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Three Essays on Music and Consumer Behavior: The Impact of Music Type on Product Evaluation and Purchase Intent

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THREE ESSAYS ON MUSIC AND CONSUMER BEHAVIOR: THE IMPACT OF MUSIC TYPE ON PRODUCT EVALUATION AND PURCHASE INTENT

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Gregory George Maloney

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To: Dean Joanne Li
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DEDICATION

I dedicate this dissertation to my mother for giving me the love and encouragement that made me believe I can accomplish anything, and to my father for introducing me to, and fostering my passion for, music.

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There are so many people I wish to thank for supporting me throughout this process. While there is much knowledge that I have gained writing this dissertation, the most important lesson I have learned is that one is only as strong as the people with which they surround themselves. I have amazing people in my life.

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ABSTRACT OF THE DISSERTATION

THREE ESSAYS ON MUSIC AND CONSUMER BEHAVIOR:

THE IMPACT OF MUSIC TYPE ON PRODUCT EVALUATION AND PURCHASE INTENT

by

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Florida International University, 2020

Miami, Florida

Professor Kimberly A. Taylor, Major Professor

Music is omnipresent in consumer environments and is classifiable by multi-dimensional measures of affect. This research explores the relationship between affect perceived within music, and how the resulting affective state created by music influences product evaluations.

Three essays explore the relationship between affect valence and purchase intent, the moderating influence of music arousal, and the effect of positive affect cues perceived in products. Four studies provide supporting evidence that music influences product evaluations in the same direction as the music affect valence. Experienced affect in the listener mediates the relationship between music affect and product evaluations, and arousal moderates the influence of affect. Positive affect cues, which occur when there is a perception that a product has the ability to improve affect, is also a significant moderator.

Results reveal that positive affect music that is high in arousal increases product evaluations, but negative valence and low arousal music has no effect. However, the

influence of affect from the negative music conditions were not as pronounced as the positive music conditions. Results also reveal that product type (presence of positive affect cues / no positive affect cues) interacts with affect valence in that negative affect leads to high purchase intent when consumers perceive the product can make them feel better. This provides additional understanding to music's role in affect-as-information processing as well as music's role in affect regulation behaviors by consumers.

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CHAPTER 1: Introduction

1.1 Introduction

Music is ubiquitous in the daily life of a consumer. A typical trip to one of the countless shopping malls across the country may involve multiple interactions with music. First, in the car on the way to the mall, perhaps again as the consumer enters the mall and music is playing in the common areas, and different music again may be played in the elevator and bathroom, all of this before the consumer even reaches a point of sale. Music has become so pervasive in all aspects of life that a consumer, walking into the Macy's department store in their local mall, would not even give a second thought to the fact that music is playing in the background while they peruse the racks of clothing to find a potential clothing purchase. As this consumer surveys the different options available to them, there is a specific music selection playing in the background that has been carefully selected by Macy's with the intention of improving the shopping environment. However, while this music is playing, the consumer experiences a slight but distinct change in their affective state that is similar to the affective tone of the music. These feelings experienced by the consumer from the music may influence their cognitive ability and evaluative process that will determine their consumption response. This consumer finds a specific outfit and thinks to themselves, "I'll go ahead and buy this" and then moves on to their next consumer decision. However, did the affect they experienced from the music influence their decision? Would a different type of song have resulted in this consumer deciding not to purchase? This dissertation is intended to

study how the affective state of the consumer, which is induced by music, influences their product evaluation and purchase decision.

1.2 Music History and Research

Music has been prevalent in society throughout human history and across all cultures (Clauson and Merriam 1967). There is evidence, through discoveries of ancient bone flutes, that music existed in some fashion for at least 40,000 years (Kunej and Turk 2000). In modern times, music has permeated all aspects of our lives and it is estimated that the average American consumes 4 ½ hours of music every day (Nielsen 2017), either through a personal choice or through external environments. Accordingly, there are countless areas related to music that one could study or obtain a degree, such as music production, composition, performance, and therapy to name only a few.

Music research has received a great deal of attention in psychological and medical research due to the strong and repeatable positive results experienced when utilizing music for therapy. It has been found to be an effective tool for managing mental disorders such as depression (Aalbers et al. 2017) and has been linked to improving the physical healing of patients who have undergone surgery or cancer treatment (Bradt et al. 2016). Music has also been shown to assist in the improvement of fluency in persons with severe mental retardation (Ann et al. 2019) where many other forms of treatment were unsuccessful. It is utilized extensively by athletes to enhance performance (Murgia et al. 2012) and by countless others to relax and regulate emotions (Cook, Roy, and Welker 2019). However, despite the wide range of research that has helped discover

positive influences of music, the literature related to music and consumer behavior has not received a great amount of attention.

1.3 Music in Consumer Behavior

In consumer research, music has received only a modest level of attention in the past several decades. Prior to 1990, there were fewer than 20 published empirical studies in marketing with music as the focus (Bruner 1990). This earlier set of research focused on the core aspects of music such as tempo (speed of music or rhythm), pitch (melodic content referring to the succession of musical notes and chords), and texture (volume and timbre or distinctive tone that makes one instrument sound different from another). Bruner's research has given us a stronger understanding of how music can change and influence our behavior when in a shopping context based on these three core aspects.

Research has provided evidence that varying the tempo of music played in the background can result in consumers spending more or less time in a market or restaurant (Milliman 1982, 1986). In the studies by Milliman, he found that customers took longer to eat their meals in a restaurant and walked slower in a grocery store when slow tempo music was present in comparison to fast tempo music. While his results did not show any differences in amount of money spent by the consumers in the two different music treatments, he did suggest possible marketing implications depending on the environment. For example, busy restaurants may want consumers to eat quickly so they can accommodate more people in a single night. An important finding of this study was that consumers' behavior was manipulated by the music even though they were not aware of its presence, indicating this to be a potentially strong subconscious motivator on

shopping behavior (Milliman 1982). Research has also supported the idea that the pitch of music can result in different expressed emotions. Major modes, or keys, are generally perceived as more "happy" and minor modes are perceived as more "sad" to the listener (Hevner 1935). In this research, Hevner (1935) demonstrated that that research participants consistently used positive (negative) adjectives to describe music in the major (minor) mode regardless of musical ability and training.

Research has also demonstrated that there are different types of sounds coming from different instruments, typically referred to as texture, that can result in different emotions expressed by the listener (Van Stone 1959). For example, research by Van Stone (1959) revealed that woodwind instruments were often judged as "whimsical," whereas brass instruments were judged as "serious" or "majestic." The volume of music, or how loud it is being played, has also been shown to significantly influence the amount of time spent in a shopping environment (Smith and Curnow 1966), in that loud music has been correlated with shorter amounts of time. However, despite these advancements in the understand of tempo, pitch and texture of music and how it affects behavior, analyzing each of these core aspects of music in individual silos does not appear to fully explain the compounding effect of music. The current research seeks to advance the literature on how different components of music influence behavior when combined together more holistically, the way in which music is typically experienced.

Table 1: Summary of Marketing Research involving Music (Bruner 1990)

Author	*Date*	*Independent Variable (Tempo, Pitch, Texture, or Other)*	*Dependent Variables*
Alpert and Alpert	1986, 1988	Tempo, pitch, texture, and product "mood"	Mood and purchase intent
Gorn	1982	Appeal	Choice behavior
Holbrook and Anand	1988	Tempo	Perceived activity and appeal
Hunt	1988	Music presence and content	Recall
Kellaris and Cox	1989	Appeal	Choice behavior
Milliman	1982, 1986	Tempo	In-store behaviors
Park and Young	1986	Presence of music	Brand attitude
Sewall and Sarel	1986	Presence of music	Recall
Simkins and Smith	1974	Appeal	Audio message evaluation
Smith and Curnow	1966	Volume (texture)	Shopping behaviors
Stuwart and Furse	1986	Presence of music	Comprehension and recall
Stout and Leckenby	1988	Presence of music	Cognition and affect
Wintle	1978	Compatibility of music	Affective rating
Yalch and Spangenberg	1988	Music in background/foreground	Shopping behaviors

The last several decades have seen an increase in music research that has focused more on emotion. This development was a natural evolution of the research, as music has been referred to as the "language of emotion" and explained quite simply as something that "sounds the way emotions feel" (Pratt 1952). There is a relatively strong base of emotion research which can be leveraged by music researchers to advance our understanding of how music can influence our decisions (Van Goethem 2011). The subsequent stream of research involving music and emotions has provided support to the concept that music communicates an emotion that it transmits to the listener (Juslin and Västfjäll 2008). While there is some debate as to whether music creates a perception of emotion or if the listener is actually feeling the emotion expressed by the music (Gabrielsson 2002), there does appear to be strong empirical evidence that music can change our affective state when presented in the right conditions (Hunter, Schellenberg, and Schimmack 2010). Hunter et al. (2010) found that subjects not only could consistently identify the intended emotion of a song, but also reported feelings after

listening to a song that were highly correlated to the intended emotion. Juslin and Vastfjall (2008) summarized the research involving emotional reactions to music as seen in Table 2 below. It is worth noting that this summary references only two articles (Baumgartner 1992; Gorn, Tuan Pham, and Yatming Sin 2001) published in marketing journals, and the Gorn et al. study (2001) is the only study that used consumer behavior measures as a dependent variable. Moreover, analysis of the emotion research utilizing music reveals some inconsistencies in results. There are also large variations in how emotion has been operationalized in different studies. Thus, the body of research in this domain still lacks a clear understanding of how music can influence consumer behavior through emotion.

Table 2: Summary of Emotion Research involving Music (Juslin and Vastfjall 2008)

Author (date)	*Date*	*Measure*	*Effects of positive affect*
Baumgartner	1992	Memory	Evokes memories of specific life events
Bouhuys et al.	1995	Emotion perception	More happiness and less sadness perceived in facial expressions
Clark and Teasdale	1985	Count time	Shorter count time from 1 to 10
Gorn et al.	2001	Evaluative judgements	More positive evaluation of ads
Kenealy	1988	Decision time	Shorter time to decision
May and Hamilton	1980	Physical attraction	Higher ratings of attraction
Mitchel et al.	1998	Sexual arousal	Stronger sexual arousal
Pignatiello	1986	Writing speed	Shorter time for writing down numbers
Teasdale and Spencer	1984	Subjective probability	Higher estimates of success and lower estimates of failure
Wood et al.	1990	Incentives	Shorter time to complete a coding procedure

There are two different paths through which music is believed to influence affect in listeners. One stream of research focuses on the ability of music to create very strong associations in memory, and these researchers posit that music actually enhances the

memory process (Jäncke 2008). This stream of research supports the idea that when a song is paired to a specific event through classical conditioning, hearing this song at a subsequent time will make memories of that specific event more salient (Baumgartner 1992). When those specific memories have strong emotions connected to them, it should result in the listener experiencing those associated emotions when hearing the music later. However, the pairing of specific memories to music can cause inconsistencies in the resulting emotions one may experience from a piece of music. It seems likely that there would be a congruency between the affective valence of the music and the memory that gets associated with that music, in that positive memories would most likely get paired in memory to a song that has a positive affect. However, this is not always the case as a positive song could remind someone of relationship that went sour, resulting in a negative emotion. Inversely, a negative song could be paired with a person or experience that has many positive memories. While music operating through memory association can result in strong manipulations of emotional state, it is very difficult to predict how people will respond emotionally when hearing music because of the high variability of personal experiences in memory.

The other path through which music is believed to influence listeners is the actual emotion intended by the composer and musician. There is strong evidence supporting the idea that music is not a random set of sounds, but is instead a specific emotion that is intentionally communicated by the composer or musician (Peretz, Gagnon, and Bouchard 1998). This emotion is typically interpreted and understood in a consistent manner by different subjects (Peretz, Gagnon, and Bouchard 1998). This communication of emotion through music is unique because it is independent of language and does not appear to

require a complex learning process (Jäncke 2008). Jäncke (2008) noted in his research that children appear to have the same ability as adults to interpret the intended emotion of a song. Therefore, there is evidence of an innate ability to interpret music. This mode of music, acting as a type of non-verbal communication of emotion from the musician to the listener, should have much more consistent results than emotions associated with specific personal memories. The emotion intended by the musician is also a true structural component of music, whereas emotions related to memories associated with music are merely paired through conditioning. Therefore, the current research will focus on the intended emotion inherent within the music itself, as this allows for the study of how music affects behavior as opposed to how personal memories affect behavior.

Personal preferences for music can differ greatly across people. There is also much variation in how specific and strong each individual's preferences are for types of music (Sedlmeier and Schafer 2009). Music preference has been linked to personal identity and values, which is why it can play such a strong role in development of adolescents (Jensen Arnett 1995; Schwartz and Fouts 2003). For these reasons, it has been a challenge for researchers to achieve consistent results in studies involving music when using constructs that involve self-reported measures of "liking" or "pleasure" (Wheeler 1985), which will vary greatly in interpretation by the listener. Music has been identified as a key function in which adolescents develop their identity and form in-group / out-group associations (North and Hargreaves 1999). In their research, North and Hargreaves (1999) showed that teenagers understand the social consequences of liking certain styles of music such as inclusion and exclusion from groups of friends. This research also revealed that people typically favor others who like the same musical style

as they do. Identity formation and strength of these group associations may lead some people to enjoy music from many different genres, while others appear to gain much more enjoyment from specific genres. Strength of in-group / out-group associations may also explain why some have a strong animosity towards genres they identify with an out-group. Therefore, this research will utilize a clear categorization of music from an affect perspective that controls for personal preferences.

1.4 Dissertation Purpose and Objectives

Some of the more recent research has advanced our understanding of how music can influence consumers, yet a consistent approach to music categorization is not yet apparent in consumer research. Many studies use categorizations that are somewhat ambiguous, such as "liked" or "pleasurable," while others rely on personal preference. This inconsistency in categorizations make it difficult to connect all of the extant research into a unified theory of the effect of music on consumer behavior.

The purpose of this dissertation is to utilize a clear and repeatable process for categorizing music in consumer research and to identify a clear model of behavioral outcomes by connecting music and emotion research. This research focuses on the emotional content that is communicated through music, while controlling for personal preferences and memory associations that can confound results. Through a series of three essays, I examine the expected consumer responses to varying levels of music affect.

Essay 1

The first essay explores the categorization of music based on the different dimensional and taxonomical approaches to emotion classification in extant research. Once a clear approach to music categorization has been identified, the link to consumer decisions based on specific emotional states can be tested. The understanding of consumer decisions related to specific emotional states has been well developed from an affect valence perspective. Specifically, positive and negative emotion can lead to a transfer of affect to a target product through the use of affect-as-information (Clore and Schwarz 1983). However, utilizing the affective valence inherent within music to manipulate specific consumer behavioral responses has not yet been confirmed in the extant literature. Through an experiment, I test the basic relationship between the affective valence of music and the evaluation of products when music is present.

Essay 2

The second essay explores how arousal levels induced from music influence behavioral intentions for consumers. Arousal is a key dimension of mood and emotion (Bradley and Lang 1994) and has also been well-established as a determinant of behavioral responses (Gorn, Tuan Pham, and Yatming Sin 2001). In study 1, I measure the effect of arousal on product evaluation when music affect is positive. Study 2 introduces both positive and negative affect and tests the interaction of affect and arousal on product evaluation. This research also intends to advance our understanding of how

affect and arousal can be induced simultaneously by a single source of music and the subsequent behavioral results.

Essay 3

The last essay explores additional moderators between affective valence and purchase intent, in particular, when the relationship between affect valence and evaluation is not positive. People are motivated to maintain a positive state of emotion as often as possible (Isen 2000) through a process termed affect regulation. The objective of this essay is to identify the type of music that can lead to affect regulation and the product types that support this behavior. This research investigates whether products that are perceived to have positive affective cues are more likely to be purchased when a consumer is placed in a negative affective state through music. The moderating influence of arousal is also tested, as affect regulation is a complex process that involves a high amount of cognitive processing (Pyone and Isen 2011), which is more likely under low levels of arousal.

1.5 Summary

The extant research on music and emotions has created a solid foundation for understanding how music can lead to consumer product decisions mediated by emotion induction. However, the research has yet to show that music of a specific "type" can influence specific and repeatable results in a consumer setting. This leaves much

conjecture as to whether the outcome behavior is influenced by the core dimensions of music, or a memory association linked to the music. Emotion research provides a strong link to consumer behavioral outcomes if a consistent approach can be established in the literature. Through the use of three essays, I further explore the drivers of behavioral responses to music in a consumer situation. Essay 1 explores the core components of positive and negative affect and utilizes a consistent and reliable process for classification of music in consumer research. Essay 2 extends that research by introducing the moderating effects of arousal on the affect transfer of music to a target product. Essay 3 further establishes the type of products that may reverse these effects, driven by the underlying process of affect regulation.

CHAPTER 2: Essay 1 – The Role of Positive or Negative Affect in Music on Product Evaluation

2.1 Introduction

Many consumer situations involve music in some way, yet it is difficult to determine how music influences consumer decisions. There are many factors in music that could potentially change behavioral outcomes. Music that is liked has been correlated to an increase in product evaluation (Gorn, Goldberg, and Basu 1993). However, it is unclear as to whether a personal preference or associated memory is driving the "liking" of the music and therefore the affective response, or whether the actual intended affective valence of the music is driving the response. Thus, there is a need within the literature to establish an understanding of behavioral responses that are influenced by the emotional content of the music without personal preferences and memories confounding the results.

Once there is an established approach to inducing affect in a listener that is specifically from the music, then research involving affect valence can be combined to further our understanding of how music influences consumer decisions. There is a great deal of consensus amongst researchers that positive affect can increase product evaluations and negative affect can decrease evaluations (Clore and Bar-Anan 2001). The purpose of the present research is to increase our understanding of how music can manipulate the affective state of a consumer and lead to changes in product evaluations and purchase intent.

2.2 Literature Review and Hypotheses

2.2.1 Gaps in Consumer Research Involving Music

The seminal article "Music, Mood, and Marketing" (Bruner 1990) published in the Journal of Marketing summarized the consumer research involving music to that point. While there were a number of studies that focused on music and helped to advance the understanding of how music can influence consumers, Bruner (1990) made an important point to note that "fewer than 20 published empirical studies in marketing have music as their focus." Much of this research focused on the core aspects of music such as tempo (Milliman 1982, 1986), pitch (Hevner 1937), and texture (Smith and Curnow 1966) and how these attributes can individually influence consumer behavior. Based on the review of extant research at the time, Bruner concluded that music can evoke nonrandom behavioral responses in marketing-related contexts, and he urged researchers to raise the level of sophistication in marketing related consumer research. Bruner also noted that there was a tremendous opportunity to extend consumer research involving music, as the applications in a marketing context showed a great deal of potential.

Research then evolved further into the domain of emotion. This progression was natural, as music appears to be a way of communicating emotion without the need for written words (Pratt 1952). More recent research by Juslin and Västfjäll (2008) and Juslin and Sloboda (2013) summarized the research involving music and emotion and concluded that music cannot be properly studied without regard to the underlying emotional mechanisms. There is still much debate as to whether music expresses emotion that is interpreted by the listener or if music actually induces emotion when experienced (Zentner, Grandjean, and Scherer 2008). There is also still a question as to

which emotions can be evoked by music (Juslin and Laukka 2003) ranging from simple positive or negative valence to very complex and specific emotional states. Much of the existing research did not attempt to distinguish between behavioral responses from music that are based on the emotion inherent within the song compared to responses driven by personal memories specific to an event in the listener's life that the music evokes (Baumgartner 1992). The current research intends to advance music research in a marketing context by utilizing a clear categorization of music, which allows us to predict reliably the behavioral responses based on the emotional content of the entire song instead of individual components.

2.2.2 Affect, Emotion & Mood

Affect is an umbrella term that is used to cover all evaluative or positive and negative valenced states (Juslin and Sloboda 2001). Emotions, on the other hand, involve a number of subcomponents, which result in more complex expressions such as joy, love, and despair. While it is clear that music has the ability to express these more complex emotions (Kreutz et al. 2008; Lindstrom et al. 2003), the research supporting specific behavioral responses from these complex emotions is far from conclusive. However, research involving potential behavioral and cognitive differences based on positive and negative affect is much more established in the existing literature (Alice. M. Isen 1984; Isen 2001). Additionally, many of these complex emotional terms are commonly referred to as subcomponents of multi-dimensional models of affect (Russell 1980; Thayer 1978). In these models, emotion is measured through a minimum of two dimensions. The two

most consistently used dimensions across different models of emotion are arousal, referring to some level of excitement or relaxation, and a positive to negative valence feeling, such as happy and sad. This means that complex emotions can be simplified, at least partially, into differing levels of these two dimensions of affect. Refer to Table 3 for a summary of the main terms related to emotions and music that are used throughout the current research.

Table 3: Definition of Affect Related Terms (Juslin and Vastfjall 2008)

Term	***Definition***
Affect	An umbrella term that covers all evaluative - or valenced (i.e. positive/negative) - states such as emotion, mood and preference
Arousal	Activation of the autonomic nervous system (ANS). Physiological arousal is one of the components of an emotional response but can also occur in the absence of emotions (e.g., during exercise).
Emotions	Relatively intense affective responses that usually involve a number of sub-components - subjective feeling, physiological arousal, expression, action tendency, and regulation - which are more or less synchronized. Emotions focus on specific objects, and last minutes to a few hours.
Moods	Affective states that feature a lower felt intensity than emotions, that do not have a clear object, and that last much longer than emotions (several hours to days).
Musical emotions	A short term for "emotions that are induced by music."
Emotion induction	All instances where music evokes an emotion in a listener, regardless of the nature of the process that evoked the emotion.
Emotion perception	All instances where a listener perceives or recognizes expressed emotions in music (e.g., a sad expression), without necessarily feeling an emotion.

