, my mood begins to darken.		
	If music wasn't a part of my life, I would be a completely different person.		
	When I hear a slow song, I start to slow down my actions.		
	When I hear a happy song, my mood begins to brighten.		
	My life would lose meaning if I couldn't listen to music.		
	When I listen closely to music, I start to lose track of my immediate surroundings.		
	When I listen to music my head moves along with the beat.		
	When I hear music, my foot starts tapping along with the beat.		

Table 4.3. Scales used in the study (Continued)

Measure	Items	Reference	Cronbach's Alpha
Subjective Musical Reactivity			0.85
	If the right song comes on, I have trouble following another person's conversation.		
	If I close my eyes and listen to music, the rest of the world starts to fade away.		
Persuasion		Griskevicius et al. (2009).	0.90
Attitude	Good-Bad		0.95
	Positive - Negative		
	Favorable - Unfavourable		
Behavior	To what extent are you interested in finding out more about Kırmızı Café?		0.85
	How likely are you to consider going to Kırmızı Café?		
	How likely are you to actually go to Kırmızı Café?		

CHAPTER FIVE

DATA ANALYSIS AND FINDINGS

5.1. MANIPULATION CHECKS

As it is discussed in the methodology section, three positive café reviews were used to manipulate persuasion heuristics. In order to make sure that the customer reviews conveyed the message we intended to, manipulations were checked. Upon reading the review scenarios, participants were asked to what extent they agree or disagree with the statements regarding *Kırmızı Café & Bistro* on seven-point Likert-type scale ranging from 1 *(Entirely disagree)* to *(Entirely agree)*. In doing so, we verified the degree to which each review conveyed the message that was precisely associated with the two heuristic cues (see Table 5.3). To make it clearer, subjects rated the degree to which review disclosed that the café seemed like very popular, and most visited place by people from the community or social group that they belong to. (in-group social proof); that the café seemed like undiscovered unique place distinct from other (scarcity).

As expected, in-group social proof product review revealed significantly more I-SP related message (M = 5.03 versus M = 4.38, M = 4,26 respectively; $F_{(1,81)} = 4.789$ $p < 0.05$), as compared to other reviews in the experiment (i.e., SC and NoH, respectively), that the café was very popular, and most visited place among the social group they belong to (see Table 5.1, Table 5.3).

Table 5.1 ANOVA Result for I-SP Manipulation Check

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	9.73	1	9.73	4.789	0.03
Within Groups	164.51	81	2.03		
Total	174.24	82			

As expected, scarcity product review revealed significantly more scarcity related message (M = 5.42 versus M = 3.77, M = 3.85 respectively; $F_{(1,81)} = 19{,}548$ $p < 0.001$) as compared to the other reviews in the experiment (i.e., I-SP and NoH, respectively), that the café undiscovered, and unique place distinct from other (see Table 5.2, Table 5.3). Overall, the results confirmed that all manipulations were done successfully.

Table 5.2. ANOVA Result for SC Manipulation Check

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	46.63	1	46.63	19.55	0.000
Within Groups	193.22	81	2.39		
Total	239.86	82			

Table 5.3. Specific Messages Conveyed By Each Heuristic Cue

	Type of Persuasion Heuristic		
Information Conveyed About Product	*In-group Social Proof*	*Scarcity*	*Control*
Popular, and most visited place by people from the social group that I belong to.	**5.03** (1.33)	4.38 (1.20)	4.26 (1.72)
Undiscovered and unique place distinct from others.	3.77 (1.48)	**5.42** (1.55)	3.85 (1.63)

Notes: Bold numbers denote the highest means within a row. Standard deviations are in parentheses.

5.2. HYPOTHESES TESTING

The dependent variables of the study analyzed in two levels as attitudinal response, and behavioral intention toward the café. Since these two levels are the two aspect of persuasiveness, attitudinal response and behavioral intention can be merged into one combined DV as well (Griskevicius, 2009). We, however, preferred to measure the persuasiveness on these two dimensions, due to exploratory reasons. As expected, the results regarding attitude toward the café and behavioral intention to go there are significantly correlated each other ($r = 0.61$, $p < 0.01$).

As we crafted three types of positive café reviews (i.e., I-SC, SC, and NoH respectively), we first tested our primary assumption to ascertain whether there were differences among the groups in terms of persuasiveness without considering MR.

More clearly, when we do not account for differences in MR, there should be no attitudinal and behavioral differences among conditions. In order to test our prediction, univariate analysis of variance (ANOVA) were performed. As expected, both for attitudinal response ($M_{I\text{-}SP}$ = 6.22, M_{SC} = 6.40, M_{NoH} = 5.86; F(2, 197) = 1.60, p = 0.20), and for behavioral intention ($M_{I\text{-}SP}$ = 5.89, M_{SC} = 5.96, M_{NoH} = 5.63; F(2,197) = 0.61, p = 0.55), the test revealed that the mean scores were not significantly different among conditions. In other words, when we did not account for the differences in MR, there were no significant attitudinal and behavioral differences found among conditions (i.e., I-SP, SC, and NoH), (see Table 5.4 and 5.5). Hence, our first assumption was met.

Table 5.4. Mean Table of Each Persuasion Heuristics without Considering MR

	I-SP	**SC**	**NoH**
Attitude	6.22 (0.22)	6.40 (0.22)	5.86 (0.22)
Behavior	5.89 (0.22)	5.96 (0.23)	5.63 (0.22)

Table 5.5. ANOVA Results of Heuristics without Considering MR

Dependent Variable	F	df	p=
Attitude	1.60	2, 197	0.20
Behavior	0.61	2, 197	0.55

Although the results confirmed our first assumption, that is, when we did not account for MR, no significant differences in persuasiveness should have been found among heuristics, we also should see no significant differences between low and high MR conditions, without considering heuristics. More clearly, when we do not account for differences in heuristics, there should be no attitudinal and behavioral differences among conditions. In order to test this second assumption univariate analysis of variance ANOVA were performed. As expected, when we did not account for heuristics, there was no significant difference found between high and low MR conditions in terms of attitudinal dimension of persuasiveness ($M_{\text{low MR}}$ = 6.07 $M_{\text{high MR}}$ = 6.26; F (1, 197) = 0.57, p = 0.45), (see Table 5.6, and 5.7). When it comes to behavioral dimension of persuasiveness, very interestingly, a significant difference seemed to exist between high and low MR conditions ($M_{\text{low MR}}$ = 5.48, $M_{\text{high MR}}$ = 6.18; F (1, 197) = 7.45 $p < 0.05$), (see Table 5.6 and 5.7). Even though a pure significant difference was found in MR groups in terms of behavioral intention,

which seemingly violated our second assumption, when we further scrutinized each experimental condition, as a matter of fact, there was no difference found between MR groups in the SC and NoH conditions. In other words, the difference between MR groups was only stemmed from the I-SP condition. We reached this conclusion by performing a series of planned comparisons for each experimental condition (see Table 5.8). More importantly, in doing so not only did the results confirm our second assumption, but we also tested our primary hypothesis indirectly. To sum up, our first assumption was met.

Table 5.6. Mean Table of MR Groups without Considering Heuristics

	Low MR	**High MR**
Attitude	6.07 (0.17)	6.26 (0.19)
Behavior	5.48 (0.17)	6.18 (0.19)

Table 5.7. ANOVA Results of MR without Considering Heuristics

Dependent Variable	F	df	p=
Attitude	0.57	1, 197	0.45
Behavior	7.45	1, 197	0.04

Table 5.8. Planned Comparisons for Each Experimental Condition

	Experimental Conditions								
	I-SP			**SC**			**NoH**		
Dependant Variables	F	df1, df2	p =	F	df1, df2	p =	F	df1, df2	p =
Attitude	0.33	1, 68	0.57	0.05	1, 64	0.83	0.26	1, 65	0.62
Behavior	15.20	1, 68	≤ 0.01	0.09	1, 64	0.77	0.14	1, 65	0.71

In order to test our primary hypothesis we performed univariate analysis of variance (ANOVA). As expected, in high MR condition, social proof appeal was more persuasive than both control and scarcity appeal in terms of behavioral intention ($M_{social\ proof} = 6.80$, $M_{control} = 5.72$, $M_{scarcity} = 5.72$). However the difference was not significant. On the other hand, in line with our primary hypothesis, there was a significant difference between the behavioral intention of high MR and low MR groups in the in-group social proof condition ($M_{high\ MR} = 6.80$, $M_{low\ MR} = 4.98$; $F_{(1, 68)} = 15.20$ $p < 0.001$), (see Table 5.9). Furthermore, there was a significant, positive correlation between MR and persuasiveness of in-group social proof appeal ($r = 0.41$, $p < 0.001$). Hence, our primary hypothesis H1b was fully supported. However, when it comes to attitudinal dimension of persuasiveness, in-group social proof appeal, likewise, was more persuasive in high MR condition than low MR ($M_{high\ MR} = 6.36$, $M_{low\ MR} = 6.08$; $F_{(1, 68)} = 0.33$ $p = 0.565$). The difference, however, was not significant. Hence H1a is rejected.