2.2.3 Dimensional vs. Categorical Measurements of Affect

There are two basic approaches to the measurement of affect. The first approach seeks to identify the underlying dimensions of affect, which typically results in bipolar

measurements of a few dimensions. These dimensions have been described as activation and energy expenditure (Thayer 1978), pleasure and arousal (Bradley and Lang 1994), and many other categorizations, with the common characteristics being some form of positive / negative valence and a level of excitement or relaxation. This approach relies on valenced measurements of these core components of affect to determine affective state. The second takes a more functional approach to identify the terms, or adjectives, which express the complex emotional states related to affect such as "enthusiastic", "excited", "scared", or "hostile" (Tellegen, Watson, and Clark 1988). The result of this taxonomical approach to emotion classification gives researchers the ability to study behavioral responses related to very specific emotions. This is valuable but also complicated with the nearly unlimited amount of emotional terms that are available in spoken language. However, even though terms like "scared" and "hostile" have clear differences, they both could be considered negative affect and an excited state. While negative and excited does not explain the complex detail of how one feels when they are "scared," the extant research provides evidence that there are basic expected behavioral responses from these types of emotions. There are some consistencies in behavior one would expect from all negative and excited emotions like "scared" and "hostile" (Izard 2009). Both of these emotions have been linked to less constructive behavior and lower appraisals of their surroundings (Gouaux 1971). Hall et al. (1993) pointed out that, even though it is common in research to consider each negative emotion individually, negative moods are highly correlated clinically and empirically. Their research supported this concept by linking a wide variety of negative emotions to nicotine treatment failure.

The basic positive and negative emotions are also much simpler to induce in a research environment than complex emotions. There is also greater potential for confounds in research using taxonomy measures of emotions due to the specific memory associations that may be related to these complex emotions (Zentner and Eerola 2009). Moreover, Bradley and Lang (1994) also noted in their research that a valenced measurement of core dimensions of affect accounts for the same amount of variability in reports of affective reactions as the Semantic Differential Scale (Russell and Mehrabian 1977), which used eighteen different ratings of emotional terms. Russell (1980) also noted in later research that the majority of affective response can be captured using two or three basic dimensions of emotion. While both categorical and dimensional models of affect have been used extensively in emotion research, the categorical are considered more appropriate when unique response profiles are needed (Zentner and Eerola 2009). For example, in a study where subjects were asked to match very specific emotions to pictures (Nawrot 2003), a categorical model was more appropriate than dimensional models and has been more widely used in studies with music involving recognition paradigms like this. This current research is more focused on behavioral responses elicited from general affective states, which is what is more likely induced when music is in the background (Västfjäll 2015) as is most typical for a consumer environment. For this reason, I utilize a dimensional approach to measuring affect in music, as it is most appropriate for the intended research.

2.2.4 Multi-dimensional Models of Affect

Thayer (1978) developed one of the earliest multi-dimensional theories of affect using energy and tension. He defined the former dimension as ranging from high energy to the opposite feeling of sleepiness. The latter dimension ranges from high tension, which can more clearly be recognized as anxiety or anger, to placidity or positivity. This idea of a two dimensional model of affect was reinforced, and further developed, by Russell (1980) in his circumplex model of affect. See Figure A and B for graphical representations of these models. Russell's model involved more specific terms representing eight affect concepts in circular order. However, Russell represented these terms in a two dimensional space, arousal-sleep and pleasure-displeasure, which mimicked Thayer's model. The research at this point supported the emergence of an accepted classification of affect across the two dimensions of arousal (high energy to low energy) and affective valence (positive to negative).

Figure A: Thayer's Two Dimensional Model of Affect

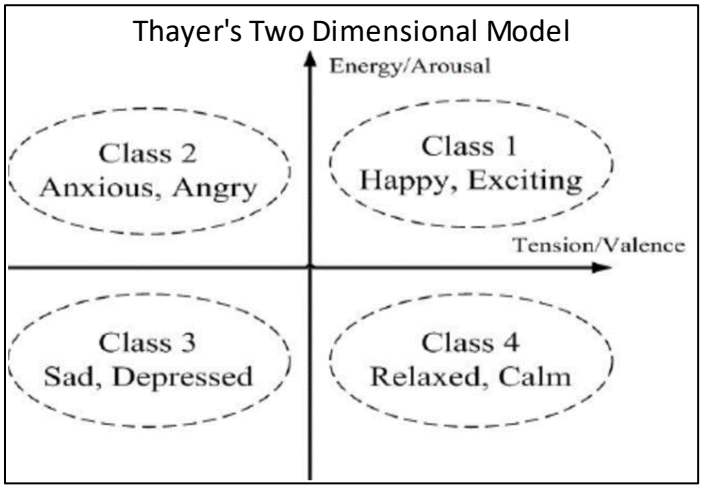
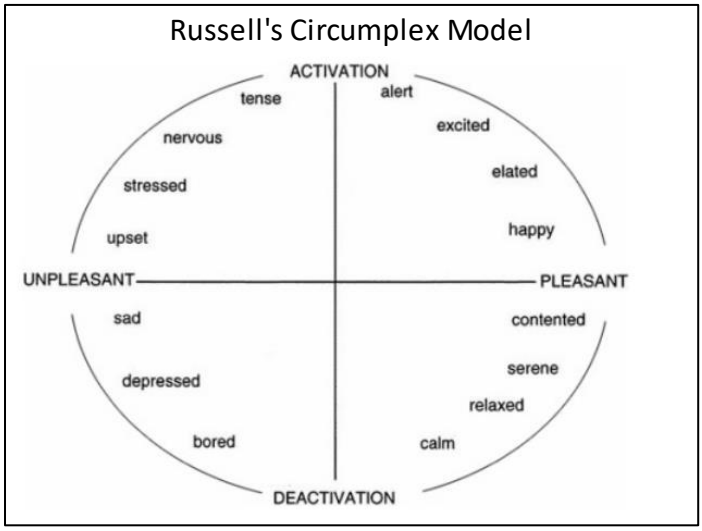


Figure B: Russell's Circumplex Model of Affect

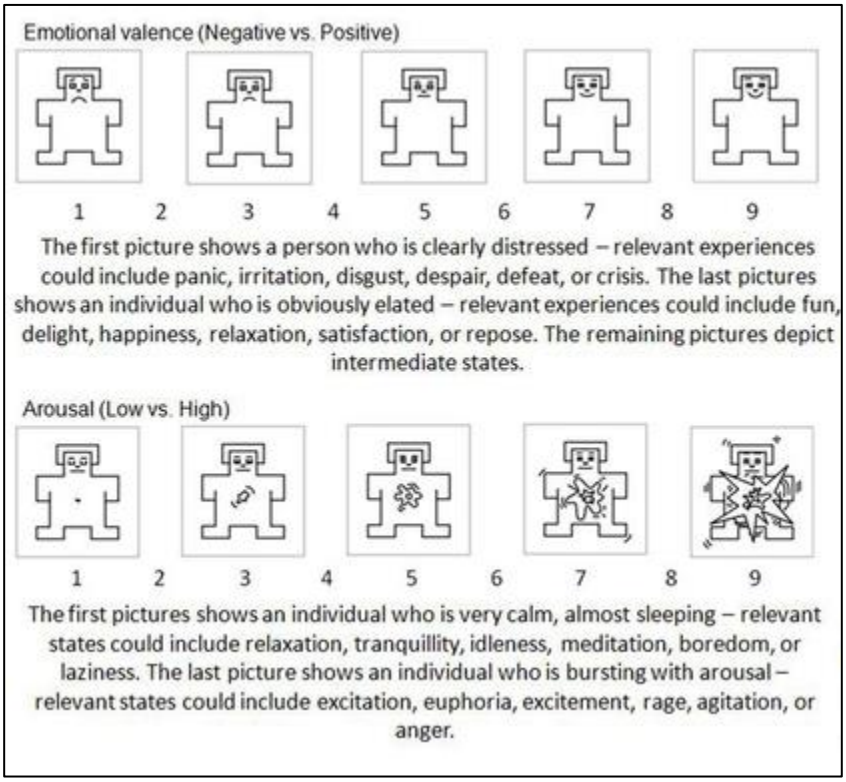


The development of the self-assessment manikin (SAM), which allows for subjects to rate affective valence using visual representations of pleasure and arousal, further reinforced these dimensions of affect (Bradley and Lang 1994). It is worth noting that Bradley and Lang also included a third dimension, dominance, which arose from the early research by Russell and Mehrabian (1977). However, Bradley and Lang also admit in their conclusions that the dominance dimension had the highest variation, and the majority of subsequent research has focused on just pleasure and arousal (Bakker et al. 2014). These two dimensions have also been operationalized as the measurements of affect in research involving music published in marketing focused journals (Alpert and Alpert 1990; Gorn, Goldberg, and Basu 1993).

Another key factor of the research by Bradley and Lang (1994) is the ability to use visual representations instead of verbal classifications of affect and arousal, as the

SAM instrument relies on pictures instead of terms. Verbal rating systems make research difficult across different language speaking cultures and in non-linguistically sophisticated samples such as children (Bradley and Lang 1994). Additionally, the evaluation of affect through pictures is a visceral experience that does not require a verbal explanation or description. Music affect evaluation is similar in that we can recognize emotion within music without the need for words. The similarity of these evaluations provides for an efficient cognitive route between the affect experienced from music and the affect seen visually through pictures (Bradley and Lang 1994). Emotional imagery can be an objective source of information that is processed by the brain consistently across different subjects (Lang et al. 1980). For this reason, the SAM is selected as an appropriate tool for measuring affect valence and arousal in the current research involving music. See Figure C for a visual representation of the SAM instrument.

Figure C: Self-Assessment Manikin (SAM)



These developments have now been used extensively in research related to affect, emotion and mood. At the time of this writing (2020), Russell's paper (1980) defining the circumplex model of affect has received over 13,000 citations, many of them from top journals. Bradley and Lang's article (Bradley and Lang 1994) developing the self-assessment manikin (SAM) has seen similar support and has also been used extensively in music research. The last decade has seen much progress in the music emotion recognition (MER) field, in which the majority of research has relied heavily on two dimensional models utilizing arousal and affective valence through either independent

measurement of these attributes or with the use of the self-assessment manikin (Aljanaki, Yang, and Soleymani 2017).

2.2.5 Affective Transfer of Music

Emotion induction refers to instances where music evokes an emotion in the listener. There are two schools of thought on this process in the extant research. One is that music simply serves as an expression of emotion to be identified or translated, but not necessarily experienced, by the listener. An exception to that would be when the music evokes a memory that creates an emotional reaction. This process of emotional recognition would be similar to seeing someone smile and understanding that they are happy, yet not actually feeling happy oneself. However, if the smile reminds you of a time you were smiling and the specific action that caused you to smile is recalled, then an emotional reaction is expected. The other prevalent approach in the literature on emotion induction of music is that music transfers specific emotions even when there is no specific memory in association. In this case, someone can listen to a piece of music they had never heard before with no specific memory association, yet would still experience the emotion intended by the composer. A review of research attempting to induce affect with music (Västfjäll 2015) has provided strong support that induction of affect with music is possible under the right circumstances even with no specific memory associations.

Empirical research has provided evidence that music arouses emotions, instead of merely perception of the emotions, as evidenced by participants' self-reports. Multiple

research studies have revealed that subjects report they experience emotions during music listening (Gabrielsson 2002; Pike 1972; Sloboda, O'Neill, and Ivalidi 2001). However, it is possible that subjects could not accurately describe their own feelings or that they were merely reporting an emotion as expected through demand characteristics (Västfjäll 2002). More recent advances in research utilizing fMRI imaging have provided evidence that brain areas involved in emotional reactions are activated while listening to music (Blood and Zatorre 2001). Additional research involving expressive behavior has captured visual representations of emotions, such as smiling, crying, and laughing, when music is present (VanOyen Witvliet and Vrana 1995).

Music has been used successfully to manipulate affect in research participants through a musical mood induction procedure (MMIP) developed by Clark (1983) as an improvement on the Velten's (1968) mood induction procedure.[1] In order to induce affect, Velten (1968) used a procedure of reading a set 60 affectively charged statements, such as "This is great, I really do feel good, I am elated about things" for the positive inducement or "I have too many bad things in my life" for the negative one. Participants are asked to "try to feel the mood suggested" while reading the statements and the result is a temporary change in affect. Clark (1983) notes that music was found to be more effective in inducing the intended affect and was also found to be less likely to result in demand characteristics (Clark 1983). The original MMIP contained specific instructions about how to obtain the desired affect including asking the subjects to try and put themselves in the mood they are hearing in the music; however, later studies showed that

[1] Note that the aforementioned research uses the term mood, however based on the previously presented definitions of affective terms, affect would be the more accurate term.

music can induce affect without the need for those instructions (Pignatiello, Camp, and Rasar 1986). Pignatiello et al. (1986) noted that a simple cover story along with no explicit instructions to change mood still resulted in significant differences between positive and negative affect. A more recent review of studies using an MMIP (Västfjäll 2015) found that music induces mild and general positive and negative moods instead of specific emotions. For these reasons, it is generally accepted amongst modern mood researchers that music can transfer mild affect to the listener.

> **H1:** Music categorized with a positive (negative) affect valence will result in a more positive (negative) affective state compared to a condition with no music.

2.2.6 Affect-as-Information

The influence of positive and negative affect on behavioral responses is well documented in consumer research. Most notably in this literature is the concept of affect-as-information (Clore and Schwarz 1983). This theory posits that our feelings influence decisions when diagnostic information is lacking due to misattribution of feelings to transient external sources. In a series of experiments by Clore and Schwarz (1983), research subjects were asked about life happiness and satisfaction on either sunny or rainy days. Sunny days resulted in greater happiness and life satisfaction than rainy days. Possible explanations for why this occurs is the availability of mood-congruent thoughts (Isen et al. 1978) meaning that, due to connections in memory, positive thoughts are more accessible in memory when experiencing positive affect. Mood-congruent memory connections increase the likelihood that positive thoughts are generated about

the target stimulus during an evaluation if one is in a positive affective state. Another explanation, postulated by Schwarz and Clore (Schwarz and Clore 2006), is that evaluation and affect are inherently linked in that positive evaluations of attributes related to the target object are correlated with positive affect. For example, when evaluating a restaurant, one might consider the cost and quality of the food as well as the service and cleanliness of the restaurant. Positive thoughts on these attributes, such as the food being delicious, would lead to positive feelings, which results in a positive evaluation of the restaurant. Negative thoughts related to these attributes, such as an unsanitary environment, would result in negative feelings and a subsequently poor evaluation of the restaurant. While these thoughts are diagnostic and help in the decision process, there is also a clear positive or negative feeling associated with them. This leads to an expectation that positive evaluative decisions involve positive affect and negative evaluations involve negative affect. Feelings and preferences thereby become linked through classical conditioning, which creates the possibility of misattribution. As the dog in the classic experiment on conditioning connected the ringing of a bell to an expectation of food (Clark 2004), positive feelings become connected to an expectation of a positive evaluative judgement. This explains why many people make judgements by asking themselves, "How do I feel about it?" (Schwarz and Clore 2006) and why people in a negative affective state might not like a product that has positive attributes because it simply "doesn't feel right."

The linking of affect to preferences allows appraisals to be formed using heuristics or mental shortcuts, thereby allowing emotional feelings to serving as feedback that guides judgement and information processing (Clore and Bar-Anan 2001). When

one consciously processes the source of the affect, however, it is less likely that affect will be misattributed to an external source (Clore and Schwarz 1983). While sunny days resulted in greater happiness and life satisfaction than rainy days in the previously mentioned research by Clore and Schwarz (1983), the difference was eliminated when subjects were asked to consider that an external source (the weather) was potentially influencing their mood. Extant research also supports that mood source is generally not salient and, therefore, affect is likely to influence evaluations in most situations unless the source of the affect is specifically identified. Therefore, if affect is positive, the target stimulus should be influenced by affect resulting in an increase in the evaluation of that product. I hypothesize that the affective valence of music will cause an induction of affect in the listener, which will influence evaluation of a target stimulus.

H2: Music categorized with a positive (negative) affect valence will result in a higher (lower) evaluation of a product compared to a condition with no music.

2.2.7 Evaluation Leads to Purchase Intent

Extant research supports the idea that positive feelings increase purchase intentions (Brown, Homer, and Inman 2006) and that positive product evaluation increases purchase intent (Fishbein and Ajzen 1977). Therefore, I also hypothesize that the affective valence of music should have an influence on purchase intent of the target stimulus through the process of arousing emotion in the listener that leads to a change in evaluation. The model testing these hypotheses is a double mediation of music affect towards purchase intent, which is explained by affect felt by the consumer when listening

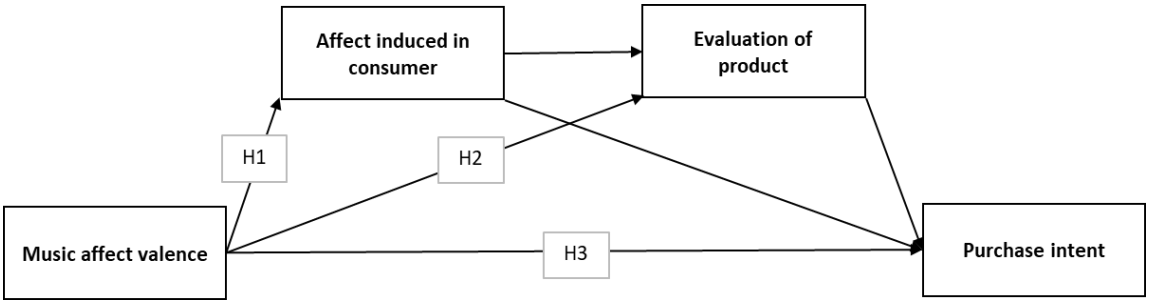
to music and then leads to an increased evaluation of the product. The affect experienced by the consumer leads to the increased evaluation of the product. The increased evaluation of the product causes the increase we expect to see in purchase intent.

H3: Music categorized with a positive (negative) affect valence will result in a higher (lower) purchase intent of a product compared to a condition with no music.

2.2.8 Theoretical Model

The theoretical model is presented below with the path from music affect valence to purchase intent being double mediated by affect induced in the consumer by the music and evaluation of the product. Music affect valence is posited to induce affect in the consumer. The induced affect then influences product evaluation and the product evaluation influences purchase intent.

Figure D: Theoretical Model of Double Mediation of Music Affect Valence to Purchase Intent



2.3 Study 1 – The Influence of Positive and Negative Affect on Product Evaluation and Purchase Intent

2.3.1 Design

Music induction

Most retail environments involve music in the background which may not have a strong enough focus, with all the additional stimuli in the environment, to produce complex emotions in a listener (Eich and Metcalfe 1989). However, music has been used extensively to induce basic positive or negative affect as well as differing arousal levels using the musical mood induction procedure (MMIP) (Västfjäll 2015). A common cover story that has been used successfully in research involves telling the participants that they are participating in two different experiments, the first involves rating a song (which actually serves as the manipulation), and the second "seemingly unrelated" experiment serves as the dependent variable (Siemer 2001).

The procedure for this dissertation is adopted from a study on consumer mood states and the mitigating influence of personal relevance (Curren and Harich 1994). This study asked participants to evaluate two products, the first product being a film and the second being a personal computer. The showing of the film was actually the affect manipulation, which was chosen because films have been effective mood inducers yet this mood induction is not obvious to the participants (Isen and Gorgoglione 2007). Curren and Harich (1994) found in their research that positive and negative affective states had significant effects on product evaluations. More specifically, positive valenced mood resulted in higher purchase intentions of a computer than a negative valenced mood

condition. Music is expected to have a similar effect on affect as films, as noted by Pignatiello (Pignatiello, Camp, and Rasar 1986) in a review of the MMIP.

DEAM dataset

The categorization of music for this current research utilizes the results of a study conducted by Soleymani et al. (2013) in which they analyzed 1000 clips of songs from several musical genres. This study resulted in statistically significant agreement in ratings of arousal and affect valence across multiple subjects. The research from Soleymani et al. has evolved into the development of a publicly available database for the emotional analysis of music (DEAM). This dataset has increased to include 1802 songs which were dynamically rated on dimensions of affect valence and arousal using methods similar to the self-assessment manikin (Aljanaki, Yang, and Soleymani 2017). This dataset also includes only songs that are available through the Free Music Archive, which is an online library of high-quality music that does not require licensing fees. The nature of these songs being free ensures that they are not of high popularity and would not be played on typical radio stations or online paid music streaming services. The lack of popularity reduces the familiarity to the typical consumer, thereby lowering the possibility that each song would have personal relevance to a listener and could therefore be associated with specific memories. The DEAM dataset includes music from a variety of popular genres (Blues, Electronic, Rock, Classical, Folk, Jazz, Country, and Pop) but does not include more ambiguous genres such as Novelty (Soleymani et al. 2013). Songs from the DEAM dataset are used in this study as the music affect valence

manipulation. Utilizing the music from this dataset enables the current research to test the behavioral results pertaining to the two main dimensions of emotion (valence and arousal), while reducing the possibility that another aspect of the music, such as personal memory associations, is causing the observed results.