Table 5.9. ANOVA Results for I-SP Condition

		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Attitude	Between Groups	1.26	1	1.26	0.33	0.57
	Within Groups	256.11	68	3.77		
	Total	257.37	69			
Behavior	Between Groups	55.25	1	55.25	15.20	0.00
	Within Groups	247.18	68	3.64		
	Total	302.43	69			

As can be seen on Table 5.10 and 5.11, although the result was indicated that MR was significant alone due to the aforementioned reasons, in fact it was not significant when we analyzed the conditions one by one (see Table 5.8). To reiterate, a strong significant difference between high MR and low MR in the in-group social proof condition led the result to be ambiguous. With this in mind, when we reinterpret the results with ignoring MR, we could see that heuristics and MR interaction was significant for behavioral level ($F_{(2, 197)} = 4.71$, $p < 0.01$), however, it was not statistically significant for attitudinal level ($F_{(2, 197)} = 0.05$, $p = 0.95$).

Table 5.10. ANOVA Results for MR and Heuristics (Attitude)

Dependent Variable: **Attitude**						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	12.18(a)	5	2.44	0.76	0.58	0.02
Intercept	7559.23	1	7559.23	2362.60	0.00	0.92
MR	1.84	1	1.84	0.57	0.45	0.00
Heuristic	10.26	2	5.13	1.60	0.20	0.02
MR * Heuristics	0.30	2	0.15	0.05	0.95	0.00
Error	630.31	197	3.20			
Total	8316.97	203				
Corrected Total	642.49	202				

a. R Squared = .019 (Adjusted R Squared = -.006)

Table 5.11. ANOVA Results for MR and Heuristics (Behavior)

Dependent Variable: **Behavior**						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	59.74(a)	5	11.95	3.63	0.00	0.08
Intercept	6766.47	1	6766.47	2057.73	0.00	0.91
MR	24.49	1	24.49	7.45	0.01	0.04
Heuristic	3.98	2	1.99	0.60	0.55	0.01
MR * Heuristic	30.99	2	15.50	4.71	0.01	0.05
Error	647.80	197	3.29			
Total	7.450.89	203				
Corrected Total	707.54	202				

a. R Squared = .084 (Adjusted R Squared = .061)

In parallel with our second hypothesis, we expected to see no significant difference between low MR and high MR groups with respect to persuasiveness -both for attitudinal and behavioral level-, when the review presented with no specific heuristic cue (i.e., control, NoH). In order to test our second hypothesis, we performed univariate analysis of variance (ANOVA). As we hypothesized, the results revealed that there was no significant difference between low MR and high MR groups with respect to both for attitudinal response ($M_{\text{high MR}} = 5.96$, $M_{\text{low MR}} = 5.75$; $F_{(1, 65)} = 0.255$ $p = 0.62$), and for behavioral intention ($M_{\text{high MR}} = 5.72$, $M_{\text{low MR}} = 5.50$; $F_{(1, 65)} = 0.14$, $p = 0.71$). Hence, both hypotheses H2a and H2b were fully supported.

Table 5.12. ANOVA Results for NoH Condition

		Sum of Squares	df	Mean Square	F	Sig.
Attitude	Between Groups	0.77	1	0.77	0.26	0.62
	Within Groups	197.00	65	3.03		
	Total	197.77	66			
Behavior	Between Groups	0.474	1	0.47	0.14	0.71
	Within Groups	220.22	65	3.39		
	Total	220.70	66			