Self-Assessment Manikin (SAM)

The current research also uses the self-assessment manikin (SAM) instrument (Bradley and Lang 1994) as a manipulation check on music affect valence as this was also the basis of the measurement used to categorize the music within DEAM. The SAM is a visual representation of affective valence, and it has shown consistent results across differing cultural and educational groups (Burkholder et al. 2016; Huang et al. 2015).

2.3.2 Sample

The sample for this research consists of students from a public research university in the Southeastern United States. Student participants voluntarily completed the experiment in exchange for course credit. A post hoc power analysis of the research upon which this study was designed (Curren and Harich 1994) revealed a power > .8 when detecting a large effect of .40 at an alpha level .05. Post hoc power analysis of subsequent research involving music (Gorn, Tuan Pham, and Yatming Sin 2001) revealed similar results with a power of > .8 when detecting a large effect of .40 at an alpha level .05. Based on this analysis and the generally accepted power of .80 in psychology

(Howell 2013), an a priori power analysis conducted using G*Power v3.1 (Faul, Erdfelder, Lang and Buchner 2007) to achieve power to detect a medium effect of .25 at an alpha level .05 indicated a sample size of 128 was adequate for this analysis.

2.3.3 Experimental Procedure

The procedure for this study utilized an adapted version of testing the influence of affect on brand evaluation and purchase intent used by Curren and Harich (1994). This study employed a single factor design (positive music / negative music) with a control group to test the main effect of affective valence on product evaluation and purchase intent.

Per the study design by Curren and Harich (1994), participants were asked to evaluate two seemingly unrelated "products". The participants in the control group only evaluated the second product. The first product to evaluate is a song, which would be played in a common area of a university. The song is actually the affect valence manipulation. One group was presented with a song of positive affect (per the DEAM annotations) and one group was presented with a song of negative affect. The control group received no song and instead went straight to the second product evaluation. The songs used for this study were selected from the DEAM dataset as either positive or negative in affective valence. The DEAM dataset also captures arousal annotations and for this test, songs were chosen with consistent arousal levels. A pre-test was conducted in which participants listened to five music selections of positive affect and five of negative affect chosen by the researcher from the DEAM dataset and rated the affective

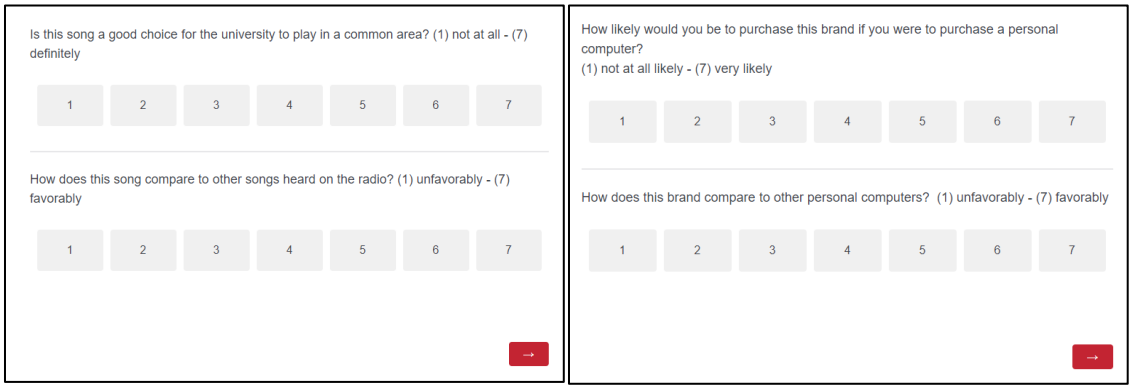
valence and arousal using the SAM tool. The second product is a computer being offered for sale on a website. The computer product presented is of a generic brand to prevent evaluative judgement from being influenced by brand familiarity. Figure A demonstrates a sample visual execution of the computer being evaluated:

Figure E: First Screen of Computer Evaluated in Study 1

Participants then evaluated both the music and the personal computer on a 7-point Likert-type scale. As part of the cover story, they were asked to indicate (a) "How does this song compare to other songs heard on the radio? (1) unfavorably – (7) favorably"; (b) "Is this song a good choice for the university to play in a common area? (1) not at all – (7) definitely." For the dependent variables, they were asked (c) "How likely would you

be to purchase this brand if you were to purchase a personal computer? (1) not at all likely – (7) very likely" and (d) "How does this brand compare to other personal computers? (1) unfavorably – (7) favorably." Participants then answered questions pertaining to their affective valence state (a) "How happy (1) unhappy (7) do you feel right now?" and (b) "How good (1) bad (7) do you feel at this moment?" Participants were then presented with the affective valence section of the SAM and were asked to select the pictures that "best represent the music selection" as a manipulation check that the music was perceived to be the same valence as identified in the DEAM dataset. Additional questions were then asked pertaining to personal liking and memory associations (a) "How would you rate this song on your own personal preference? (1) I really dislike this song – (7) I really enjoy this song.", "Does listening to this song remind you of a specific event that occurred in your life?", and "If yes, please describe the memory below in less than 50 words." See Figure F for examples of questions used in the survey.

Figure F: Questions Asked via Survey in Study 1



2.3.4 Constructs and Measures

Established constructs from marketing and consumer behavior research were adapted for this study. A series of 7-point Likert-type scale responses were used to measure product evaluation and purchase intent per Curren and Harich (1994). Affect was measured using a 7-point Likert-type scale (Clore and Schwarz 1983) to determine the mediating role of experienced affect. The affective evaluation of the music was captured using the SAM (self-assessment manikin), which is an established measure of perceived affect (Bradley & Lang 1994). See Table 4 for a summary of measures and constructs.

Table 4: Constructs and Adapted Measures for Essay 1 Study 1

Construct	***Measures or method tested***	***Drawn/adapted from***
Purchase intent	(a) How likely would you be to purchase this brand if you were to purchase a personal computer? (1) not at all likely - (7) very likely	Curren and Harich (1994)
Product evaluation	(a) How does this brand compared to other personal computers? (1) unfavorably – (7) favorably	Curren and Harich (1994)
Affective valence state	(a) How (1) happy (7) unhappy do you feel right now? (b) How good (1) bad (7) do you feel at this moment?	Clore and Schwarz (1983)
Affect valence of music	Self-assessment manikin (referenced in Figure C)	Bradley and Lang (1994)

2.3.5 Analysis

Pre-test:

Forty undergraduate students completed this pre-test and received course credit in exchange for participation. Participants were asked to listen to five music selections of positive affect and five of negative affect chosen by the researcher from the DEAM dataset and rate the affective valence and arousal using the SAM instrument.

Out of the ten songs, two were selected for use in the main study, one rating high on the affect dimension of the SAM scale ($M = 6.00$, $SD = 1.908$) and one rating low on the affect dimension ($M = 4.55$, $SD = 1.894$). These songs were selected because they resulted in the highest and lowest affect ratings and were also similar in arousal (see results in Table 5). Despite these songs being chosen based on the highest and lowest affect scores within the DEAM dataset, most of the negative songs resulted in affect ratings that were not significantly different from the midpoint of the affect scale. One song did result in a lower affect rating ($M = 4.30$, $SD = 1.951$) than the song chosen for the negative affect condition of the main study. However, a paired samples t-test revealed that this song resulted in a significantly different arousal rating ($M = 3.48$, $SD = 2.253$) than the song selected for the positive affect ($M = 5.25$, $SD = 2.329$) condition; $t(39) = 3.620$, $p = .001$. Therefore, the song with the second lowest affect rating was selected as it had similar arousal ratings as the song selected for the positive affect condition. A paired-samples t-test was conducted to compare the perceived affect of the positive affect song and the negative affect song. There was a significant difference between ratings of affect in the positive affect song ($M = 6.00$, $SD = 1.908$) and the

negative affect song (M = 4.55, SD = 1.894) conditions; t(39) = 3.552, p = .001. A one-sample t-test also revealed that the song selected for the positive affect condition (M = 6.00, SD = 1.908) was significantly above the midpoint of the scale; t(39) = 3.315, p < .002. However, a one-sample t-test also revealed that the song selected for the negative affect condition (M = 4.55, SD = 1.894) was not significantly different from the midpoint of the scale; t(39) = -1.503, p = .141. A paired samples t-test also revealed that the arousal ratings for the positive affect song (M = 5.25, SD = 2.329) and the negative affect song (M = 5.98, SD = 1.833) were not significantly different; t(39) = -1.783, p = .082.

Table 5: Reported Means of Affect Valence and Arousal in Pre-test

	Affect Valence	Arousal	Affect Valence Condition
Song 1	6.00	5.25	Positive
Song 2	4.55	5.98	Negative
Song 3	5.68	3.67	
Song 4	4.30	3.48	
Song 5	4.95	2.72	
Song 6	5.62	4.10	
Song 7	5.30	3.65	
Song 8	5.20	3.00	
Song 9	5.30	3.15	
Song 10	5.00	4.43	

Main Study:

One hundred and thirty-six undergraduate students completed an online survey and received course credit in exchange for participation. Participants were asked to listen to a music selection and rate the music for appropriateness to be played in a common area

at a university. This was actually the manipulation of affect. After rating the music, participants were presented with a seemingly unrelated task of rating a laptop computer.

Analysis of the results was performed using IBM SPSS Version 20. The manipulation check of affect valence perceived by the listener was tested using a t-test on the results of the valence measure from the SAM scale. An independent samples t-test was conducted to compare the perceived affect of the positive affect song and the negative affect song. There was a significant difference in the affect valence of the song perceived by the listener for the positive affect valence song ($M = 7.24$, $SD = 1.401$) and the negative affect valence song ($M = 5.80$, $SD = 1.995$) conditions; $t(89) = 3.989$, $p < .001$.

Support for H1 (see appendix for summary of hypotheses), that positive (negative) affect music would result in a positive (negative) affect state by the listener compared to a no music condition, was tested using a one-way ANOVA. The affect valence state measures were averaged to form a composite measure of affect ($\alpha = .928$). There was no significant effect of music affect on affective state of the listener at the $p < .05$ level for the three conditions [$F(2, 133) = 3.018$, $p = .052$]. However, the means of the results were directionally as predicted ($M_{positive} = 5.51$, $SD = 1.351$; $M_{negative} = 4.75$, $SD = 1.804$; $M_{control} = 5.17$, $SD = 1.183$) and the p-value was approaching significance, which prompted further analysis of the data discussed later in this section.

Support for H2, that positive (negative) affect music would result in higher (lower) evaluation of a product compared with a no music condition, was tested using a one-way ANOVA. There was a significant effect of music affect on product evaluation

at the $p < .05$ level with the positive music condition having a higher evaluation ($M = 4.65$, $SD = 1.037$) than the negative music ($M = 3.93$, $SD = 1.388$) and the control ($M = 4.27$, $SD = .963$) conditions [$F(2, 133) = 4.502$, $p = .013$].

A mediation analysis using bootstrapping method with bias-corrected confidence estimates on the experienced affect of the listener was measured using PROCESS MODEL 4 (Hayes 2013) to test the causal path of music affect -> experienced affect -> product evaluation. Experienced affect did not significantly mediate the effects of music affect on product evaluation ($\beta = .03$, $SE = .02$, 95% CI = -.011 to .105).

Support for H3, that positive (negative) affect music would result in higher (lower) purchase intent of a product, was tested using a one-way ANOVA. There was a significant effect of music affect on purchase intent at the $p < .05$ level with the positive music condition having a higher purchase intent ($M = 4.28$, $SD = 1.760$) than the negative music ($M = 3.20$, $SD = 1.817$) and the control ($M = 3.96$, $SD = 1.566$) conditions [$F(2, 133) = 4.739$, $p = .01$]

A mediation analysis using bootstrapping method with bias-corrected confidence estimates on the causal path of music affect -> experienced affect -> product evaluation -> purchase intent was measured using PROCESS MODEL 6 (Hayes 2013). Experienced affect and product evaluation served as sequential mediators in the model. The analysis revealed that experienced affect and product evaluation did not sequentially mediate the effect of music affect on purchase intent ($\beta = .02$, $SE = .02$, 95% CI = -.009 to .088).

Further analysis of the data revealed potential outliers in the timing between capturing the product evaluation and purchase intent measures and the subsequent

experienced affect measures. Study design required participants to remain on the screen with the computer to be evaluated for a minimum period of time in order to ensure proper examination of the computer. The data revealed that many participants waited for extremely long periods of time between the computer evaluation screen and the subsequent self reported measures of felt affect. This indicates the possibility that these participants disengaged from the study thereby either reducing the affect manipulation of the music or causing them to be influenced by factors outside the survey. Analysis of the number of seconds between evaluating the computer and reporting of felt affect ($M = 92.6$, $SD = 49.8$) revealed five responses that were submitted above two standard deviations from the mean (192 seconds). As ANOVA are especially sensitive to outliers (Hair et al. 1992), these five responses were eliminated from the data for the subsequent analysis.

The manipulation check of affect valence perceived by the listener was tested on this reduced sample using a t-test on the results of the valence measure from the SAM scale. An independent samples t-test was conducted to compare the perceived affect of the positive affect song and the negative affect song. There was a significant difference in the affect valence of the song perceived by the listener for the positive affect valence song ($M = 7.36$, $SD = 1.259$) and the negative affect valence song ($M = 5.57$, $SD = 1.863$) conditions; $t(84) = 5.249$, $p < .001$.

Support for H1 (see appendix for summary of hypotheses), that positive (negative) affect music would result in a positive (negative) affect state by the listener compared to a no music condition, was tested on this reduced sample using a one-way

ANOVA. The affect valence state measures were averaged to form a composite measure of affect ($\alpha = .924$). There was a significant effect of music affect on affect state of the listener at the $p < .05$ level with the positive music condition having higher affect state ($M = 5.67$, $SD = 1.125$) than the negative music ($M = 4.66$, $SD = 1.796$) and the control ($M = 5.17$, $SD = 1.183$) conditions [$F(2, 128) = 5.579$, $p = .005$]. An independent samples t-test revealed that the positive affect music did result in a significant difference in affect state compared to the control condition; $t(87) = -2.012$, $p = .047$. However, the affective state in the negative affect condition was not significantly different from the control condition preventing the rejection of the null hypothesis.

Support for H2, that positive (negative) affect music would result in higher (lower) evaluation of a product compared with a no music condition, was tested on this reduced sample using a one-way ANOVA. There was a significant effect of music affect on product evaluation at the $p < .05$ level with the positive music condition having a higher evaluation ($M = 4.64$, $SD = 1.059$) than the negative music ($M = 4.02$, $SD = 1.239$) and the control ($M = 4.27$, $SD = .963$) conditions [$F(2, 128) = 3.458$, $p = .034$]. However, independent samples t-tests revealed that neither the positive or negative affect conditions resulted in significantly different results from the control condition. An independent samples t-test revealed the difference in product evaluations was significant when comparing the positive and negative affect conditions; $t(84) = -2.468$, $p = .016$.

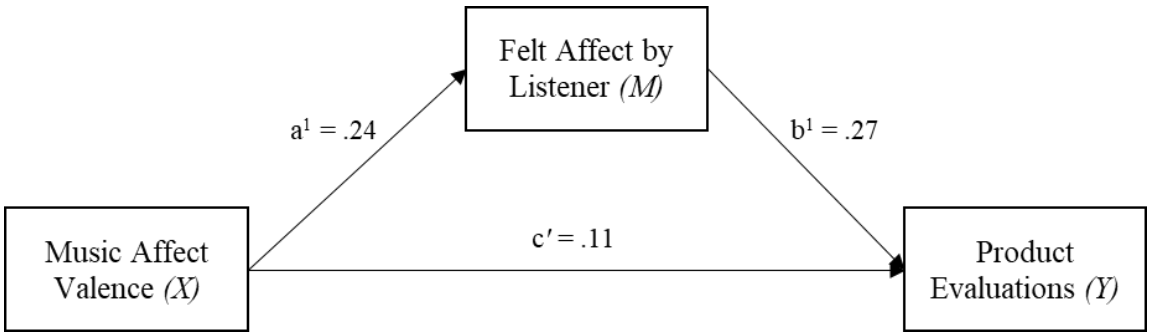
A mediation analysis using bootstrapping method with bias-corrected confidence estimates on the experienced affect of the listener was measured on the reduced sample using PROCESS MODEL 4 (Hayes 2013) to test the causal path of music affect ->

experienced affect -> product evaluation. As expected, experienced affect did significantly mediate the effects of music affect on product evaluation (β = .06, SE = .04, 95% CI = .004 to .156). Analysis of the direct and indirect effects of the model (see Figure G) reveal that more than half of the effect that music condition has on product evaluation is explained by experienced affect mediating the relationship.

Table 6: Mediation Results on Product Evaluations (HAYES PROCESS MODEL 4)

	Product Evaluations			
	Coeff.	SE	t	*p*
Condition (X)	0.1169	0.1110	4.2795	0.2941
Felt Affect (M)	0.2726	0.0637	4.2795	0.0000
Model Summary	R^2 = .1415	F(2, 128) = 10.548, *p* = .0001		

Figure G: Mediation Model of Music Affect on Product Evaluations



Support for H3, that positive (negative) affect music would result in higher (lower) purchase intent of a product, was tested on the reduced sample using a one-way

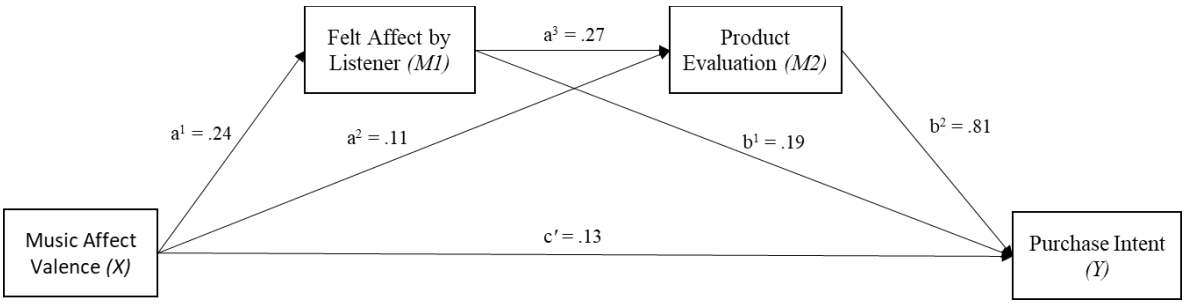
ANOVA. There was a significant effect of music affect on purchase intent at the $p < .05$ level with the positive music condition having a higher purchase intent ($M = 4.23$, $SD = 1.777$) than the negative music ($M = 3.31$, $SD = 1.814$) and the control ($M = 3.96$, $SD = 1.566$) conditions [$F(2, 128) = 3.215$, $p = .043$]. Independent samples t-tests again revealed that neither the positive or negative affect conditions resulted in significantly different results from the control condition. However, an independent samples t-test revealed the difference in purchase intent was significant when comparing the positive and negative affect conditions; $t(84) = -2.370$, $p = .020$.

A mediation analysis using bootstrapping method with bias-corrected confidence estimates on the causal path of music affect -> experienced affect -> product evaluation -> purchase intent was measured on the reduced sample using PROCESS MODEL 6 (Hayes 2013). Experienced affect and product evaluation served as sequential mediators in the model. The analysis revealed that experienced affect did mediate the effect of music affect on purchase intent ($\beta = .04$, $SE = .03$, 95% CI = .001 to .144). Analysis also revealed that experienced affect and product evaluation did sequentially mediate the effect of music affect on purchase intent ($\beta = .05$, $SE = .03$, 95% CI = .003 to .129). Product evaluation, however, did not significantly mediate the effect of music affect on purchase intent when felt affect was not accounted for in the model ($\beta = .09$, $SE = .08$, 95% CI = -.067 to .255) indicating the path through felt affect being a requirement for the mediation. Analysis of the direct and indirect effects of the model (see Figure H) reveal a large percentage of the effect that music condition has on purchase intent is explained by experienced affect and product evaluation mediating the relationship.

Table 7: Serial Mediation Results on Purchase Intent (HAYES PROCESS MODEL 6)

	Purchase Intent			
	Coeff.	SE	t	*p*
Condition (X)	-0.0633	0.1535	-0.4126	0.6806
Felt Affect (M_1)	0.1900	0.0938	2.0256	0.0449
Product Evaluation (M_2)	0.8188	0.1217	6.7273	0.0001
Model Summary	$R^2 = .3494$	$F(2, 128) = 22.7386, p < .0001$		

Figure H: Serial Mediation Model of Music Affect on Product Evaluations



These findings provide supporting evidence to the prediction that positive (negative) music affect leads to positive (negative) experienced affect which results in increased (decreased) product evaluation and subsequently higher (lower) purchase intent.

2.4 Discussion

The purpose of this research is to utilize a clear categorization of music and to operationalize music in studies in a way that focuses specifically on the emotional

intention of music and not the personal preferences or memories related to music. In addition, this research is intended to link the affective valence state produced by hearing music, to product evaluation and purchase intent.

Results of this study indicate that the affect valence of music can significantly influence product evaluations and subsequent purchase intent. By presenting study participants with music that was either positive or negative in valence, a significant difference in both ratings and purchase intent was observed for a laptop computer. This process was further explained through the mediating effect of experienced affect. The affect valence of the music being played resulted in the listener experiencing or feeling affect similar to the affect of the music. Listening to positive music leads to positive feelings, which results in an increase in product evaluation compared to someone listening to negative music or to no music at all. Supporting evidence for product evaluation being a mediating factor for purchase intent was also found. This resulted in a significant serial mediation of music affect to experienced affect to product evaluation and then purchase intent.