Finally, according to our expectancy in the low MR condition scarcity appeals should be more persuasive than both in-group social proof appeal and control. As expected, in low MR condition, scarcity seemed the most persuasive appeal in terms of both attitudinal ($M_{scarcity} = 6.36$, $M_{social\ proof} = 6.08$, $M_{control} = 5.75$) and behavioral level ($M_{scarcity} = 5.90$, $M_{social\ proof} = 4.98$, $M_{control} = 5.55$), the differences, however, were not statistically significant. When it comes to our third hypothesis, as expected, in the low MR condition, scarcity appeal was more persuasive than high MR condition in terms of behavioral intentions ($M_{high\ MR} = 5.90$, $M_{low\ MR} = 5.72$), univariate analysis of variance (ANOVA) however revealed that the difference was not statistically significant ($F_{(1, 64)} = 0.86$, $p = 0.77$). With respect to attitudinal outcomes, in the low MR condition, scarcity appeal seemed to be less effective when compared to the high MR condition. The difference was not statistically significant. Therefore, while the difference was in the expected direction in terms of behavioral intentions, both H3a and H3b were rejected.

Table 5.13. ANOVA Results for SC Condition

		Sum of Squares	df	Mean Square	F	Sig.
Attitude	Between Groups	0.13	1	0.13	0.05	0.83
	Within Groups	177.20	64	2.77		
	Total	177.33	65			
Behavior	Between Groups	0.24	1	0.24	0.09	0.77
	Within Groups	180.40	64	2.82		
	Total	180.64	65			

Table 5.14. Effectiveness of Each Persuasion Heuristic

Musical Reactivity (MR)		*Type of Persuasion Heuristic*		
		Social Proof	*Scarcity*	*NoH (Control)*
High MR	*Attitude*	6,36 (1,89)	6,45 (1,66)	5,96 (1,26)
	Behavior	**6,80**[a] (1,94)	5,72 (1,42)	5,72 (1,42)
Low MR	*Attitude*	6,08 (1,97)	6,36 (1,67)	5,75 (2,11)
	Behavior	**4,98**[a] (1,88)	5,90 (1,67)	5,55 (2,17)

Notes: Superscripts and bolds denote significant differences ($p < 0.01$) between means within a column. Standard deviations are in parentheses.

Figure 5.1. Effectiveness of Each Persuasion Heuristic (By Two Dimensions)