The results were not as significant when utilizing the negative affect conditions. The music chosen for the negative affect conditions did not result in ratings that were significantly below the midpoint of the scale indicating that participants considered the music to be more neutral than negative. The resulting affect that was felt by participants after hearing the negative music was also not significantly below the midpoint of the scale. Analysis of the product evaluation and purchase intent revealed that the negative affect valence music conditions did not significantly lower these ratings below the ratings from the control conditions. Analysis of the ratings provided from the DEAM dataset

reveal that most music does not seem to be rated very low on affect valence by participants using the SAM instrument. Future research could attempt to utilize music considered more negative in valence than the music used in this study but would need to control for the manipulation being too obvious to the research participants. An extremely negative song might make it too easy for participants to guess the hypothesis.

Another result of the analysis was that the affect manipulation may be somewhat short lived. Observed effects were weaker and moderation analysis was not significant until outliers were removed from the sample. These outliers were participants that waited a significant amount of time between the product evaluation and the report of experienced affect. While the affect manipulation appears to have been successful, the effect appears to weaken quickly as the time after the music increases. This is consistent with the belief that affect manipulations do not last long term. However, this also reinforces that experienced affect needs to be measured either while the music is being played or as soon as possible afterwards.

This study provided partial support for H1, that music categorized with a positive (negative) affect valence will result in a more positive (negative) affect state compared to a condition with no music, in that positive music did increase the affect state significantly compared to the control condition, but the negative music did not. This study did not provide support for H2, that music categorized with a positive (negative) affect valence will result in higher (lower) evaluation of a product compared to a condition with no music, in that neither of the conditions resulted in a significant difference from the control condition. However, the difference in product evaluation between the positive and negative conditions was significant. The more neutral rating of the negative music is

a possible reason the negative condition did not result in a significant decrease compared to the control condition. This study also did not provide support for H3, that music categorized with a positive (negative) affect valence will result in a higher (lower) purchase intent compared to a condition with no music, in that neither the positive or negative conditions were significantly different from the control condition. However, again the difference between the positive and negative conditions was significant.

While the expected results for the music conditions compared to the control condition was not achieved, this study provides supporting evidence that music affect valence can significantly effect the purchase intent of a product. The study also provides supporting evidence that the process of music affect valence influencing purchase intent operates through the mediating path of music affect leading to experienced affect, which influences product evaluations and subsequent purchase intent.

CHAPTER 3: Essay 2 – The Role of Music Affect and Arousal on Product Evaluation

3.1 Introduction

Different musical excerpts can generally be interpreted in terms of positive or negative affect (Hevner 1935), even with purely instrumental music lacking any descriptive language. There are songs with which we are all familiar that communicate negative feelings similar to sadness, lost love, or struggle related to the hardships of life. There are also songs that one can easily identify as communicating positive feelings and which can make someone feel happy or inspired. Few of us can deny that we have experienced happiness when hearing the Beach Boys song "Good Vibrations," or strong emotions and even tears from listening to Whitney Houston's rendition of "I Will Always Love You." These positive and negative affective states are easily identified by people listening to the music and, through processes like affect-as-information (Clore and Bar-Anan 2001), one can predict the basic behavioral outcomes resulting from listening to music that communicates these affective states. A positive song that improves our mood seems likely to increase our evaluation of a product through misattribution of affect towards that product, and a song that communicates negative affect would be likely to lower our evaluation. However, under what conditions is the affective valence of a particular piece of music likely to influence product evaluations? Additionally, affective valence is only one dimension of the emotions that are experienced and communicated through music. The other dimension widely accepted by mood and emotion researchers

is arousal (Bradley and Lang 1994), which corresponds to levels of excitement or relaxation.

Music has a clear influence on arousal which is evidenced by the extensive use of music by athletes to improve performance or distract from the pain related to physical exertion (Priest and Karageorghis 2008). Music is also used successfully to lower arousal and can assist in meditation or relaxation, which has been linked to improvements in medical conditions as well as faster recovery from surgery (Marciniak et al. 2014). However, within psychology research, arousal has also been linked to differing levels of cognitive performance (Keller and Block 2002) in that high levels of arousal can constrict cognitive ability. High levels of arousal create a narrow focus and limit the ability to elaborate cognitively, while low levels of arousal are more likely to increase cognitive elaboration (Sanbonmatsu and Kardes 1988). This narrow cognitive focus makes it more difficult to think deeply and consider all relevant information related to a decision. This effect of arousal is consistent with the Elaboration Likelihood Model (Petty and Cacioppo 1986), which has helped to explain when different types of influencing factors will determine a behavioral outcome. Specifically, ELM suggests that when cognitive capacity is high, persuasion is more likely to come from strong arguments. Inversely, when cognitive capacity is constrained, persuasion will be influenced more by peripheral cues, which are sources of information used as short-cuts but do not necessary contain issue-relevant information. In most cases, the affective valence of background music in a consumer environment does not have any issue-relevant information related to the product being considered. Therefore, if music affective valence is influencing product evaluation, it must be through the peripheral route. The purpose of the present research is

to support the idea that high arousal music increases the influence of the affective valence communicated by the music on product evaluations, compared to music that is low in arousal.

3.2 Literature Review and Hypotheses

3.2.1 Gaps in Consumer Research Involving Music

Music has not received a significant amount of attention in consumer research as noted by Bruner (1990) in his article "Music, Mood, and Marketing." The majority of the research, at the point of his review, focused on individual components of music such at tempo, pitch, and texture. However, the existing research has yet to connect the emotional influence of music on consumer decisions.

Additional research has provided an understanding of how emotion and affect can be induced by music and therefore influence behavior (Juslin and Västfjäll 2008). However, much of this research determined affective state through preferences and "liking" of music, instead of focusing on the emotion inherent within a song. The other main component of affect, arousal, also has received minimal attention in both the marketing research (Bruner 1990) and emotion research (Juslin and Sloboda 2001) involving music. For a more detailed description, please refer to the full summary of gaps in consumer research involving music in section 2.2.1.

3.2.2 Affect Research

Affect has been studied extensively in psychology and has recently been studied a great deal in music research (Juslin and Sloboda 2001). Affect is typically the umbrella term used to cover all positive and negative evaluative states, while emotions refer to intense short term affective responses and moods refer to less intense but longer lasting emotions (Juslin and Västfjäll 2008). Emotions and mood will also typically have an arousal component. These terms are sometimes used interchangeably throughout the literature but there are slight distinctions between them.

Affect is typically measured one of two ways by researchers, through a valenced report of basic dimensions or through a rating of categorical terms that correspond to very specific emotions. While both types of measurement have valid uses in psychological research, the categorical measures are considered more appropriate when unique responses are need to detect small effect sizes, and dimensional measures are more consistent but less specific (Zentner and Eerola 2009). Since music is believed to induce mild and general affective responses (Västfjäll 2015), the dimensional approach to affect measurement seems appropriate for the current research.

The development of the musical mood induction procedure (Clark 1983) has allowed researchers to use music consistently to induce affective states in listeners even if they are sometimes mild and less intense emotions. For this reason, it is reasonable to expect that music can induce some level of affect in a listener within a marketing context. According to Clore and Swartz (1983), the concept of affect-as-information helps explain how mood and emotion can influence decisions. This theory posits that affect influences

evaluative judgements in that positive affect leads to positive evaluations. For more detailed information, please refer to the full summary of research involving affect in section 2.2.

3.2.3 Music Arousal Induction

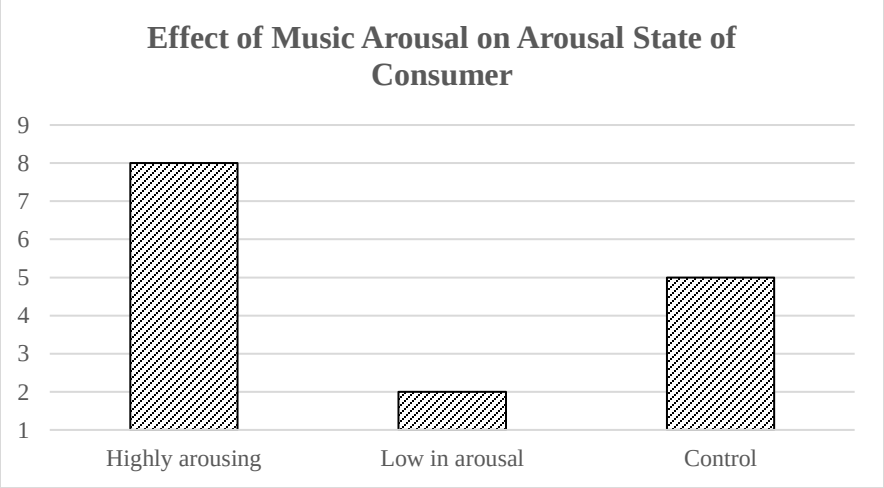
Music can influence our level of excitement by increasing or decreasing arousal. Studies have provided evidence that music which is high in arousal can increase power and exertion during exercise (Karageorghis and Priest 2012; Karageorghis 2008; Murgia et al. 2012). Research also suggests that music can distract people during exercise, by reducing the awareness of fatigue related to the workout (Edworthy and Waring 2006). Additionally, there is evidence from a neurological perspective that music can directly affect our autonomic nervous system (Yamashita et al. 2006). Studies have shown an increase in heart rate and other physiological indicators of arousal, as well as a lower rating of perceived exertion (RPE), when listening to music (Copeland and Franks 1991).

The very basic function of arousal in a consumer context is discussed in the "arousal hypothesis" (Smith and Curnow 1966) which states that highly arousing music, which in their study was operationalized as loud music, will "speed up" the consumer or result in less time spent in the store. Smith and Curnow (1966) did not find any difference in the amount of money spent whether loud or soft music was played, but due to the shorter amount of time spent in store during the loud condition, this group had a higher rate of spending (sales per minute). Milliman (1982, 1986) reinforced this research in his two studies that varied music tempo in a retail environment. Milliman

(1982, 1986) found a significant difference in the amount of time spent in store by people in the fast tempo condition compared to the slow tempo condition. High tempo music has been correlated with high levels of arousal (Gowensmith and Bloom 1997) which suggests that these studies previously referenced were inducing an increased arousal in the research subjects.

H4: Music that is categorized as high in arousal (low in arousal) will result in an elevated (less) aroused state compared to a condition with no music.

Figure I: Graph of Expected Results of **H4**



3.2.4 Arousal and Cognitive Ability

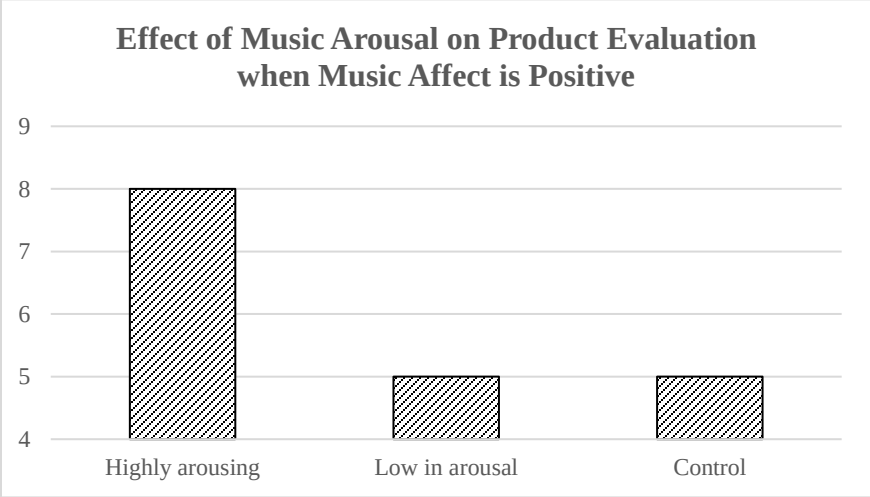
High arousal has been correlated with limited cognitive capacity. Researchers hypothesize that one possible explanation for why athletes can perform better with music is that the music "distracts" them from thinking about the pain or fatigue associated with the exercise and lowers ratings of perceived exertion (RPE) during said exercise

(Potteiger, Schroeder, and Goff 2000). Arousal also affects behavior other than sports, as our brains can handle fewer tasks when we are highly aroused because high arousal narrows our focus and only allow us to concentrate on specific tasks instead of consuming large amounts of information (Fedorikhin and Patrick 2010).

The relationship between arousal and cognitive capacity has traditionally been viewed as an inverted U (Andrade 2005), in which cognitive ability is low at extreme levels of relaxation or exhaustion at one end and also low at extreme levels of excitement at the other end, but higher at moderate levels of arousal. However, levels of relaxation achieved through meditation have been shown to increase our cognitive functions (Marciniak et al. 2014). Research suggests that high arousal restricts attentional capacity, which narrows attention to limited features and decreases cognitive effort (Kahneman 1973). As a result, people who are highly aroused simply will not think through their decisions in as much detail as people who are low in arousal. Additional research on physiological arousal and persuasion (Sanbonmatsu and Kardes 1988) has reinforced that high levels of arousal lead to a greater propensity to use "short-cuts" in our decision making. If arousal leads to less cognitive elaboration and a higher chance of heuristics in decision-making, then there should be a greater chance for music affect to be misattributed to a focal product as posited by Clore and Swartz (1983) with their affect-as-information hypothesis. Therefore, I hypothesize that music that is high in arousal will result in higher product evaluations than music that is low in arousal when music affect valence is positive.

H5: For music that is categorized with a positive affect valence, music that is also categorized as high in arousal (low in arousal) will result in a higher (no difference in) evaluation of a product compared to a condition with no music.

Figure J: Graph of Expected Results of **H5**



3.2.5 Elaboration Likelihood Model

Development of the Elaboration Likelihood Model (Petty, Cacioppo, and Schumann 1983) has given us a greater understanding of how consumers make decisions using key diagnostic information versus when we rely on "short-cuts" to drive our decisions. The overall concept of ELM posits that there are two different paths, or routes of thought, that we use to form an opinion in a consumer context. Sometimes, information that is specific and relevant to our target object is more influential, such as detailed specifications of a product or reviews from other consumers. This type of information has valid detail about a product, which can be utilized to make a decision,

and is typically referred to in ELM research as a "strong argument." This path or route to a decision using information that is relevant to the target is referred to as the central path (Petty and Cacioppo 1986).

At other times, it is more difficult to expend the cognitive energy that is required to process all the details of a "strong argument" and other easily accessible information becomes a factor in forming opinions. This information may not be diagnostic of the actual target stimuli, yet still can be influential in our decision-making. These factors are sometimes referred to as "atmospherics" (Kotler 1973) in a retail environment and can include the smell, sounds, and visual appearance of a store. In other marketing contexts such as advertising, the attractiveness or the celebrity status of the product endorser can have a similar influence. These factors cause observable changes in our behavior yet do not contain any relevant information about the target product. This type of information, typically referred to as "peripheral cues" in ELM research, can be used as a mental "short-cut" when making decisions if there is low motivation to analyze relevant detail about the focal product. Petty and Cacioppo (1986) call the path or route to a decision using this non-diagnostic information the peripheral route. According to the theory of ELM, when there is motivation to elaborate or think deeply about a product, the likelihood of utilizing specific information related to the product will increase and, therefore, lead to better decisions. However, when motivation to elaborate is low, then peripheral cues become a stronger determinant of behavioral responses. Attitudes formed under the peripheral route are also considered more temporary than those formed through the central route.

The research by Petty and Cacioppo (1986) typically points to "involvement" as the determining factor of whether the central or peripheral route is employed for attitude formation of a consumer. Involvement refers to how important the decision is to the subject and how motivated they are to think deeply about it. If the decision is important and has personal relevance, then higher elaboration and the use of the central route is more likely. However, if the decision is not important, then there is less motivation to expend the energy that is required to process all the relevant details related to a decision. When motivation is low, the peripheral route is a more likely path of persuasion. Therefore, involvement moderates the strength of each route to attitude formation. The current research is utilizing arousal in place of involvement in determining the consumers' route to attitude formation. As discussed earlier in this paper, arousal restricts our cognitive focus, thereby making it less likely for us to think deeply about a topic. Therefore, it is reasonable to expect that high levels of arousal would have the same effect as low personal involvement, leading to a greater likelihood of influence by peripheral cues. Indeed, this concept has been supported by subsequent research that has observed a relationship between high arousal levels and the influence of peripheral cues on decision making (Keller and Block 2002; Mano 1997; Sanbonmatsu and Kardes 1988). Music, when used in most consumer environments, does not have any diagnostic information related to the product. While a consumer may enjoy, or dislike, the music being played in a retail environment such as a grocery store, there is nothing about the music that would communicate any detail about the product they are considering for purchase. Therefore, music would be considered a peripheral cue in a consumer environment. Based on the foundations of ELM research involving peripheral cues, it is

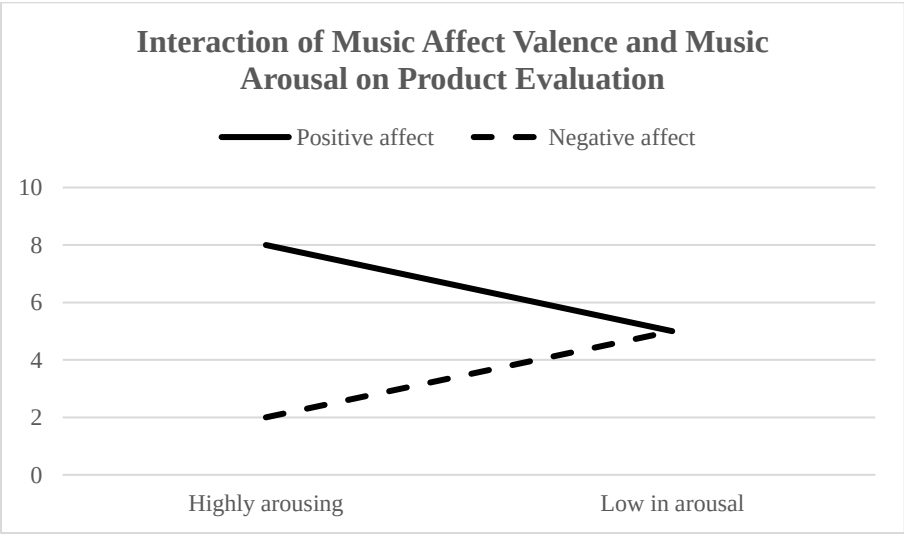
reasonable to expect that music would have a greater influence on consumers' decisions when they are utilizing the peripheral route of persuasion. Therefore, I hypothesize that the arousal level of a consumer will act as a moderating influence between the music affective valence and the attitude formation or evaluation of a product. High levels of arousal experienced by a listener will strengthen the influence of positive/negative affect and low levels of arousal will weaken the influence. More specifically, arousal felt by the consumer, in response to arousal levels of the music, will moderate the mediating effects of affect felt by a consumer in response to the affective valence of the music.

H6: There is an interaction between music arousal and music affect valence on product evaluation, such that:

H6a: Music that is categorized with a positive affect valence will result in a higher product evaluation when the music is high in arousal compared to a condition that is low in arousal.

H6b: Music that is categorized with a negative affect valence will result in a lower product evaluation when the music is high in arousal compared to a condition that is low in arousal.

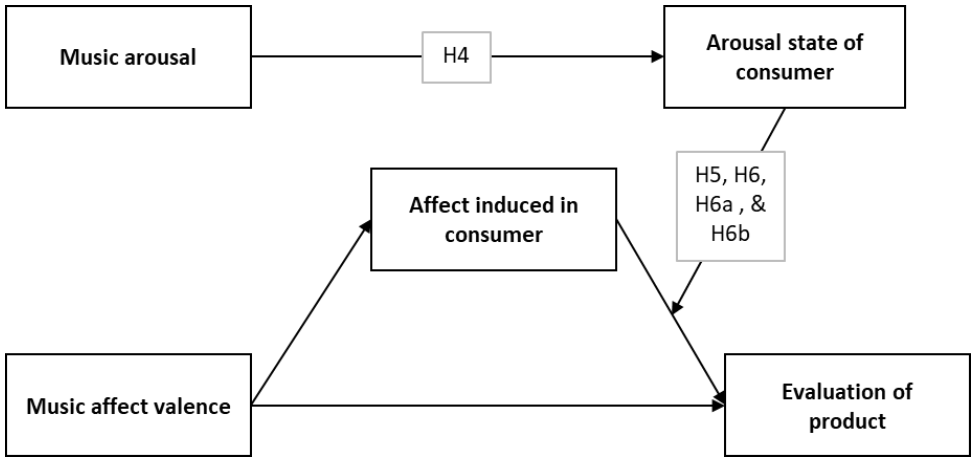
Figure K: Graph of Expected Results of **H6**



3.2.6 Theoretical Model

The full theoretical model is presented below with the path from music affect valence to product evaluation being mediated by affect induced in the consumer. The relationship between affect induced in the consumer and product evaluation is moderated by the arousal state of the consumer that is induced by the arousal level of the music. Arousal state of the consumer acts as an enhancing moderator in that high arousal levels would strengthen the effect of the affective valence of the music and low arousal levels would weaken the effect.

Figure L: Theoretical Model of the Interaction between Music Affect Valence and Arousal State of Consumer on Product Evaluation



3.3 Study 1 – The Influence of Arousal on Product Evaluation when Music is of a Positive Affect Valence

3.3.1 Design

It is generally accepted amongst emotion researchers that music can induce affect in a listener through the musical mood induction procedure (MMIP), which was used to operationalize this study. For detail related to this process, please refer to section 2.2.5 on the affective transfer of music.

The procedure from this research is adopted from a study on consumer mood states and the mitigating influence of personal relevance (Curren and Harich 1994). This research involved the evaluation of two products, the first product being a film and the second being a personal computer. For more detail on the aforementioned research, please refer to section 2.3.1 in the previous chapter.

This research also utilized songs from the DEAM dataset as it provides a sample of music already annotated on the two main dimensions of affect being utilized in this study, affective valence and arousal. The songs from this dataset are also unknown, thereby reducing the potential of confounds related to personal preferences and memory associations. For more detail pertaining to the DEAM dataset, please refer to section 2.3.1 in the previous chapter. The current research also uses the self-assessment manikin (SAM) instrument (Bradley and Lang 1994) as a manipulation check on music affect valence as this was also the basis of the measurement used to categorize the music within DEAM.

3.3.2 Sample

The sample for this research consists of students from a public research university in the Southeastern United States. Student participants voluntarily completed the experiment in exchange for course credit. A post hoc power analysis of the research on which Study 1 was designed (Curren and Harich 1994) revealed a power > .8 when detecting a large effect of .40 at an alpha level .05. Based on this analysis and the generally accepted power of .80 in psychology (Howell 2013), an a priori power analysis conducted using G*Power v3.1 (Faul, Erdfelder, Lang and Buchner 2007) to achieve power to detect a medium effect of .25 at an alpha level .05 indicates a sample size of 128 is adequate for Study 1.

3.3.3 Experimental Procedure

The research proposed for Study 1 utilizes an adapted version of testing the influence of affect on brand evaluation and purchase intent used by Curren and Harich (1994) similar to Study 1 from the previous chapter. The main difference in the execution of this study is that arousal is manipulated instead of affective valence. Only positive affect is used in this study, which focuses on measuring the moderating influence of arousal. In this study, a single factor design (music high in arousal / music low in arousal) with a control group is employed using music of positive valence to test the influence of arousal on product evaluation and purchase intent.

Per the study design by Curren and Harich (1994), participants were asked to evaluate two seemingly unrelated "products." The participants in the control group only evaluated the second product. The first product to evaluate is a song to be played in a common area of a college. The song is actually the affect manipulation. One group listened to a song of high arousal (per the DEAM annotations) and one group listened to a song of low arousal. Both groups received a song that is positive in affect valence. The control group receive no song and instead proceeded straight to the second product evaluation. The songs used for this study were selected from the DEAM dataset as either high in arousal or low in arousal. The DEAM dataset also captures affective valence annotations and for this test, songs were chosen with affect levels that are positive. A pre-test was conducted in which participants listened to five music selections that are high in arousal and five of low arousal, chosen by the researcher from the DEAM dataset, and rated the arousal level using the SAM instrument. The second product is a computer being offered for sale on a website. The computer product presented is of a generic brand to prevent evaluative judgement to be influenced by brand familiarity. Please refer to Figure E and Figure F in essay 1 for the visual representation of the computer presented to research subjects.

Participants then evaluated both the music and the personal computer on a 7-point Likert-type scale. As part of the cover story, they were asked to indicate (a) "How does this song compare to other songs heard on the radio? (1) unfavorably – (7) favorably"; (b) "Is this song a good choice for the university to play in a common area? (1) not at all – (7) definitely." For the dependent variables, they were asked (c) "How likely would you be to purchase this brand if you were to purchase a personal computer? (1) not at all

likely – (7) very likely" and (d) "How does this brand compare to other personal computers? (1) unfavorably – (7) favorably." Participants then answered questions related to their arousal level (a) "How (1) stimulated (7) relaxed do you feel right now?", (b) "How (1) excited (7) calm do you feel at this moment?" and (c) "How (1) aroused (7) unaroused do you currently feel?" Participants then answered questions pertaining to their affective valence state (a) "How happy (1) unhappy (7) do you feel right now?" and (b) "How good (1) bad (7) do you feel at this moment?" Participants were then presented with the affective valence and arousal sections of the SAM and were asked to select the picture that "best represent the music selection" as a manipulation check that the music was perceived to be the same valence and arousal as identified in the DEAM dataset. Additional questions were asked pertaining to personal liking and memory associations (a) "How would you rate this song on your own personal preference? (1) I really dislike this song – (7) I really enjoy this song.", "Does listening to this song remind you of a specific event that occurred in your life?", and "If yes, please describe the memory below in less than 50 words."

3.3.4 Constructs and Measures

Established constructs from marketing and consumer behavior research were adapted for Study 1. A series of 7-point Likert-type scale responses were used to measure product evaluation per Curren and Harich (1994). Arousal is measured through three semantic differential scales which have been highly correlated to the main dimension of arousal within affect (Gorn, Tuan Pham, and Yatming Sin 2001). Affect

was measured using a 7-point Likert-type scale (Clore and Schwarz 1983). The affective valence and arousal evaluation of the music was measured using the SAM (self-assessment manikin) (Bradley & Lang 1994).

Table 8: Constructs and Adapted Measures for Essay 2 Study 1

Construct	*Measures or method tested*	*Drawn/adapted from*
Product evaluation	(a) How likely would you be to purchase this brand if you were to purchase a personal computer? (1) not at all likely - (7) very likely (a) How does this brand compared to other personal computers? (1) unfavorably – (7) favorably	Curren and Harich (1994)
Affective valence state	(a) How (1) happy (7) unhappy do you feel right now? (b) How good (1) bad (7) do you feel at this moment?	Clore and Schwarz (1983)
Arousal state	(a) How (1) stimulated (7) relaxed do you feel right now? (b) How (1) excited (7) calm do you feel at this moment? (c) How (1) aroused (7) unaroused do you currently feel?	Gorn et al. (2001)
Affect valence of music	Self-assessment manikin (referenced in Figure C)	Bradley and Lang (1994)
Arousal of music	Self-assessment manikin (referenced in Figure C)	Bradley and Lang (1994)

3.3.5 Analysis

Pre-test:

Forty undergraduate students completed this pre-test and received course credit in exchange for participation. Participants were asked to listen to five music selections that were high arousal and five that were low arousal, which were chosen by the researcher from the DEAM dataset. Participants were also asked to rate the arousal and affect valence of each music selection using the SAM instrument.

Out of the ten songs, two were selected for use in the first study. One rating high on the arousal dimension of the SAM scale (M = 5.25, SD = 2.329) and one rating low on the arousal dimension (M = 3.68, SD = 1.886). These songs were selected because they resulted in the highest and lowest arousal ratings and were also similar in affect (see results below in Table 9). A paired samples t-test was conducted to determine if there was a significant difference between the two songs in terms of arousal as it was perceived by the participants. There was a significant difference between ratings of arousal in the high arousal song (M = 5.25, SD = 2.329) and the low arousal song (M = 3.68, SD = 1.886) conditions; t(39) = 4.196, p < .001. The affect ratings for both the high arousal (M = 6.00, SD = 1.908) and low arousal (M = 5.68, SD = 1.328) songs both resulted in positive ratings in the SAM scale. A paired samples t-test was conducted to determine if there was a significant difference between the two means. There was no significant difference between ratings of affect in the high arousal song (M = 6.00, SD = 1.908) and the low arousal song (M = 5.68, SD = 1.328) conditions; t(39) = .845, p = . One-sample t-tests also revealed both songs have affect ratings significantly above the scale midpoint.

Table 9: Reported Means of Arousal and Affect Valence in Pre-test

	Arousal	***Affect Valence***	***Arousal Condition***
Song 1	5.25	6.00	High
Song 2	5.98	4.55	
Song 3	3.67	5.68	Low
Song 4	3.48	4.30	
Song 5	2.72	4.95	
Song 6	4.10	5.62	
Song 7	3.65	5.30	
Song 8	3.00	5.20	
Song 9	3.15	5.30	
Song 10	4.43	5.00	

Main Study:

One hundred and thirty-four undergraduate students completed an online survey and received course credit in exchange for participation. Participants were asked to listen to a music selection and rate the music for appropriateness to be played in a common area at a university. This was actually the manipulation of arousal. After rating the music, participants were presented with a seemingly unrelated task of rating a laptop computer.

The manipulation check of arousal perceived by the listener was tested using a t-test on the results of the arousal measure from the SAM scale. An independent samples t-test was conducted to compare the perceived arousal of the high arousal song and the low arousal song. There was a significant difference in the arousal of the song perceived by the listener for the high arousal song ($M = 5.24$, $SD = 1.990$) and the low arousal song ($M = 3.16$, $SD = 1.918$) conditions; $t(88) = -5.069$, $p < .001$.

Support for H4 (see appendix for summary of hypotheses), that high (low) arousal music would result in an increase (decrease) in arousal compared to a control condition, was tested using a one-way ANOVA. The arousal measures were averaged to form a composite measure of arousal ($\alpha = .803$). There was a significant effect of music arousal on arousal state of the listener at the $p < .05$ level, with the high arousal condition resulting in higher arousal ($M = 3.511$, $SD = 1.3919$) than the low arousal ($M = 2.689$, $SD = 1.2760$) and control ($M = 2.898$, $SD = 1.3493$) conditions [$F(2, 131) = 4.573$, $p = .012$]. An independent samples t-test revealed that the high arousal condition did result in a significant difference in the arousal state of the listener compared to the control

condition; t(87) = 2.110, p = .038. However, there was no significant difference in the arousal state of the listener between the low arousal condition and the control group.

Support for H5, that high arousal music would result in higher product evaluations when the music is also positive in affect, compared to low arousal music or a no music condition, was tested using a one-way ANOVA. There was a significant effect of music arousal on product evaluations at the $p < .05$ level when comparing the high arousal music condition ($M = 4.11$, $SD = 1.481$) to low arousal music ($M = 3.33$, $SD = 1.279$) and control ($M = 3.50$, $SD = 1.389$) conditions [$F(2, 131) = 3.926$, $p = .022$]. An independent samples t-test revealed that there was a significant effect of music arousal on product evaluations at the $p < .05$ level when comparing the high arousal music to the low arousal music [$t(1, 88) = -2.667$, $p = .009$] conditions, as well as a significant effect when comparing high arousal music to the control condition [$t(1, 87) = -2.007$, $p = .048$]. An independent samples t-test also revealed no significant effect of music arousal on product evaluations when comparing the low arousal music to the control condition [$t(1, 87) = .589$, $p = .557$]

3.4 Study 2 – The Interaction of Music Affective Valence and Arousal on Product Evaluation

3.4.1 Design

The previous study intended to evaluate the moderating role of music arousal on the effect of music affect valence on product evaluation. Study 1 used only positive

valenced music for less variability and included a control group to establish a normal state of arousal upon which to compare the high and low arousal conditions. This next study introduces a negative affect condition to evaluate the interaction between affect valence and arousal in music.

The procedure from this research is adopted from a study on the moderating influence of arousal on ad evaluation (Gorn, Tuan Pham, and Yatming Sin 2001). In this study, participants were asked to evaluate a set of speakers. The type of music varied across the different conditions within the study. After listening to the music, participants rated the speaker based on attributes that would be commonly used to evaluate speakers. Music successfully manipulated affect in this study. Some types of music may seem to facilitate speaker evaluation. For example, classical music may be better at evaluating the clarity of the treble component of the speakers, where music of the hip hop genre would be better at identifying the bass capabilities of the speakers. However, the dimensions measured in this study, the affective valence and arousal of the music, do not provide any diagnostic information about the speakers. Therefore, this study design is appropriate.

This research also utilized songs from the DEAM dataset similar to Study 1. However, a pre-test was used in this study to identify songs that are high arousal and positive in affect, high arousal and negative in affect, low arousal and positive in affect, and low arousal and negative in affect. For more detail pertaining to the DEAM dataset, please refer to section 2.3.1 in the previous chapter. The current research also utilized the

self-assessment manikin (SAM) instrument (Bradley and Lang 1994), similar to Study 1 as a manipulation check on music affect valence and arousal.

3.4.2 Sample

The sample for this research consists of students from a public research university in the Southeastern United States. Student participants voluntarily completed the in-class study in exchange for course credit. Post hoc power analysis of the research involving music on which study 2 was designed (Gorn, Tuan Pham, and Yatming Sin 2001) revealed results of one study with a power of > .8 when detecting a medium effect of .25 at an alpha level .05. Based on this analysis and the generally accepted power of .80 in psychology (Howell 2013), an a priori power analysis conducted using G*Power v3.1 (Faul, Erdfelder, Lang and Buchner 2007) to achieve power to detect a medium effect of .25 at an alpha level .05 indicates a sample size of 128 is adequate for study 2.

3.4.3 Experimental Procedure

The research proposed in study 2 is an adapted version of the method used successfully to measure the results of affect on product evaluation (Gorn, Goldberg, and Basu 1993; Gorn, Tuan Pham, and Yatming Sin 2001). This design limits the possibility of participants' awareness that music is being used to manipulate affect by presenting the music as a relevant part of a product evaluation task. In this study, students are asked to rate the quality of speakers (per the original study by Gorn et al. 2001) while the type of

music being played is manipulated. This study employs a two by two factorial design with music affect valence (positive / negative) and music arousal (high / low) as the two independent variables.

Figure M: 2 X 2 Factorial Design of Essay 2 / Study 2

Negative Affect / High Arousal	Positive Affect / High Arousal
Negative Affect / Low Arousal	Positive Affect / Low Arousal

Participants arrived in a classroom setting to participate in a product research study pertaining to the quality of speakers. The participants were instructed to listen to music with a focus on the quality of the speakers. This instruction was intended to place the participants in an evaluative state similar to a shopping situation. One group listened to a song of high arousal and positive affect (per the DEAM annotations), one listened to a song of low arousal and positive affect, one listened to a song of high arousal and negative affect, and one listened to a song of low arousal and negative affect. The songs used for this study were selected from the DEAM dataset to represent the correct levels of affect valence and arousal for each condition. A pre-test was conducted in which participants listen to five music selections from each of the four quadrants validate that the songs selected for this research are the correct arousal and affective valence level.

After a few minutes of listening to music, the participants were presented with a set of questions related to their evaluation of the product while the music is still playing. This approach was intended to simulate a situation where consumers are hearing music while evaluating a product in a retail environment. Participants were then asked a series of diagnostic questions related to the speakers that are used to indicate product evaluation (Gorn, Goldberg, and Basu 1993). These questions are (a) "How do the speakers rate on (1) good stereo separation to (7) poor stereo separation?", (b)" How do the speakers rate on (1) little background noise to (7) much background noise?", and (c) "How do the speakers rate on (1) very little distortion to (7) a lot of distortion?" Participants then answered questions related to their arousal level (a) "How (1) stimulated (7) relaxed do you feel right now?", (b) "How (1) excited (7) calm do you feel at this moment?" and (c) "How (1) aroused (7) unaroused do you currently feel?" Participants then answered questions pertaining to their affective valence state (a) "How happy (1) unhappy (7) do you feel right now?" and (b) "How good (1) bad (7) do you feel at this moment?" Participants were then presented with the affective valence and arousal sections of the SAM and were asked to select the pictures that "best represent the music selection" as a manipulation check that the music was perceived to be the same valence and arousal as identified in the DEAM dataset. Additional questions were then asked pertaining to personal liking and memory associations (a) "How would you rate this song on your own personal preference? (1) I really dislike this song – (7) I really enjoy this song.", "Does listening to this song remind you of a specific event that occurred in your life?", and "If yes, please describe the memory below in less than 50 words."

3.4.4 Constructs and Measures

Established constructs from marketing and consumer behavior research were adapted for Study 2. A 7-point semantic differential scale was used to determine product evaluation per Gorn et al. (1993). Arousal was measured through three semantic differential scales which have been highly correlated to the main dimension of arousal within affect (Gorn, Tuan Pham, and Yatming Sin 2001). Affect was measured using a 7-point Likert-type scale (Clore and Schwarz 1983). The affective valence and arousal evaluation of the music was measured using the SAM (self-assessment manikin) (Bradley & Lang 1994).

Table 10: Constructs and Adapted Measures for Essay 2 Study 2

Construct	***Measures or method tested***	***Drawn/adapted from***
Product evaluation	(a) How do the speakers rate on (1) good stereo separation to (7) poor stereo separation? (b) How do the speakers rate on (1) little background noise to (7) much background noise? (c) How do the speakers rate on (1) very little distortion to (7) a lot of distortion?	Gorn, Goldberg, and Basu (1993)
Affective valence state	(a) How (1) happy (7) unhappy do you feel right now? (b) How good (1) bad (7) do you feel at this moment?	Clore and Schwarz (1983)
Arousal state	(a) How (1) stimulated (7) relaxed do you feel right now? (b) How (1) excited (7) calm do you feel at this moment? (c) How (1) aroused (7) unaroused do you currently feel?	Gorn et al. (2001)
Affect valence of music	Self-assessment manikin (referenced in Figure C)	Bradley and Lang (1994)
Arousal of music	Self-assessment manikin (referenced in Figure C)	Bradley and Lang (1994)

3.4.5 Analysis

Pre-test:

Forty undergraduate students completed this pre-test and received course credit in exchange for participation. Participants were asked to listen to five music selections of positive affect and five of negative affect chosen by the researcher from the DEAM dataset and rate the affective valence and arousal using the SAM instrument.

Out of the ten songs, four were selected for use in the main study (see results below in Table 11). Three of the songs (positive affect / high arousal, positive affect / low arousal, and negative affect / high arousal) were selected for use in previous studies. The fourth song (negative affect / low arousal) was selected because it received the lowest ratings of affect ($M = 4.30$, $SD = 1.951$) and an arousal rating ($M = 3.48$, $SD = 2.253$) that was significantly below the scale midpoint as revealed by a one-sample t-test; $t(39) = -4.281$, $p < .001$.

Table 11: Reported Means of Affect Valence and Arousal in Pre-test

	Affect Valence	***Arousal***	***Affect Condition***	***Arousal Condition***
Song 1	6.00	5.25	Positive	High
Song 2	4.55	5.98	Negative	High
Song 3	5.68	3.67	Positive	Low
Song 4	4.30	3.48	Negative	Low
Song 5	4.95	2.72		
Song 6	5.62	4.10		
Song 7	5.30	3.65		
Song 8	5.20	3.00		
Song 9	5.30	3.15		
Song 10	5.00	4.43		

Main Study:

One hundred and fifty-one undergraduate students completed an in-class survey and received course credit in exchange for participation. A different class was used for each of the four cells in the study in order to allow for the different songs as unique manipulations. Similar classes were selected at similar time periods to minimize confounds resulting from non-random assignment. Participants were asked to listen to a set of speakers and rate the quality of the speakers, then report their felt affect and arousal as well as the perceived affect and arousal of the song. The participants were then debriefed and allowed to leave.

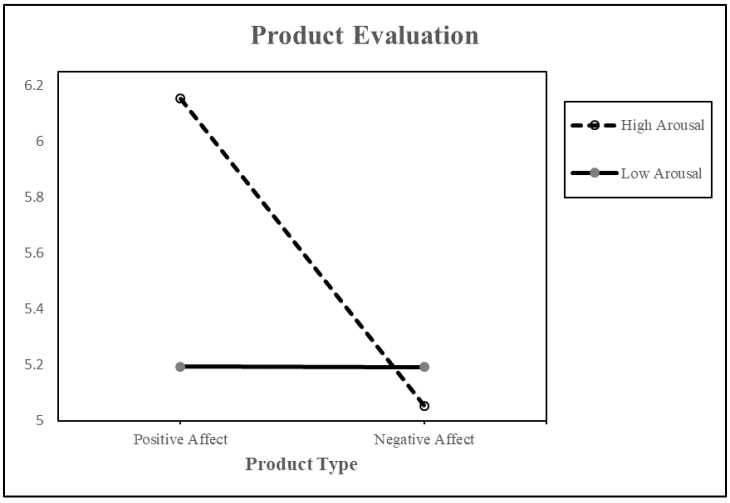
Analysis of the results was performed using IBM SPSS Version 20. The manipulation check on the affect valence and arousal levels of the music as perceived by the listener were tested using an independent samples t-test on the results of the SAM scale. There was a significant difference in the affect valence of the songs perceived by the listener for the positive affect songs ($M = 6.49$, $SD = 1.329$) and the negative affect songs ($M = 5.61$, $SD = 1.804$) conditions; $t(149) = -3.443$ $p = .001$. An independent samples t-test on arousal of the song revealed a significant difference in the arousal perceived by the listener for the high arousal songs ($M = 5.36$, $SD = 1.829$) and the low arousal songs ($M = 2.71$, $SD = 1.555$); $t(149) = -9.617$, $p < .001$.

The manipulation check of affect valence and arousal experienced by the listener was tested using an independent samples t-test. There was a significant difference in the affect valence experienced by the listener for the positive affect songs ($M = 5.87$, $SD = 1.204$) and the negative affect songs ($M = 5.11$, $SD = 1.456$); $t(149) = -3.516$, $p = .001$.

An independent samples t-test on arousal experienced by the listener also revealed a significant difference in the high arousal songs ($M = 3.73$, $SD = 1.671$) and the low arousal song ($M = 2.62$, $SD = 1.469$); $t(149) = -4.321$, $p < .001$.