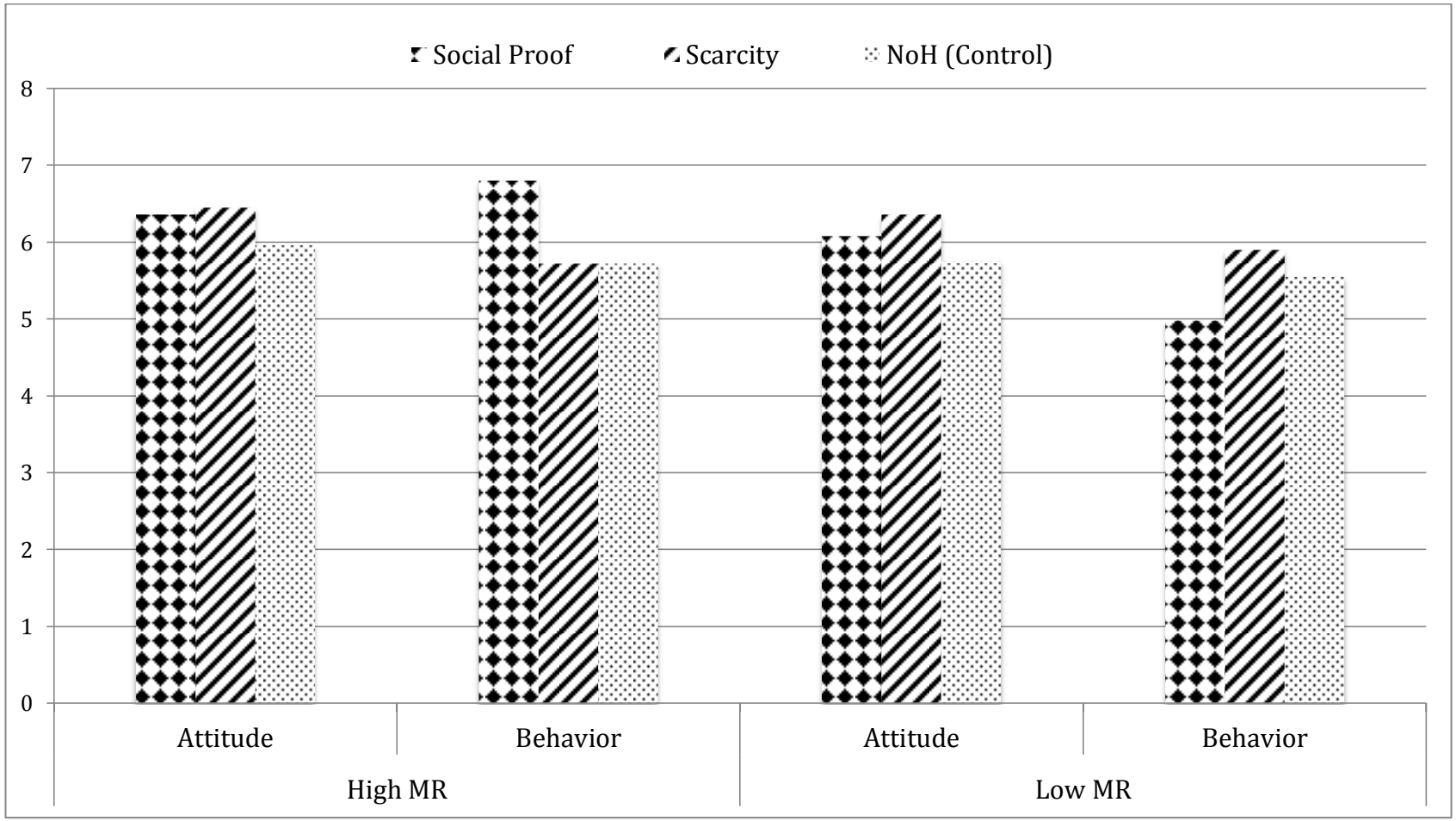


Figure 5.2. Effectiveness of Each Persuasion Heuristic (Overall)