Support for H6 (see appendix for summary of hypotheses), that there would be an interaction between music affect valence and music arousal on product evaluation, was tested using a two-way ANOVA. The product evaluation measures were averaged to form a composite measure of affect ($\alpha = .728$). The main effect of song affect on product evaluation was significant ($F(1,147) = 9.386$, $p = .003$) in that the positive affect songs ($M = 5.69$, $SD = 1.208$) resulted in a higher product evaluation than the negative affect songs ($M = 5.12$, $SD = 1.081$). The main effect of song arousal on product evaluation was also significant [$F(1,147) = 5.205$, $p = .024$] in that the high arousal songs ($M = 5.67$, $SD = 1.075$) resulted in higher product evaluation than the low arousal songs ($M = 5.19$, $SD = 1.232$). There was also a significant interaction between the effects of music affect valence and music arousal on product evaluation [$F(1, 147) = 9.341$, $p = .003$]. Simple main effects analysis showed that positive affect valence music resulted in higher product evaluations than negative affect music when both were also high arousal ($p < .001$), but there were no significant differences in product evaluations between positive affect valence music and negative affect valence music when both were low arousal ($p = .996$).

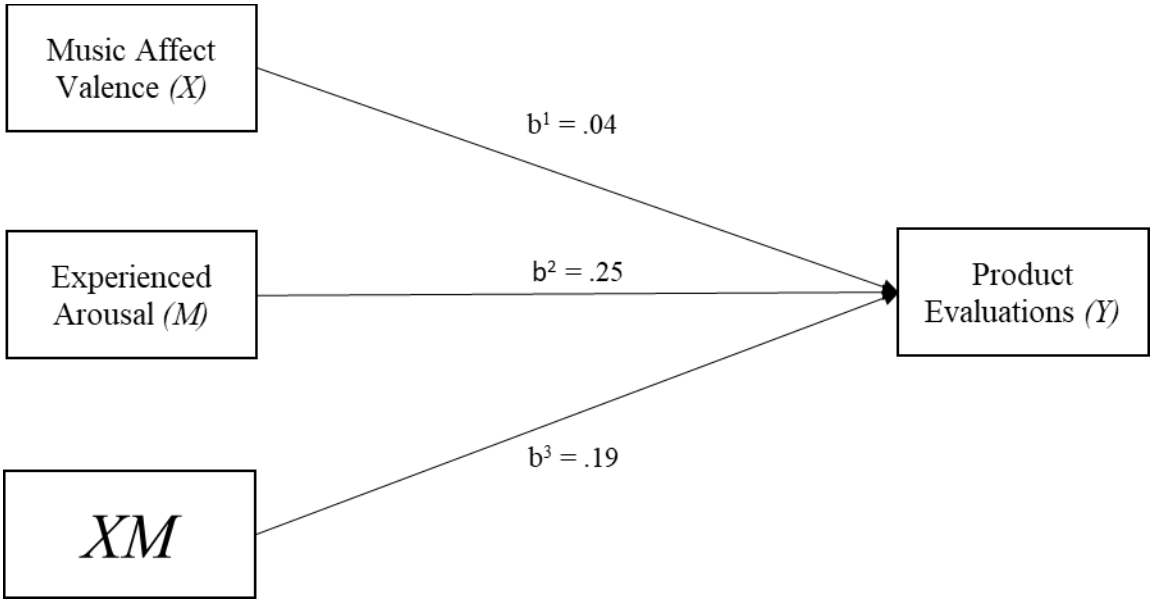
Figure N: Interaction between Music Affect and Arousal on Product Evaluation



To investigate the influence of experienced arousal on the effect of music affect valence on product evaluation, a moderator analysis was performed using PROCESS MODEL 1 (Hayes 2013). The outcome variable for analysis was the composite measure of product evaluation. The predictor variable for the analysis was the music affect valence. The moderator variable evaluated for the analysis was experienced arousal. As expected, arousal state of the consumer explained a significant difference in the variance of product evaluation; $\Delta R^2 = .078$, $F(3, 147) = 4.192$, $p = .007$ indicating that arousal state of the listener was a significant moderator of the effect of music affect valence on product evaluation. Conditional effect analyses revealed that high and medium feelings of arousal did moderate the relationship between music affect and product evaluation, but low arousal levels did not. At low moderation one SD below the mean (experienced arousal = 1.502), the conditional effect was not significant ($\beta = .02$, 95% CI = -.285 to .761, $p = .369$). However, the conditional effect was significant at middle moderation

(experienced arousal = 3.162, β = .55, 95% CI = .183 to .924, p =.003) and high moderation one SD above the mean (experienced arousal = 4.822, β = .86, 95% CI = .332 to 1.405, p = .001). These results identify experienced arousal as a positive moderator of the relationship between music affect valence and product evaluation when values are middle or high. This supports the prediction that experienced arousal would strengthen the effect of music affect on purchase evaluations but only when arousal is not low (see Figure O for the statistical model of moderation).

Figure O: Moderation of Experienced Arousal on the Effect of Music Affect Valence on Product Evaluation



3.5 Discussion

The purpose of this research is to provide additional understanding of the behavioral results from the interaction of the affective valence and arousal of musical selections. More specifically, this research is intended to support the theory that affective valence of a song is more influential to product evaluation when the song is also high in arousal than when the song is low in arousal.

Study 1 provided supporting evidence that arousal moderates the effect of music affect valence on product evaluation. More specifically, when music is high in arousal, the positive affect of the music resulted in a higher product evaluation than the control condition. However, when the music was low in arousal, the positive affect of the music did not result in any difference in product evaluation compared to the control condition.

Study 2 reinforced the moderating effect of arousal on affect while introducing a negative music condition. This study showed a significant interaction between music affect valence and music arousal. Music with a positive affect valence that was also high in arousal resulted in higher product evaluations than all other conditions. However, music with negative affect that was also high in arousal did appear to lower the product evaluation slightly, but the difference was not significant from the low arousal conditions. A possible explanation for the lack of significance in the negative music condition is the strength of the negative affect perceived in the negative music. The songs selected for the negative condition were rated by study participants as close to the midpoint of the scale, indicating their perception as being neutral or slightly negative. The resulting affect, while significantly different from the positive song conditions, was also not

significantly below the midpoint of the scale indicating the resulting affect experienced by the listener may not have been negative enough to influence product evaluations. Without a strong manipulation of negative affect, we may not be able to see the results of negative music that is high in arousal as the arousal acts as a moderator to affect. The arousal may have strengthened the effect of affect in this case but the valence of the affect may not have been enough to significantly lower product evaluations.

The results of two studies provided support to H6, that there is an interaction between music arousal and music affect valence on product evaluations. These studies also provided support to H6a, that music that is categorized with a positive affect valence will result in a higher product evaluation when the music is high is arousal compared to a condition that is low in arousal. However, H7a, that music that is categorized with a negative affect valence will result in a lower product evaluation when the music is high in arousal, was not supported.

These studies also provide support for the moderating influence of arousal on affect. Arousal was found to be a significant moderator of music affect valence when music is high in arousal. However, music that was low in arousal had no difference in product evaluation between the two (positive and negative) affect conditions. This indicates that low arousal levels effectively eliminate the effect of affect on product evaluations. The difference in experienced affect was significant between positive and negative affect conditions, but the resulting product evaluations did not appear to be influenced. This provides supporting evidence that music of low arousal is able to influence our experienced affect, but we are able to logically think through the product

evaluations and distinguish our negative feelings of affect as separate from our evaluation of a product. High arousal reduces our ability to distinguish the source of our affect and leads to the misattribution of affect as postulated in my theoretical model.

CHAPTER 4: Essay 3 – Music's Role in Affect Regulation

4.1 Introduction

Attempting to adjust our own mood is a process that is utilized extensively by consumers. When experiencing negative affect, people will commonly engage in behaviors to "feel better." Some productive behaviors that regulate mood are exercise and meditation. Less productive behaviors, such as drugs and alcohol, are also used in an attempt to improve mood. Music, which communicates a clear affective state, can also be used to improve mood. However, in what situations does music influence the regulation of mood in a consumer context? The extant literature involving music and consumer behavior has yet to explore this topic of the role of music in affect regulation.

Prior literature, and the previous essays in this dissertation, suggest that both the affective valence and arousal level of music are communicated to the listener and impact consumer behavior. The research on affect-as-information (Clore and Schwarz 1983) suggests that positive affect would result in higher product evaluations than conditions involving negative affect. Additional research also supports that this mediating effect of affect valence is strengthened by arousal (Keller and Block 2002; Petty, Cacioppo, and Schumann 1983). However, this model still does not explain the differing behaviors expected when a consumer is in a negative affective state and is actively seeking to improve it.

A common phrase that is currently used by consumers is "retail therapy," which refers to the notion of improving one's mood through a purchase (Atalay and Meloy 2011). While the existence of this phenomenon is well documented, it is still unclear of all the antecedents that lead to these types of purchases. Additionally, it also remains to be seen what role affect valence and arousal have in retail therapy and whether this process is possibly influenced by the music that a consumer hears in a retail situation. According to Isen (2000), being in a state of negative affect should motivate someone to actively seek a way to improve their affect through a process called affect regulation. The current research seeks to understand if music induces negative affect in a way that influences affect regulation and possible "retail therapy" purchases that may not have occurred without the presence of music.

4.2 Literature Review and Hypotheses

4.2.1 Gaps in Consumer Research Involving Music

The majority of the consumer research involving music has focused on individual components of music such at tempo, pitch, and texture. A modest amount of consumer studies have been conducted involving music (Bruner 1990) leaving open a great deal of opportunity for research. More recently, there has been an increase in focus on music from emotion researchers, but there are still many inconsistencies in their approach. This has essentially hindered the emergence of an overall model that predicts behavioral outcomes involving music. Additionally, an approach to music classification that clearly delineates the personal memory associations with music from the emotional content

inherent to the music has yet to be established within consumer research. For a more detailed description, please refer to the full summary of gaps in consumer research involving music in section 2.2.1.

4.2.2 Affect Research

Affect is the term used to cover all positive and negative evaluative states and typically have a component of arousal. Affect has been studied extensively in psychology and will sometimes use the terms emotion, mood and affect interchangeably. The two main approaches to measuring affect by researchers are valenced measurement of the core dimensions of affect and ratings of categorical terms pertaining to discrete emotional states. The dimensional approach is more appropriate for music research as music is generally accepted to induce a mild emotional state (Västfjäll 2015) which is difficult to capture accurately with categorical terms. Valenced measurements of the core dimensions of affect are also more appropriate for comparison as measures of high and low arousal are more directly comparable than ratings of anger and fear. Music can be effectively used to induce affect in research using the musical mood induction procedure (Clark 1983).

The concept of "affect-as-information", developed by Clore and Schwarz (1983), explains a potential path through which affect can influence decisions. Specifically, this theory posits that consumers use affect to assist in evaluative judgements; more specifically, positive affect leads to positive product evaluation and negative affect leads

to negative evaluations. For more detailed information, please refer to the full summary of research involving affect in section 2.2.

4.2.3 Arousal Research

Research has shown that listening to music influences arousal levels which has not only been reinforced through self-reported measures (Gowensmith and Bloom 1997; Smith and Curnow 1966) but also through physiological indicators (Yamashita et al. 2006). Music is also known to be an effective manipulator of arousal using the musical mood induction procedure (Clark 1983). High levels of arousal have been linked to limited cognitive focus, which leads to a higher chance of heuristics in decision making (Sanbonmatsu and Kardes 1988). Therefore, it is reasonable to expect that high arousal music can lead to a limited cognitive focus and an increase in the use of affect-as-information. ELM theory states that situations where elaboration is not likely will be more likely to take a peripheral route to persuasion. When using the peripheral route, non-diagnostic information that is quick and easy to access becomes a stronger influence on behavioral outcomes. The affective valence that is communicated through music is easy to reference for a consumer when arousal is high. Therefore, music with positive affect should increase purchase intention for products when the arousal level of the music is also high and is effectively induced in the listener. For additional detail on arousal research, please refer to the full summary of arousal research in section 3.2.

4.2.4 Affect Regulation

Much research on positive and negative affect points to a monotonic relationship between affect and product evaluation or purchase intent (Andrade 2005). This is driven by the premise of affect-as-information and our ability to use our feelings as a determinant of decisions (Clore and Bar-Anan 2001). However, the seminal work on the role of affect in decision making by Isen (2000) supported her hypothesis, through several studies, that people are motivated to always be in a state of positive affect. Therefore, a state of positive affect increases the likelihood of making decisions one perceives will maintain this positive state. However, when consumers are in a state of negative affect, they are motivated to improve their affective state.

Earlier research by Isen and Daubman (1984) helped identify the role of mood in cognition with studies that reinforced that affective states influence our cognitive abilities. In this research, Isen and Daubman (1984) found that research subjects induced with positive affect were more efficient in categorizing words or colors. Isen and Daubman postulated the reason for this effect is that positive affect improves connections and associations in our memory, which makes more information accessible. More accessible information leads to greater creativity and to generally better decision making (Isen 2000; Isen 1984). It was also observed that these effects do not require extreme levels of mood, and that mild positive affect is enough to have a significant effect on decision making and behavior (Hermalin and Isen 2008).

Through this research on affect, Isen discovered and developed the concept of affect regulation, which refers to our motivation to maintain a positive mood or correct a

negative mood (Isen 2000). The implications are that when a person is in a positive mood state, they will be motivated to avoid situations that they perceive will threaten their positive mood. While the majority of Isen's research focused on positive mood, there are also implications for negative moods. More specifically, negative mood motivates a person to engage in behavior that they perceive will improve their mood. Therefore, when someone is in a negative mood, they will actively seek ways to improve their affect. They attempt to achieve this through evaluating the affective state they perceive will be a result of any specific behavior. If a complex task, like working through a mathematical equation, is perceived to lower one's mood, then being in the state of positive affect would deter someone from attempting this task because of the perception that it will hinder their mood. However, if eating a piece of chocolate is expected to create happiness, then someone experiencing negative affect is more likely to consume this chocolate because of the mood correcting benefits that are forecasted through making this decision. It is worth noting that someone in a good mood would not be more likely to consume the chocolate because they do not have as much of a need to improve their affective state. Additionally, someone in a negative mood would also not avoid the mathematical equation because the forecasting of their affect after engaging in the task would not result in a different affective state.

Isen noted that the concept of affect regulation is cognitively complex and requires high cognitive capacity to be successful due to all the mental steps that must be completed in order to regulate affect (2000). First, one must recognize they are experiencing a negative affective state. Then, a process of identifying choices that may change that affective state takes place. An additional step requires the forecasting the

affective state which will take place after making a decision. Finally, there is a comparison between the current experienced affect and the future forecasted affect and a determination of whether this change in affect is valuable compared to any negative consequences of making this decision (such as the cost or caloric content of the chocolate). All of these steps are more likely to occur when cognitive capacity is not constrained.

As mentioned in a previous section on arousal and cognition, high levels of arousal are linked to restricted cognitive function, thereby reinforcing the idea that consumers experiencing a high level of arousal will be less likely to engage in affect regulation. This concept has been reinforced by subsequent research showing the ability to make the "smart" decision, or to resist poor decisions that are unhealthy, is attenuated when positive mood is accompanied by elevated levels of arousal (Fedorikhin and Patrick 2010). In this research by Fedorikin and Patrick (2010), subjects in a positive mood rejected unhealthy food decisions because the process of affect regulation helped them forecast the negative mood that would result in making this decision. However, when arousal was high, subjects were less likely to regulate affect and make decisions to maintain a positive affective state, resulting in more unhealthy decisions. Research specific to negative affect has also corroborated that consumers in negative mood states are significantly more likely to make "feel-good" purchases (Maxwell and Kover 2003). The reason for this behavior is that consumers are using the process of affect regulation to determine the improvement in affect they will experience from "feel-good" purchases. However, this process only occurs when consumers perceive something in the product or purchase decision will result in positive affect, which I refer to as products with "positive

affect cues" throughout the current dissertation. Extant research has revealed that consumers intuitively realize that products with positive affect cues can improve their affective state and that products lacking positive affect cues would not.

4.2.5 Products with Positive Affect Cues

Products can vary drastically in utility for consumers. Some are necessary, while others have very little need but still result in a pleasurable experience. Products that focus on pleasure are typically referred to as hedonic (Alba and Williams 2013) and shopping for these types of products is reported as "fun" and "playful" (Holbrook and Hirschman 1982) by consumers. Products that are task-related and rational are typically described as utilitarian (Batra and Ahtola 1991). This foundational understanding of the difference between hedonic and utilitarian products has led to the development of the "perceived personal shopping value" scale (Babin, Darden, and Griffin 2002). Since the development of this scale, multiple studies have compared hedonic to utilitarian consumer decisions on food, fashion and financial decisions (savings and investments). Items consistently identified as hedonic in nature using this scale are chocolate or dessert items and luxury brand items (Barbopoulos and Johansson 2016). The common characteristic of these items is that they all result in some level of positive affect experienced by the consumer, not only when making the purchase, but also when thinking about the purchase and future use of the item. Research involving hedonic products supports that items such as chocolate can induce positive affect in the consumer (Andrade 2005).

Research also indicates that consumers can identify in advance the resulting affect of making a purchase decision quite easily, and a study by López and De Maya (2012) noted that subjects could intuitively realize that the non-hedonic product option would not improve their affective state. Consumers do this by evaluating the product and searching for "cues" that create positive affect, such as the pleasure experienced from eating a piece of chocolate or the attention one will receive from wearing an expensive watch. Therefore, positive affect cues a consumer identifies within a product are influential in a purchase decisions. In their article summarizing the role of emotions in marketing, Bagozzi el al. (1999) pointed out that our appraisal of the emotional reaction we will have to a consumer decision is a key determinant to our actual decision. How a consumer perceives they will feel after purchasing a product has a significant influence on purchase decisions.

The question then arises of when positive affect cues become an important factor in the consumer's decision process. Isen (2000) postulated that the perception of positive feelings associated with products should become more salient when consumers are in a negative affect state because they are intuitively seeking ways to improve their mood. Therefore, a consumer experiencing a negative affect state will search for cues within purchases that will lead to positive affect.

A post-hoc analysis of the 1996 Yankelovitch market research study of over 4000 consumers revealed that consumers in a negative affect state are more likely to prefer "feel-good" purchases such as "junk" snacks (candy, cookies, donuts, nachos, snack cakes and salty chips) instead of healthy snacks (cheese, fruit, gelatin, raisins and raw

vegetables; . These "feel-good" purchases have been observed through research to be utilized by consumers to regulate mood (López and De Maya 2012). López and De Maya noted in their research that subjects were more likely to choose a hedonic product when in a negative affect state compared to a positive affect state.

As noted by Isen (2000), affect regulation is a complex process that requires a great deal of cognitive effort. High levels of arousal constrict cognitive ability, making the process of affect regulation very difficult; however, low levels of arousal increase cognitive ability and allow consumers to regulate their affect through purchase decisions. Therefore, low levels of arousal will enable the cognitive capacity required to seek out and analyze items that have positive affect cues.

One of the more cited articles in consumer behavior utilizing music is by Alpert and Alpert (1990) in which they witnessed higher purchase intention for a "negative" greeting card when inducing subjects to a negative affective state. The authors postulated this effect to be due to congruence, which occurs when the feelings being experienced have some consistency with an attribute of the target product (Park and Young 1986). This was first posited by Forkan (1980) with the "match-up hypothesis," which posited that similarities between the target product and the medium that promoted the target product should increase product evaluations. For example, a celebrity spokesperson (medium) that endorses a fancy sports car (product) is most effective when there are similarities between them. A young, strong celebrity would match better with a sports car where an older, more distinguished celebrity would match better with a luxury sedan. This consistency is postulated to make the advertisement more effective. In the study by

Alpert and Alpert, the consistency between the negative mood state and the negative greeting card was suggested as a possible explanation. However, an alternative explanation not explored in their research, is that the participants might have perceived the greeting cards to have positive affect cues. The cards utilized in the "negative" condition in this study contained messages such as "missing you." While pre-tests validated these cards as being considered sad, they may have also been perceived to create a positive affect in the subjects. It is possible that someone in a sad mood would perceive the act of sending a card saying "missing you" to "a friend," as instructed in this study, as an action that would result in positive affect. Merely the thought of interacting with a friend who is "missed" could also induce positive feelings similar to the "warm glow" experienced from doing something good, (Strahilevitz and Myers 1998) or lead to a perception that the greeting card contains positive affect cues.

Therefore, I hypothesize that there would be an interaction between music affective valence, music arousal, and product type on purchase intent. More specifically, consumers that are induced into a negative affect state and low arousal will have high purchase intent for products with positive affect cues because there is an expectation that these products will improve affect.

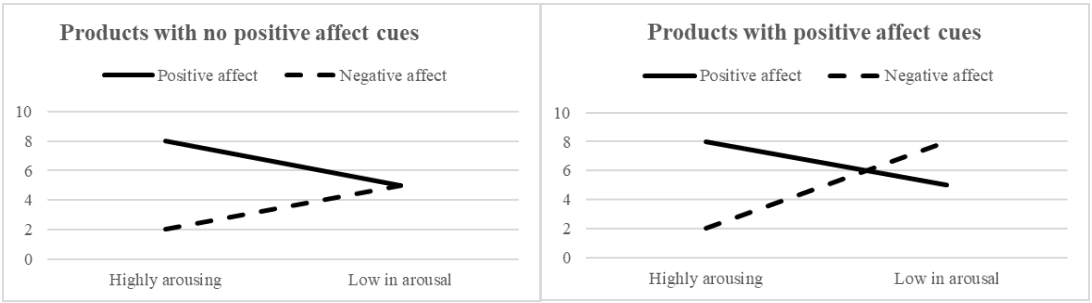
H7: There is an interaction between music arousal, music affect valence, and product type on product evaluation, such that:

H7a: Music that is categorized with a positive affect valence will result in a higher purchase intent when music is high in arousal compared to a condition that is low in arousal.

H7b: Music that is categorized with a negative affect valence will result in a lower purchase intent when music is high in arousal compared to a condition that is low in arousal.

H7c: Music that is categorized with a negative affect valence and is low in arousal will result in a higher purchase intent when product type has positive affect cues compared to a condition that product type has no positive affect cues.

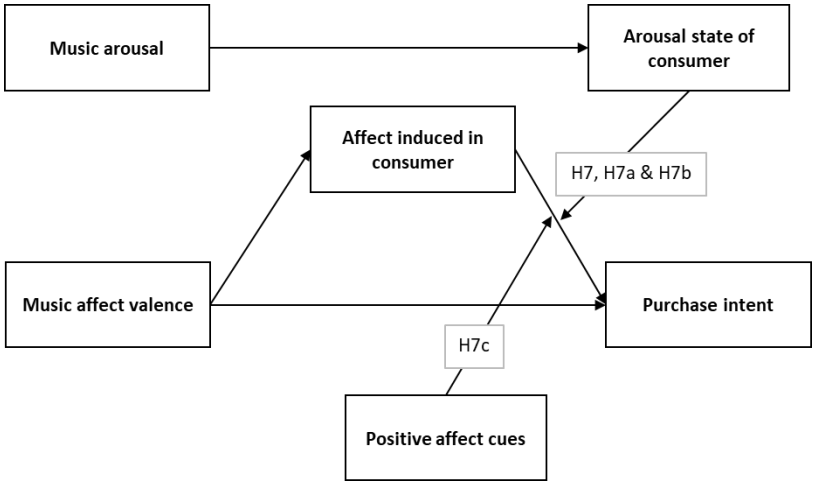
Figure P: Graphs of Expected Results of **H7**



4.2.6 Theoretical Model

The theoretical model is presented in Figure Q with purchase intent being mediated by the affective valence of music. There are two moderators between the affective valence of music and purchase intent. Arousal acts as an enhancing moderator in that it increases the effect of the affective valence. The type of product, being either with positive affect cues or without positive affect cues, is an antagonistic moderator that reverses the effect of the affective valence.

Figure Q: Theoretical Model of the Interaction between Music Affect Valence, Arousal State of Consumer, and Product Type (with or without Positive Affect Cues) on Purchase Intent



4.3 Study 1 – The Interaction of Music Affect Valence, Arousal, and Product Type on Purchase Intent

4.3.1 Design

Music has been used in existing literature to transfer affect using the musical mood induction procedure (MMIP) which was used to operationalize this study. For details related to this process, please refer to section 2.2.5 on the affective transfer of music.

The procedure from this research is adopted from a study on consumer mood states and the mitigating influence of personal relevance (Curren and Harich 1994). In this study participants were asked to evaluate two products, the first product being a film

and the second being a personal computer. For more detail on the aforementioned research, please refer to section 2.3.1 in the previous chapter.

This research also utilized songs from the DEAM dataset, as it provides a sample of music already annotated on the two main dimensions of affect I use in this study, affective valence and arousal. The low popularity of the songs reduces the potential of confounds related to personal preferences and memory associations. For more detail pertaining to the DEAM dataset, please refer to section 2.3.1 in this dissertation. The current research also uses the self-assessment manikin (SAM) instrument (Bradley and Lang 1994) as a manipulation check on music affect valence and arousal.

Research involving food as hedonic items has high potential for additional covariates that may confound the results, such as level of hunger, time since last meal, food preferences, and specific dietary restrictions (Shiv and Fedorikhin 1999). A recent study on mood regulation with hedonic products successfully used books as a manipulator of positive affect cues in multiple studies to provide support to the idea that negative mood can increase evaluations of hedonic items (López and De Maya 2012). In this study, participants were presented with a book from Amazon either framed as positive affect (hedonic) or not. While the study presented the positive book as hedonic, this is different from the types of products typically seen in research involving hedonic items, such as chocolate and luxury goods. However, post-hoc manipulation checks on mood regulation intuition revealed that the positive valenced book was perceived to have the ability to improve mood, similar to the definition of "products with positive affect cues" discussed in this chapter. Analysis of the results of this study found that the

positive book had the highest purchase intentions when the induced mood was negative. As in essays 1 and 2, the current research uses the "two product" manipulation utilized by Curren and Harich (1994) with the film manipulation replaced with music used as the first product participants will evaluate. The second product was either a book with positive affect cues or a book with no positive affect cues per the procedure used by López and De Maya (2012).

4.3.2 Sample

The sample for this research consists of students from a public research university in the Southeastern United States. Student participants voluntarily completed the experiment in exchange for course credit. A post hoc power analysis of the research on which this study was designed (Curren and Harich 1994) revealed a power > .8 when detecting a large effect of .40 at an alpha level .05. Post hoc power analysis of subsequent research involving music (Gorn, Tuan Pham, and Yatming Sin 2001) revealed results of one study with a power of > .8 when detecting a medium effect of .25 at an alpha level .05. Based on this analysis and the generally accepted power of .80 in psychology (Howell 2013), an a priori power analysis conducted using G*Power v3.1 (Faul, Erdfelder, Lang and Buchner 2007) to achieve power to detect a medium effect of .25 at an alpha level .05 indicates a sample size of 158 is adequate for this study.

4.3.3 Experimental Procedure

The research proposed for Study 1 utilizes an adapted version of the procedure testing the influence of affect on brand evaluation and purchase intent used by Curren and Harich (1994). In this study, a two (positive affect music / negative affect music) by two (high arousal music / music low in arousal) by two (product with positive affect cues / product without positive affect cues) factorial design is utilized to test the influence on purchase intent.

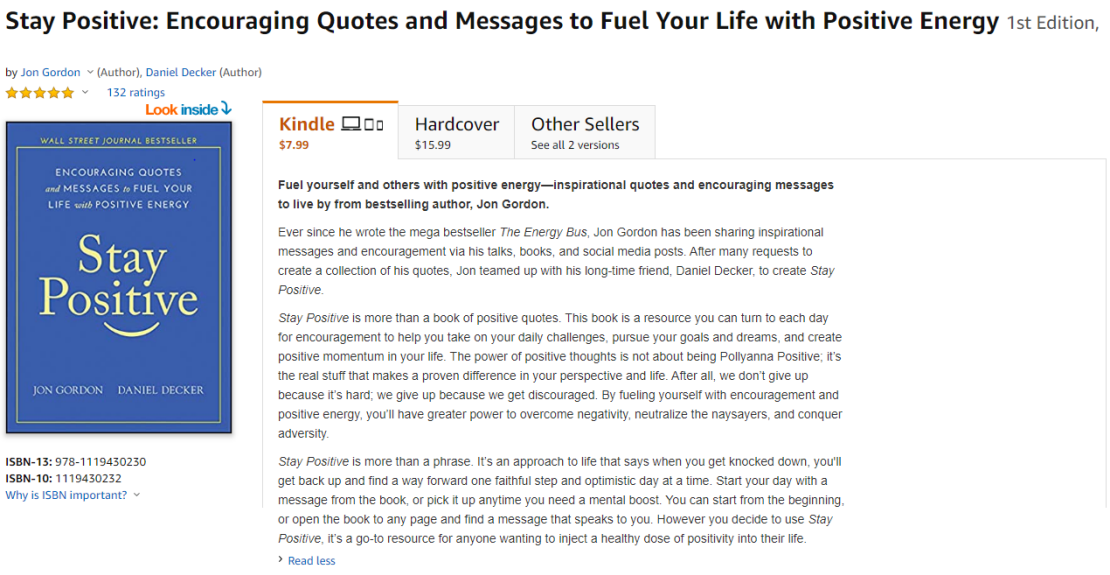
Figure R: 2 X 2 X 2 Factorial Design of Essay 3 / Study 1

Products with Positive Affect Cues		Products without Positive Affect Cues	
Negative Affect / High Arousal	Positive Affect / High Arousal	Negative Affect / High Arousal	Positive Affect / High Arousal
Negative Affect / Low Arousal	Positive Affect / Low Arousal	Negative Affect / Low Arousal	Positive Affect / Low Arousal

Per the study design by Curren and Harich (1994), participants were asked to evaluate two seemingly unrelated "products." The first product to evaluate was a song that would be played in a common area visited by students at a college. The song was actually the affective valence manipulation. The music used in this study was chosen based on affect valence and arousal ratings from the DEAM database. The second product was a book being sold through a website. The participants were presented with the website pertaining to the book. An example of a book in the positive affect cue condition is "Stay Positive" by Jon Gordon and Daniel Decker. This book is presented as a set of messages that will provide positive encouragement which will help to overcome

daily challenges. An example of a book in the no positive affect cue condition is "A Little Life" by Hanya Yanagihara. This book is presented as a story that is "astonishing, challenging, and profoundly moving." Both books were presented with the exact same price as well as the same ratings. A pre-test, in which participants were asked to review five positive and five negative books and rate them on their perception that the book could improve their mood (López and De Maya 2012), was used to validate the presence of positive affect cues. See Figure S for an example of the website presenting the books.

Figure S: Screen of Book Examples used in Essay 3 / Study 1



Participants were then asked to evaluate both the music and the book on a 7-point Likert scale. As part of the cover story, they were asked to indicate (a) "How does this song compare to other songs heard on the radio? (1) unfavorably – (7) favorably"; (b) "Is

this song a good choice for the university to play in a common area? (1) not at all – (7) definitely." For the dependent variables, they were asked (c) "How likely would you be to purchase this book if you were looking for something to read? (1) not at all likely – (7) very likely." Participants then answered questions related to their arousal level (a) "How (1) stimulated (7) relaxed do you feel right now?", (b) "How (1) excited (7) calm do you feel at this moment?" and (c) "How (1) aroused (7) unaroused do you currently feel?" Participants then answered questions pertaining to their affective valence state (a) "How happy (1) unhappy (7) do you feel right now?" and (b) "How good (1) bad (7) do you feel at this moment?" Participants were then presented with the affective valence and arousal sections of the SAM and asked to select the picture that "best represent the music selection" as a manipulation check that the music was perceived to be the same valence and arousal as identified in the DEAM dataset. Additional questions were then asked pertaining to personal liking and memory associations (a) "How would you rate this song on your own personal preference? (1) I really dislike this song – (7) I really enjoy this song.", "Does listening to this song remind you of a specific event that occurred in your life?", and "If yes, please describe the memory below in less than 50 words." Participants then reported their perception on whether the book is able to improve their affective valence "How likely is the book reviewed in this study capable of improving someone's mood? (1) not likely – (7) very likely." The final question identified any specific bias towards the author or book in the study (a) "What is your opinion of the author of this book? (1) I really don't like them – (7) I really like them" and (b) "What is your opinion of the book? (1) I really don't like this book – (7) I really like this book."

4.3.4 Constructs and Measures

Established constructs from marketing and consumer behavior research were adapted for this study. A 7-point Likert-type scale response was used to measure purchase intent per Curren and Harich (1994). Arousal was measured through three semantic differential scales which have been highly correlated to the main dimension of arousal within affect (Gorn, Tuan Pham, and Yatming Sin 2001). Affect was measured using a 7-point Likert-type scale (Clore and Schwarz 1983). The affective valence and arousal evaluation of the music was measured using the SAM (self-assessment manikin) (Bradley & Lang 1994). The perceived presence of positive affect cues was measured using a 7-point Likert-type scale per López and De Maya (2012).

Table 12: Constructs and Adapted Measures for Essay 3 Study 1

Construct	***Measures or method tested***	***Drawn/adapted from***
Product evaluation	(a) How likely would you be to purchase this book if you were looking for something to read? (1) not at all likely - (7) very likely	Curren and Harich (1994)
Affective valence state	(a) How (1) happy (7) unhappy do you feel right now? (b) How good (1) bad (7) do you feel at this moment?	Clore and Schwarz (1983)
Arousal state	(a) How (1) stimulated (7) relaxed do you feel right now? (b) How (1) excited (7) calm do you feel at this moment? (c) How (1) aroused (7) unaroused do you currently feel?	Gorn et al. (2001)
Affect valence of music	Self-assessment manikin (referenced in Figure C)	Bradley and Lang (1994)
Arousal of music	Self-assessment manikin (referenced in Figure C)	Bradley and Lang (1994)
Presence of positive affect cues	How likely is the book reviewed in this study capable of improving someone's mood? (1) not likely – (7) very likely	López and De Maya (2012)

4.3.5 Analysis

Pre-test:

Forty-four undergraduate students completed this pre-test and received course credit in exchange for participation. Participants were asked to review five books chosen by the researcher to be positive and therefore having potential for positive affect cues, and were also asked to review five books that would not have positive affect cues. These songs were then rated on their ability to "improve one's mood".

Out of the ten books, two were selected for use in the first study based on being the highest and lowest rated as having the ability to improve one's mood (see Table 13 for summary). A paired samples t-test was conducted to determine if there was a significant difference between the two means. There was a significant difference between ratings of the book with positive affect cues ($M = 5.77$, $SD = 1.171$) and the book without positive affect cues ($M = 3.70$, $SD = 1.519$); $t(44) = 3.41$, $p < .001$. A one-sample t-test was also conducted on each mean to determine if they were different from the midpoint of the scale. The means of the book with the positive affect cues was significantly different from the midpoint; $t(44) = 10.059$, $p < .001$. However, the means of the book with no positive affect cues was not significantly different from the midpoint; $t(44) = -1.291$, $p = .204$.

Table 13: Reported Means of Positive Affect Cues in Pre-test

	Positive Affect Cues
Book 1	5.77
Book 2	3.70
Book 3	5.27
Book 4	3.91
Book 5	5.66
Book 6	3.98
Book 7	5.34
Book 8	3.73
Book 9	5.48
Book 10	3.81

Main Study:

Three hundred undergraduate students completed an online survey and received course credit in exchange for participation. Participants were asked to listen to a music selection and rate the music for appropriateness to be played in a common area at a university. This was actually the manipulation of affect and arousal. After rating the music, participants were presented with a seemingly unrelated task of rating a book. Ratings were then captured related to experienced affect and arousal as well as the perceived affect and arousal of the music selection. Participants were also asked to rate the book on presence of positive affect cues.

Analysis of the results were performed using IBM SPSS Version 20. The manipulation checks on the affect valence and arousal levels of the music as perceived by the listener were tested using an independent samples t-test on the results of the SAM scale. There was a significant difference in the affect valence of the songs perceived by

the listener for the positive affect songs (M =6.70, SD = 1.464) and the negative affect songs (M = 5.37, SD = 1.644); t(298) = -7.417, p < .001. An independent samples t-test was also performed comparing the lowest rated positive affect song (M = 6.25, SD = 1.079) with the highest rated negative affect song (M = 5.55, SD = 1.655). Results indicate a significant difference between the two means [t(72) = 2.134, p = .036] and each of the positive affect songs were rated significantly higher than each of the negative affect songs. There was also a significant difference in the arousal of the song perceived by the listener for the high arousal songs (M =5.55, SD = 2.032) and the low arousal songs (M =3.82, SD = 1.871); t(298) = -7.681, p < .001. An independent samples t-test was also performed comparing the lowest rated high arousal song (M = 5.11, SD = 1.817) with the highest rated low arousal song (M = 4.11, SD = 1.991). Results indicate a significant difference between the two means [t(79) = -2.334, p = .022] and each of the high arousal songs were rated significantly higher than each of the low arousal songs.

The manipulation checks of affect valence and arousal experienced by the listener were tested using independent samples t-tests. There was a significant difference in the affect valence experienced by the listener for the positive affect songs (M = 5.27, SD = 1.404) and the negative affect songs (M = 4.373, SD = 1.543); t(298) = -5.262, p < .001. The means of the affect valence experienced in the positive affect song condition with the lowest rating (M = 5.22, SD = 1.487) was also significantly different from the affect valence experienced in the negative affect song condition with the highest rating (M = 4.44, SD = 1.732); t(74) = 2.044, p = .045. Each of the positive affect songs were rated significantly higher in experience affect compared to each of the negative affect songs. There was a significant difference in the arousal experienced by the listener for the high

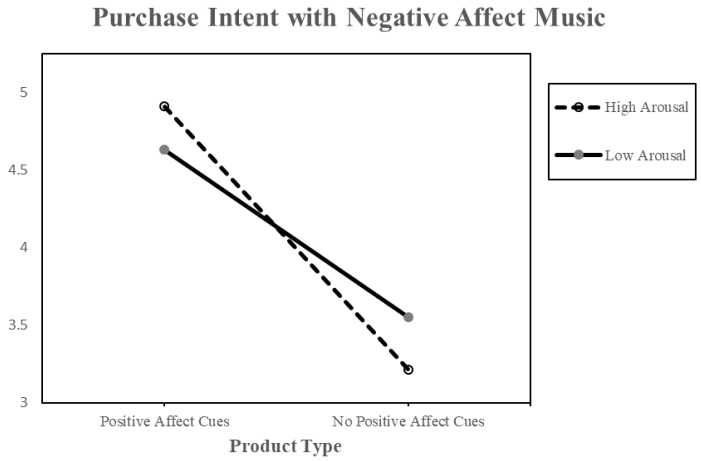
arousal songs (M = 3.389, SD = 1.628) and the low arousal songs (M = 2.46, SD = 1.387); t(298) = -5.279, p < .001. The means of the arousal experienced in the high arousal song condition with the lowest arousal rating (M = 3.31. SD = 1.706) and the low arousal song condition with the highest arousal rating (M = 2.56, SD = 1.429) were also significant; t(81) = 2.133, p = .036. Each of the high arousal songs resulted in a significantly higher feeling of arousal than each of the low arousal songs.

The manipulation checks on perceived presence of positive affect cues was tested using an independent samples t-test. There was a significant difference in the perceived presence of positive affect cues for the positive book (M = 5.36, SD = 1.172) and the negative book (M = 3.85, SD = 1.464) conditions; t(298) = -9.883, p < .001.

Support for H7 (see appendix for summary of hypotheses), that there is an interaction between music arousal and music affect valence but only when a product does not have positive affect cues, was tested using a three-way ANOVA. Music affect valence, music arousal, and product type (with positive affect cues / without positive affect cues) were the independent variables and purchase intent was the dependent variable. The results indicate a main effect of product type [F(1, 292) = 12.916, p < .001]. Not surprisingly, the product with positive affect cues (M = 4.56, SD = 1.866) had a higher purchase intent than the product with no positive affect cues (M = 3.79, SD = 1.941). No significant main effects were found for affect valence or arousal. There was a significant interaction between affect valence and product type [F(1, 292) = 7.559, p = .006]. As expected, the purchase intent in the positive affect valence conditions were similar when positive affect cues were present (M = 4.33, SD = 1.727) and when they

were not (M = 4.10, SD = 1.954). However, in the negative affect valence conditions, the purchase intent was much higher when positive affect cues were present (M = 4.78, SD = 1.957) than when they were not (M = 3.40, SD = 1.867) (see Table 14 for details). There was no significant interaction between affect valence and arousal or between arousal and product type. In addition, the three way interaction between affect valence, arousal, and product type did not attain significance [F(1, 292) = 2.448, p = .119].

Table 14: Product Type's Effect on Purchase Intent with Negative Affect Music



Support for H7a, that music that is categorized with positive affect will result in higher purchase intent when music is high in arousal compared to music that is low in arousal was tested using a one-way ANOVA. There was a significant effect of arousal on purchase intent with conditions that utilized positive affect valence music [F(1, 148) =

4.269, p = .041] in that high arousal conditions (M = 4.51, SD = 1.823) resulted in higher purchase intent than low arousal conditions (M = 3.89, SD = 1.844).

Support for H7b, that music that is categorized with negative affect will result in lower purchase intent when music is high in arousal compared to music that is low in arousal was tested using a one-way ANOVA. There was no significant effect of arousal on purchase intent with conditions that utilized negative affect valence music [F(1, 148) = .206, p = .650] as high arousal conditions (M = 4.24, SD = 2.039) were not different in purchase intent than low arousal conditions (M = 4.09, SD = 2.034).

Support for H7c, that music that is categorized with negative affect and is low in arousal will result in a higher purchase intent when product type has positive affect cues compared to a condition in which product type has no positive affect cues, was tested using an independent samples t-test. There was a significant difference in the purchase intent for the product that has positive affect cues (M = 4.63, SD = 2.006) compared to the product that does not (M = 3.55, SD = 1.941); t(74) = -2.383, p = .020.

To investigate the influence of music arousal on the effect of music affect valence on purchase intent, a moderator analysis was performed using PROCESS MODEL 1 (Hayes 2013). The outcome variable for analysis was purchase intent. The predictor variable for the analysis was the music affect valence. The moderator variable evaluated for the analysis was music arousal. Music arousal did not explain a significant difference in the variance of purchase intent for all conditions. Music arousal also did not explain a significant difference in the variance of purchase intent when positive affect cues were present. However, a third moderation analysis was performed on the conditions where

there were not positive affect cues (see Table 15 for model summaries) and this analysis did reveal significance. When no positive affect cues are present, music arousal explained a significant difference in the variance of purchase intent; ΔR^2 =.067, F(3, 146) = 3.529, p = .016. The conditional effect of music affect valence on product evaluation revealed that high arousal conditions did moderate the relationship but low arousal conditions did not. At low moderation, the conditional effect was not significant (β = .11, 95% CI = -.710 to .938, p = .784). However, at high moderation, the conditional effect was significant (β = 1.39, 95% CI = .475 to 2.320, p = .003). These results identify music that is high in arousal as a positive moderator of the relationship between music affect valence and product evaluation when no positive affect cues are present.