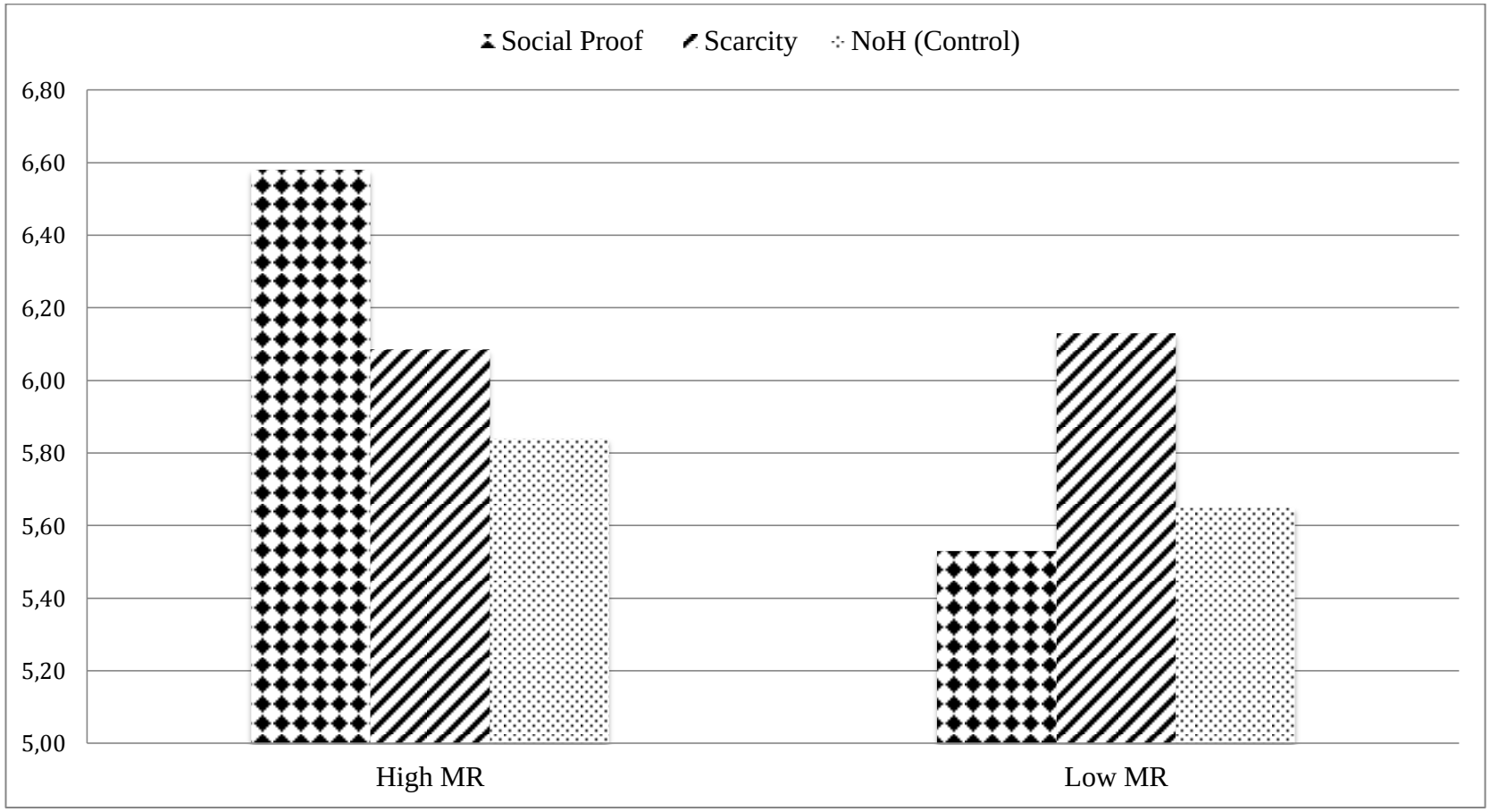


Table 5.15. Summary of Hypotheses

Hypothesis		Results
H1a	In-group Social proof appeals (I-SP) should be more persuasive -in terms of attitudinal responses- for the individuals with higher musical reactivity than the individuals with lower musical reactivity.	**(-) Rejected**
H1b	In-group Social proof appeals (I-SP) should be more persuasive -in terms of behavioral intentions - for the individuals with higher musical reactivity than the individuals with lower musical reactivity.	**(+) Supported**
H2a	Persuasiveness of a positive marketing message without any specific heuristic cue should not differ in terms of individuals' musical reactivity at the attitudinal level.	**(+) Supported**
H2b	Persuasiveness of a positive marketing message without any specific heuristic cue should not differ in terms of individuals' musical reactivity at the behavioral level.	**(+) Supported**
H3a	Scarcity appeals should be more persuasive for the individuals with lower musical reactivity than the individuals with higher musical reactivity in terms of attitudinal level.	**(-) Rejected**
H3b	Scarcity appeals should be more persuasive for the individuals with lower musical reactivity than the individuals with higher musical reactivity in terms of behavioral level.	**(-) Rejected**

CHAPTER SIX

DISCUSSION, IMPLICATIONS AND LIMITATIONS

6.1. DISCUSSION OF THE RESULTS

Based on a broad literature review with respect to evolutionary approach and its relevance to consumer behavior and marketing, we examined the link between musical reactivity and effectiveness of particular heuristic cues. The aim of the study was to examine the role of musical reactivity (MR) as an individual personality trait on the effectiveness of social proof cues, -particularly in-group social proof appeal- used in marketing messages. Drawing upon modern evolutionary approach and heuristics literature, we primarily hypothesized that social proof appeals are more persuasive for individuals with high MR than low MR. Since we divided persuasion construct into two levels as attitudinal response and behavioral intention, the experiment has revealed two interestingly distinct results in terms of these levels. While our study elucidated that individuals who have higher musical reactivity are more susceptible to the marketing messages with social proof appeals in terms of behavioral intentions, we, however, could not verify our prediction in terms of attitudinal levels.

As it is addressed in the first chapter, attitude is an important dimension of persuasion, and three-component model regarding the content of attitude revealed that attitude comprises affective, cognitive and behavioral components. In line with this theoretical basis, behavior itself can be considered as an element of attitude. Hence, when addressing persuasion phenomena as a whole construct, we should

consider the structural feature of attitudes. More specifically, when assessing attitude, we adopted the one-dimensional scale (see Griskevicius et al., 2009). However, contrary to common belief, attitude may be bi-dimensional (Cacioppo, Gardner, and Bernston, 1997). For instance, an individual can have any mixture of positive and negative elements at the same time in her/his attitude. This perspective has strengths in some ways, especially when dealing with the meaning of neutrality (Kaplan, 1972). In the light of this perspective, adopting single dimensional scale in our study for attitude measurement may have affected the results in this respect. Unexpected result with respect to attitudinal response (i.e. our rejected hypothesis H1a) may have stemmed from ambivalent structure of attitudes and/or individuals.