Table 15: Model Summaries for Moderation Analyses

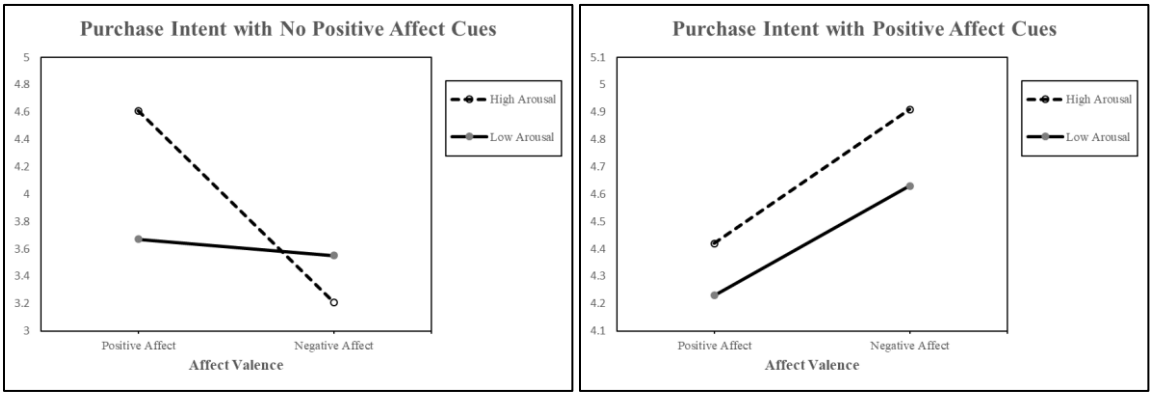
	Model Summary		
	R^2	F	*p*
All Conditions	0.013	1.357	0.255
Only Conditions with Positive Affect Cues	0.019	0.9457	0.420
Only Conditions without Positive Affect Cues	0.067	3.529	0.016

Additional analysis worth noting, is that the condition with the highest means of purchase intent in this study was negative affect music which was high in arousal when the product did have positive affect cues (M = 4.91, SD = 1.929). However, an independent samples t-test revealed no significant difference between the purchase intent of products with positive affect cues when music affect valence is positive (M = 4.33, SD

= 1.727) compared to when music affect valence is negative (M = 4.78, SD = 1.957); t(148) = 1.490, p = .138.

This additional analysis provides support to the theory that product type directly moderates the relationship between music affect valence and purchase intent. To investigate the influence of product type on the effect of music affect valence on purchase intent, a moderator analysis was performed using PROCESS MODEL 1 (Hayes 2013). The outcome variable for the analysis was purchase intent. The predictor variable for the analysis was the music affect valence. The moderator variable evaluated for the analysis was product type. Product type did explain a significant difference in the variance of purchase intent; ΔR^2 =.064, F(3, 296) = 6.803, p < .001. The conditional effect of music affect valence on product evaluation revealed that products with no positive affect cues did moderate the relationship between music affect and purchase intent, but products with positive affect cues did not. When positive affect cues were present, the conditional effect was not significant (β = -.454, 95% CI = -1.064 to .155, p = .143). However, when product type did not have positive affect cues, the conditional effect was significant (β = .69, 95% CI =.083 to 1.303, p = .026). These results identify product type as a negative moderator of the relationship between music affect valence and product evaluation in that that music affect valence influences purchase intent only when positive affect cues are not present. The presence of positive affect cues reduces the influence of music affect valence on purchase intent. Table 16 reveals the difference in purchase intent when a product has positive affect cues compared to when it does not have positive affect cues.

Table 16: Purchase Intent with or without Positive Affect Cues



4.4 Discussion

The purpose of this research is to further the understanding of different moderating variables that influence the relationship of music affect valence on purchase intent. By leveraging the dimensional approach to music categorization adopted in the previous studies, I provide evidence to support an additional factor that influences purchase intent and interacts with the affect valence of the music.

This study revealed interesting results when introducing a product that participants determined would have the ability to improve or repair their mood. When the product did not have these positive affect cues, the pattern of behavior was similar to that seen in Study 2 from Essay 2 in that there was an interaction between music affect valence and music arousal. However, once the product was perceived as having the ability to improve affect, the interaction was no longer significant and the resulting purchase intent was very different. In the case where the product did have positive affect cues, the negative affect conditions resulted in much higher purchase intent compared to

the negative affect conditions with no positive affect cues. As hypothesized, negative affect did not lower purchase intent for products that can improve one's affect. In fact, the highest ratings of purchase intent were found in the conditions where affect was negative and positive affect cues were present in the product. While these results were not significantly different from the positive affect conditions, it is worth noting that they are higher and, due to the lack of strength observed in the negative affect manipulations, may have been stronger if the affect was perceived and experienced as significantly negative from the midpoint of the scale. Additional research using a stronger negative affect manipulation may be warranted.

It is worth noting that both the high and low arousal conditions with negative affect resulted in an increase in purchase intent for products with positive affect cues. It was hypothesized that affect regulation requires a high level of cognitive effort and therefore a low arousal condition would be more susceptible to affect regulation in which the participant is attempting to improve their affect. However, I observed affect regulation behavior in both the high and low arousal conditions that involved negative affect. This reveals the possibility that product type (with or without positive affect cues) moderates the relationship between experienced affect and purchase intent before the arousal moderation and that affect regulation is not hindered by high arousal levels.

CHAPTER 5: Conclusion

5.1 Discussion

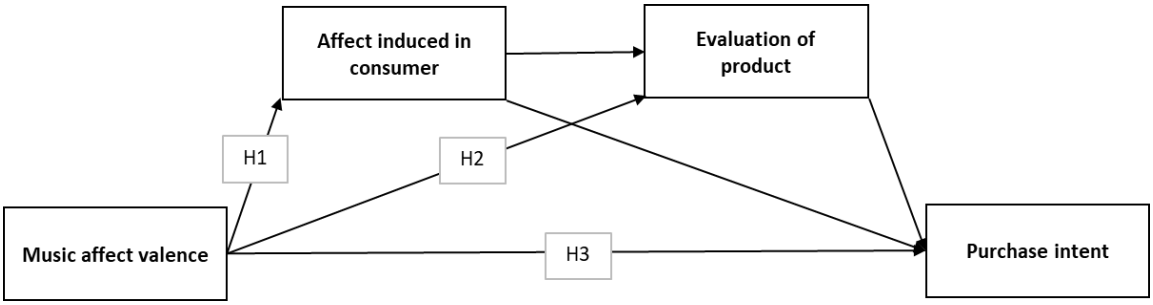
In this dissertation, I investigated how the affect and arousal level of music, separately and together, can affect purchase decisions. In order to operationalize affect within this research, a multi-dimensional approach was utilized which identifies affect valence and arousal as the two main dimensions. Multiple scales were developed for measuring these two dimensions of affect consistently within extant research. The self-assessment manikin (SAM) is one of those scales that has seen a great deal of use within the research community with consistent results. This multi-dimensional approach to measuring affect has not been utilized extensively with prior music research, and the studies presented here provide support to the SAM instrument being a useful and effective approach to measuring affect valence and arousal levels of music as perceived by listeners.

This research is unique from other music research as I utilized unknown music which controlled for personal feelings related to memories of music as a confounding factor in the analysis. This was operationalized by utilizing the DEAM dataset, which includes a large repository of free music that has been previously rated on the dimensions of affect valence and arousal. This repository also contains songs that are not available on popular music avenues such as local radio stations or popular music streaming apps. The unfamiliarity of these music selections prevented the subsequent affect observed by study participants from being influenced by any specific memory or nostalgia. These

music selections did provide successful manipulations of affect and arousal, which were void of personal memory associations. The songs chosen from this dataset provided an efficient and effective way to manipulate feelings of affect and arousal within our research. The one deficiency noted from this approach is that the negative affect manipulations were not perceived to be significantly negative despite resulting in feelings of affect that were significantly lower than other conditions. This raises questions of whether it is realistic for music to induce negative affect on a practical basis or if music perceived as neutral actually results in negative feelings of affect. Despite the challenges with negative affect, the DEAM dataset was found to be an effective tool in inducing different levels of affective valence and arousal in research participants.

These results further advance the literature related to music and consumer behavior in that I provide evidence for the path through which affect valence can influence purchase intent. Results of Essay 1 provide supporting evidence that positive affect leads to higher purchase intent than negative affect. The path through which this operates was confirmed through a mediation analysis, which revealed affect valence experienced by a listener mediates the relationship between affect valence of music and product evaluations. Additionally, a serial mediation of experienced affect and product evaluation explains the causal path between music affect valence and purchase intent. Therefore, these studies provide supporting evidence that music affect valence leads to experienced affect, which influences product evaluation, and subsequently leads to purchase intent. The theoretical model (see Figure T) now provides a clear understanding of the path in which music affect valence influences purchase intent.

Figure T: Theoretical Model of Double Mediation of Music Affect Valence to Purchase Intent



Essay 2 revealed an additional factor influencing the relationship between music affect valence and product evaluation. The additional factor is the arousal experienced by the listener as a result of the arousal level of the music. Results of two studies provide supporting evidence for arousal being a moderating factor between music affect and product evaluation. Music that is high in arousal strengthens the effect of affect valence and low arousal weakens it. This research advances the literature by revealing how the two dimensions in this multi-dimensional approach to affect interact. The significant interaction between affect valence and arousal provides a better understanding of how music affect can influence product evaluations. High arousal appears to be a requirement for music affect to influence product judgement.

Essay 3 also revealed an additional moderating variable in the causal path from music affect valence to purchase intent. Extant research supports the concept that products can contain positive affect cues, which are indicators to consumers that purchasing this product could result in an improvement in experienced affect.

Consumers may then purchase these items in an attempt to improve their mood. This process, referred to as affect regulation, is a way in which we attempt to improve our affective state. This research advances the literature in that I provide evidence for another moderator of the relationship between music affect valence and purchase intent. When listening to negative music, consumers will be more likely to purchase a product with positive affect cues in an attempt to regulate their experienced affect. However, when positive affect cues are not present, consumers will be less likely to purchase a product when listening to negative music (as supported by Essay 2).

These studies have also provided a robust framework to further advance the study of music in consumer environments. By utilizing a multi-dimensional approach to the categorization of music, researchers can provide further insight into how music may influence actual consumer decisions at the point of purchase. Consistent attribution of music based on affect valence and arousal while controlling for personal memory associations will provide understanding beyond simple responses to music provided by extant literature. Researchers utilizing this approach can further our understanding of consumer choices that are influenced by music.

5.2 Limitations and Future Research

One limitation noted consistently through the studies in this dissertation is the results of the negative music valence affect manipulations. Music picked by the researcher as negative, and having the lowest initial ratings of affect valence in the DEAM dataset, did not achieve a significantly different rating from the midpoint of the

scale in the majority of studies. It is unclear from the results if participants actually considered these songs to be neutral, or if the midpoint of the scale was perceived as somewhat negative. It is possible that a "normal" affect state by participants is considered good (meaning slightly above the midpoint of the scale) and therefore neutral ratings are actually perceived as negative. It is also a possibility that music, which is truly negative, is very rare. Music is intended to be enjoyed, which means that we would naturally eliminate music that is clearly negative in affect. Popular music that is negative in affect valence will typically also have a positive turn at some point. For example, songs about lost love and broken hearts typically will end with a positive message like "I'm better off without you" instead of maintaining a negative message like "I'll never get over this." For this reason, it may not be common for music composers to create songs of truly negative affect making it very difficult to operationalize this negative manipulation.

Future research should employ more control conditions to identify a true midpoint of the affect scale to indicate whether the midpoint is actually the indicator of whether affect is truly negative. Multi-variable composite measures could also be employed in future research to get a more accurate indicator of affect. Adding additional instructions asking participants to "think deeply about their feelings" prior to answering the measures of experienced affect could also lead to a more accurate response on this dimension.

Another limitation identified in Essay 1 is the amount of time that an affect manipulation remains with the participant. Study 1 had several outliers in time spent between the product evaluation and reported measures of experienced affect. This

reinforces, as expected, that these affect manipulations are either short-lived or easily mitigated by other affect-influencing variables. Future research should be designed to allow the music affect manipulation to be present during the product evaluations and purchase intent measure as opposed to after the music has stopped playing. Extending the amount of time that the participants listen to the music prior to answering the questions related to experienced affect could also possibly strengthen the manipulations.

These studies were also designed with a convenience sample of students from the same university, which provides internal validity, but is a limitation in how these findings could be projected to a greater population. Additional studies involving a more diverse sample would create stronger external validity as well as provide more insight into how to implement a music strategy in true consumer situations. The use of individual classrooms for each condition in Study 2 from Essay 2 assisted in efficient capture of data, but future research should utilize a laboratory setting to prevent the possibility of selection bias resulting from non-random assignment.

Finally, these studies were designed to identify how music influences consumer behavior when there are no personal memory associations with the song. However, this is not always controllable nor realistic in all environments. Popular music is much more pervasive in society and is therefore more likely to have personal memory associations. It is also more likely to increase approach behaviors, which is beneficial to retailers. Additional research is needed to understand how personal memories for consumers interact with affect and arousal dimensions.

5.3 Managerial Implications

This research provides a clear map for managers to execute a music strategy for retail shopping environments. Overall, positive music is more likely to increase product evaluations and purchase intent compared to negative music. However, this only occurs when the music is high in arousal. Positive music that is low in arousal will not increase purchase intent. Additionally, music affect does not appear to have any influence when arousal is low, leading to the conclusion that negative music should not lower product evaluations as long as it is low in arousal. Therefore, happy music that is high in arousal should be the main type of music employed by retailers looking to increase purchase intent at the point of sale.

The process of affect influencing consumer behavior becomes more complicated when products are used to regulate feelings. There is extensive research about hedonic products, like chocolate, which consumers utilize to improve their affective state. The concept of "retail therapy" in which people shop when they are sad in order to feel better has become common practice in our society. Feelings of negative affect introduce a more complicated framework for managers to determine the most effective music for their consumption environment. The results of the final study in Essay 3 revealed that consumers in negative affect conditions had a significantly higher purchase intent for a product with positive affect cues compared with products with no positive affect cues. Therefore, reinforcing the potential for products to improve affect should result in higher purchases for consumers that are experiencing negative affect. Additional research should assess this potential influence of music with negative affect. However, in the case

of "retail therapy," music of positive affect that is low in arousal could potentially improve one's affect to the point that they no longer feel a need to purchase a product to feel better. In this case, positive and relaxing music could be lowering consumers' purchase intent in comparison to other types of music.

A thorough investigation of music affect and product types should be conducted with any retail business looking to determine the best course of action for their music strategy. Revisiting the example at the beginning of this dissertation of the consumer in Macy's, now there is additional direction on music selections that will influence the affective state of this consumer in a way that is most conducive to that purchase. Music can even be varied by different areas of the store (or personalized for online shoppers) in a way that is most likely to improve product evaluations based on the different types of products. The music that has already been used so prominently in consumer environments can now be more carefully selected with a clearer understanding of the potential outcome for a business.

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APPENDICES

LIST OF HYPOTHESES:

	Essay #	*Hypotheses*	*Results*
H1	1	Music categorized with a positive (negative) affect valence will result in a more positive (negative) affective state compared to a condition with no music.	Positive music was significantly different from no music condition. Negative music was not. ANOVA was significant.
H2	1	Music categorized with a positive (negative) affect valence will result in a higher (lower) evaluation of a product compared to a condition with no music.	Neither condition was significantly different from no music condition. Positive was significantly different from negative condition.
H3	1	Music categorized with a positive (negative) affect valence will result in a higher (lower) purchase intent of a product compared to a condition with no music.	Neither condition was significantly different from no music condition. Positive was significantly different from negative condition.
H4	2	Music that is categorized as high in arousal (low in arousal) will result in an elevated (less) aroused state compared to a condition with no music.	High arousal music was significantly different from the no music condition. Low arousal was not significantly different from no music condition.
H5	2	For music that is categorized with a positive affect valence, music that is also categorized as high in arousal (low in arousal) will result in a higher (no difference in) evaluation of a product compared to a condition with no music.	Positive affect with high arousal resulted in a significantly higher product evaluation compared to all other conditions.
H6	2	There is an interaction between music arousal and music affect valence on product evaluation, such that:	Results confirmed a significant interaction between music arousal and music affect.
H6a	2	Music that is categorized with a positive affect valence will result in a higher product evaluation when the music is high in arousal compared to a condition that is low in arousal.	Positive affect music resulted in a significantly higher product evaluation when arousal was high than when arousal was low.
H6b	2	Music that is categorized with a negative affect valence will result in a lower product evaluation when the music is high in arousal compared to a condition that is low in arousal.	There was no significant difference in product evaluation for negative music when arousal was high or low.
H7	3	There is an interaction between music arousal, music affect valence, and product type on product evaluation, such that:	The three-way interaction was not significant.
H7a	3	Music that is categorized with a positive affect valence will result in a higher purchase intent when the music is high in arousal compared to a condition that is low in arousal.	Positive affect music had a significantly higher purchase intent when high in arousal compared to low in arousal.
H7b	3	Music that is categorized with a negative affect valence will result in a lower purchase intent when the music is high in arousal compared to a condition that is low in arousal.	There was no significant difference in purchase intent for negative music when high in arousal compared to low in arousal.
H7c	3	Music that is categorized with a negative affect valence and is low in arousal will result in a higher purchase intent when product type has positive affect cues compared to a condition that product type has no positive affect cues.	Negative music that is low in arousal resulted in significantly higher purchase intent when product has positive affect cues compared to no positive affect cues.

LIST OF STUDIES AND PRE-TEST:

Essay #	***Study #***	***Studies***	***Groups***	***Power Analysis Sample Size***	***Actual Sample Size***
1	*Pre-test*	*Identification of positive and negative affect songs with moderate arousal*	1	25	40
1	**1**	The Influence of Positive and Negative Affect on Product Evaluation and Purchase Intent	3	128	136
2	*Pre-test*	*Identification of positive affect/high arousal, positive affect/low arousal, negative affect/high arousal, and negative affect/low arousal songs*	1	25	40
2	**1**	The Influence of Arousal on Product Evaluation when Music is of a Positive Affect Valence	3	128	134
2	**2**	The Interaction of Music Affective Valence and Arousal on Product Evaluation	4	128	151
3	*Pre-test*	*Validation of positive affect cues in books being used*	1	25	44
3	**1**	The Interaction of Music Affect Valence, Arousal, and Product Type on Purchase Intent	6	158	300

EXAMPLE OF CONSENT STATEMENT:

PURPOSE OF THE STUDY
The purpose of this study is to evaluate different products.

NUMBER OF STUDY PARTICIPANTS
If you decide to be in this study, you will be one of approximately 100 people in this research study.

DURATION OF THE STUDY
Your participation will involve 15-20 minutes in total.

PROCEDURE
If you agree to be in the study, we will ask you to do the following things:
Listen to music and rate it. Evaluate a product and rate it.

RISKS AND/OR DISCOMFORTS
The study does not have any possible risks to you.

BENEFITS
The study can allow us to better understand consumer behavior to help consumers make better decisions.

CONFIDENTIALITY
The records of this study will be kept private and will be protected to the fullest extent provided by law. In any sort of report we might publish, we will not include any information that will make it possible to identify you. Research records will be stored securely and only the researcher team will have access to the records. However, your records may be inspected by authorized University or other agents who will also keep the information confidential.

USE OF YOUR INFORMATION
Identifiers about you might be removed from the identifiable private information that, after such removal, the information could be used for future research studies or distributed to another investigator for future research studies without additional informed consent from you or your legally authorized representative.

COMPENSATION & COSTS
You will receive course credit for participating in this study. There are no costs to you for participating in this study.

RIGHT TO DECLINE OR WITHDRAW
Your participation in this study is voluntary. You are free to participate in the study or withdraw your consent at any time during the study. You will not lose any benefits if you decide not to participate or if you quit the study early. The investigator reserves the right to remove you without your consent at such time that he/she feels it is in the best interest.

RESEARCHER CONTACT INFORMATION
If you have any questions about the purpose, procedures, or any other issues relating to this research study you may contact Greg Maloney at gmaloney@fiu.edu.

IRB CONTACT INFORMATION
If you would like to talk with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

COMPUTER IMAGES USED IN STUDIES:

15.6" Touch-Screen Laptop - Intel Core i3 - 8GB Memory - 128GB SSD - Black

Model: i3583-3756BLK-PUS **SKU:** 6373813

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BOOK IMAGES USED IN STUDIES:

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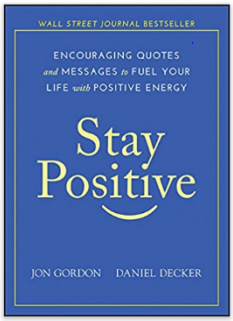

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Stay Positive is more than a book of positive quotes. This book is a resource you can turn to each day for encouragement to help you take on your daily challenges, pursue your goals and dreams, and create positive momentum in your life. The power of positive thoughts is not about being Pollyanna Positive; it's the real stuff that makes a proven difference in your perspective and life. After all, we don't give up because it's hard; we give up because we get discouraged. By fueling yourself with encouragement and positive energy, you'll have greater power to overcome negativity, neutralize the naysayers, and conquer adversity.

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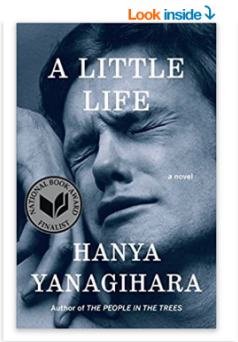

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CURRICULUM VITAE

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