By addressing our secondary hypothesis, we also aimed to rule out possible bias with respect to a positive review. As expected, a positive marketing message without any specific heuristic cue (i.e. NoH condition) did not reveal any significant difference between high MR and low MR groups in terms of both attitudinal response and behavioral intention. On the other hand, not only did we address a control group with no specific heuristic cues, but we also added scarcity condition to the experimental design. In doing so, we also aimed to compare two different types of heuristic appeals, which were examined in an empirical study (see Griskevicius et al., 2009), and demonstrated that social proof and scarcity appeals could backfire one another. In line with this empirical study, adding scarcity groups to the experiment enabled us to observe possible effect in question. Even though scarcity appeals were found to be more persuasive for individual with low MR than high MR in terms of both attitudinal response and behavioral intention, the difference, however, was not

statistically significant ($M_{scarcity} = 5.90$, $M_{social\ proof} = 4.98$, $M_{control} = 5.55$). It is important to keep in mind that the insignificancy may stem from the sample size (203 people). If so, we may consider the result as a weak support for our third hypotheses.

To sum up, our findings largely supported our primary hypothesis with respect to behavioral responses, and our second hypothesis both in attitudinal response and behavioral level. However our third hypothesis was rejected. In consideration of the sample size of the study, we may postulate weak support for our third hypothesis both in attitudinal and behavioral levels.

6.2. THEORETICAL IMPLICATIONS

Even though, a complete investigation of an evolutionary assertion is a long journey and therefore, is not possible to reach conclusive argument with a single study, this study, nonetheless, reveals the link between musical reactivity and social proof appeal in marketing context. To our knowledge the present research is the first empirical study that examines the link between human musicality and heuristics adopting the evolutionary approach.

As this is the case for every interdisciplinary research, this study also utilized very broad theoretical framework and disciplines including consumer psychology, marketing, evolutionary psychology, social psychology, musicology, evolutionary biomusicology, and cognitive sciences. Accordingly, despite the fact that the first aim of the study is to make novel theoretical and empirical contributions to the field

of consumer behavior, the outcome of the study, by its very nature, also make a major contribution to a wide range of disciplines in question. More specifically, this study makes a direct empirical contribution on the evolutionary function of music in human beings, in which studies are extremely scarce so far. Moreover, adopting an evolutionary approach, by itself, yields very strong theoretical contributions to consumer psychology. According to Saad (2013), adapting evolutionary psychology into consumer behavior breeds theoretical unity (i.e., consilience). As Pham (2013) listed the seven sins of consumer psychology, by evolutionary reasoning this study has also contributive in terms of both broadening the theoretical lenses and epistemological level (i.e. by ultimate explanatory level) of consumer behavior in the context of music.

In addition, by analyzing dependent variable in two levels as attitudinal response and behavioral intention, and reporting these levels transparently, this study also makes valuable exploratory contributions to the existing persuasion literature.

6.3. PRACTICAL IMPLICATIONS

Although extrapolation of the results of single study to real life setting is not possible, our findings may provide preliminary implications and valuable insights to the practitioners. Since findings of the study revealed the link between social proof cue (in-group) and individuals' musical reactivity trait, an ad practitioner, for instance, can consider musical inclination of target audience when crafting an ad copy. Music-related products such as personal stereo, portable, music device,

musical instruments, digital music streamer (e.g., Spotify®, Apple Music®), musical events and music as a product itself, are all, by its very nature, in great demand by highly musical people (presumably it is a good indicator of high MR). Therefore usage of social proof appeal in advertising, publicity and PR settings is recommended.

Media planning is another major area that may utilize the outcomes of the study. For example, when purchasing airtime for a campaign containing social proof appeal, practitioners may consider the mediums related to music (e.g. both in terrestrial and online music radios, music TV channels). Besides, consumer's MR trait might provide a new basis for psychographic segmentation for practitioners in marketing communications.

6.4. LIMITATIONS AND FUTURE RESEARCH

Although a rigorous research program was conducted to test our hypotheses, the study still has limitations. Since our study was experimental, we should first address the limitations or the factors threating internal and external validity of an experimental design.

To begin with, the post-test only control group design was used in the study (see Figure 6.1). This specific type of true experimental designs is widely used in psychology and consumer behavior. The drawback of the design, however, is that there is no pretest before treatment both for experimental and control groups.

Although the pretest, in fact, is not essential for true experimental designs and in order to make sure that experimental and control groups are "equal" before the treatment is simply random assignment of subjects to the groups (Campbell and Stanley, 1963). Nevertheless, in order to fully control initial biases between groups, pretest-post control designs or the Solomon four-group design is more appropriate. According to Campbell and Stanley (1963), the benefits of pretest-posttest and the Solomon four-group designs may not outweigh the burdens. Furthermore, pretest-post test designs have also some drawbacks. In some case, pretest can be awkward and leads to "giveaway problem". In other words, pretests may cues the aim of an experiment. Furthermore, pretest and treatment interaction may threats the external validity. Despite all these trade-offs, and randomization (i.e., all subjects were randomly assigned both in experimental and control groups), due to convenience sampling there may be initial bias between groups. Therefore, this situation decreased internal validity of the study in some respects. However, when it comes to other threats with respect to internal validity, its very nature of the posttest-only control group design, we controlled other possible threats about internal validity (see Table 6.1).

When it comes to external validity, as there is no pretest in the study, interaction effects of the testing and the treatment was controlled. However interaction effect of selection and the treatment may still be threat for the design. The other limitations with respect to validity of the study is, as in every experimental setting, reactive arrangement. Participants' awareness that they were participating in an experiment jeopardizes external validity.

Figure 6.1. The Posttest-Only Control Group Design

R ***X*** ***O1***

R ***O2***

Table 6.1. Validity Threats for Posttest-Only Control Group Design

Posttest-Only Control Group Design

Source of Invalidity			
	Internal	History	+
		Maturation	+
		Testing	+
		Instrumentation	+
		Regression	+
		Selection	+
		Mortality	+
		Interaction of Selection and Maturation etc.	+
	External	Interaction of Testing and *X*	+
		Interaction of Selection and *X*	?
		Reactive Arrangements	?
		Multiple *X* Interference	*Not Relevant*

Another important limitation of this study is that musical reactivity was measured in a single scale and by asking subjects to directly (i.e., Subjective Musical Reactivity). Therefore musical reactivity measurement with different scales (e.g., without asking directly) in future research may provide more reliable outcomes.

As it is mentioned earlier, the limitations with respect to attitudinal response, might have influenced the attitudinal measurements. To reiterate, unexpected results may stem from ambivalent structure of attitudes and/or individuals. In order to rule out this possibility, future research may control ambiguity both in attitude and individual level.

On the other hand, human musicality was addressed as a personality trait in our study, however some of the personality traits can be dormant and context-dependent. By definition, music in the environment should influence those with higher MR to be more reactive to the evolutionary function of music, which is social bonding. Hence, in the presence of music in the decision-making environment, more drastic differences can be seen between the behavioral responses of the groups established based on MR. In order to address this empirical question, in addition to SMR, which is used in our study, objective musical reactivity measurements (OMR), can be used in an experimental setting (Loersch and Arbuckle, 2013). Yet, having been added to the experiment, musical stimuli; by its very nature of music, would give rise to an emotional bias. However, with rigorous experimental design, it can be manageable. Although many studies have been made on the subject of consumer psychology and behaviors in the context of consumers' emotions so far, few scholars have examined the emotions from the evolutionary perspective. The consensus in

these studies is that the emotions such as fear, romantic desire, anger, jealousy, and disgusting are the outcomes of universal and functional adaptive processes (Saad, 2013). Especially in terms of survival and sexual selection, the importance of fear and romantic desire is not negligible (Griskevicius, 2009). Therefore, to which extent is the mean that induces the feeling important? As it is mentioned in the previous sections, we have instinctual reactions to certain universal stimuli that generate fear response, such as snakes and spiders. In today's modern world, although we rarely encounter such stimuli, many people have phobias against snakes, spiders, etc., but there can be hardly anyone who has a driving phobia. Seligman (1971) stated that the reason for this is our instinctive predisposition for conditioning against some certain stimuli (i.e. domain-specificity). In line with these arguments, for future research, eliciting specific emotions with musical stimuli, and comparing the same emotion with elicited by non-musical stimuli may potentially be interesting research area.

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