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WHY MUST I BE A TEENAGER IN LOVE? ASSESSING THE EFFECT OF AGE ON MUSIC PREFERENCE IN ADVERTISING

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Joyce Marie Wolburg

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DEDICATION

This thesis is dedicated to my children,
Leslie Anne Wolburg and Eric George Wolburg.
We shared a common bond as students,
and they always encouraged me in my work--even though it
meant long hours apart and fast food dinners.

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I would like to thank Dr. Michael Stankey for directing me to a topic that was a meaningful learning experience in addition to being fun. His exacting mind for details made this research take on a level of excellence that would have been missing without his guidance. He always kept his sense of humor and dedication to hard work.

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ABSTRACT

Advertisers often use music to enhance commercials. How people form preferences to popular music and the emotion people feel when music they like is used commercially are areas with direct application to advertising--yet they have received little or no research.

The present study surveyed 101 people 20-50 years old who heard a tape of 76 music selections from the years 1954-1991. The respondents rated the music for liking, familiarity, and memories.

This study hypothesized that music from the teen-age years would be the best liked, the most familiar, and the most memorable. The global score (a composite of liking familiarity and memories) was also hypothesized to peak during the teen-age years.

The effect of age in relation to the release date of the music (song-specific age) upon the dependent variables (liking, familiarity, memories, and global) was analyzed through regression. The dependent variables each formed a curvilinear relationship with song-specific age so that as song-specific age increased, the scores for the dependent variables increased until reaching a peak. At that point the dependent variable scores began to decline. A model including both song-specific age and song-specific age squared was highly significant ($p=0.0001$) for each dependent variable.

The analysis showed that liking reaches a peak at age 16,

which means that the respondents currently like the music released when they were 16 years old better than music released earlier or later. Familiarity peaked at age 15, memories at age 13, and global at age 15. Analyzing the scores within different groups showed some variation between the older and younger respondents.

While 48% of the respondents reacted favorably to the commercialization of music they like, 43% reacted negatively or had mixed feelings--something advertisers should consider when selecting music for ads.

The liking of music is complex, and age is probably only one of many factors that influences liking. The use of liked music for commercial purposes is not always well received, particularly if a different version of the music is produced. Furthermore, pairing a product with liked music doesn't guarantee a favorable attitude toward the product. Advertisers may better utilize music in ads if they have a clearer concept of what music people like, and what factors offend listeners.

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CHAPTER I

INTRODUCTION

Advertisers and marketers use music in many different ways to enhance a product or to try to increase the likelihood that consumers will buy the product.

Most broadcast commercials use music either in part or throughout. Sometimes the music is a prominent part of the ad, and other times the music is simply a background cue. Isolating music as one of many variables in advertising messages is difficult, though several studies have attempted to investigate such things as loudness, tempo, and modality--minor or major keys (Kellaris and Kent, 1991; Infante and Berg, 1979). Other studies have considered the appropriateness of the particular piece of music chosen for a given product. Some studies have considered the nature of the product, e.g., whether the product is a high or low involvement product and whether the product has an emotional appeal or a rational appeal (MacInnis and Park, 1991). The effect of music upon recall is still another issue (Wallace, 1991), as well as the pros and cons of original music (jingles) and music already familiar to consumers (Tom, 1990).

Marketers have also studied the effect that music has upon the consumer in purchase situations. Loudness, tempo, and format have been manipulated to see effects upon purchases and time spent in restaurants and stores (Milliman 1982, 1986;

Smith and Curnow, 1966; Yalch and Spangenberg, 1990).

One underlying assumption is that liked music can be better utilized commercially than disliked music. A pivotal study in 1982 (Gorn) hypothesized that preferences for products could be classically conditioned by pairing products with liked and disliked music. While the data in this study supported the hypothesis, no subsequent studies have replicated these findings. The issue of classical conditioning is unresolved, but the underlying hypothesis that preference for the music is a factor has not been rejected.

Even though preference is assumed to be a relevant factor, there is very little research that addresses how people form preferences for music. Conventional wisdom says that people prefer music that was popular at the time they became teen-agers; yet, only one quantitative study has researched this issue. Also, there is the assumption that people respond favorably to ads that contain music that they like. However, informal conversations with people have reflected that there are those who enjoy hearing a favorite song used in an ad, but there are also those who actually resent their favorite music being used in advertising because it commercializes something meaningful to them. To what extent people have this reaction has not been tested.

Another assumption exists that part of the appeal for oldies or "nostalgia" music is that it triggers memories of the past. Advertisers assume that when they use oldies music

in ads that they are successfully generating positive feelings for a product because they are bringing back fond memories of the past. They expect these positive feelings to carry over to the product. To what extent liking of music is based on familiarity and the recollection of memories has not been fully determined.

An important reason to raise these questions is simply the expense of using music. The cost of creating and producing a jingle can be more than $50,000 (Ecker, 1988). The cost of obtaining the rights to a piece of music can vary considerably. Purchasing a copyright typically costs $50,000-$100,000 depending on the song's popularity, whether it has been used before, where the spot will run, and if the original lyrics or parody lyrics will be used (Conklin, 1985). There are cases in which payment for the advertising rights have actually exceeded those figures. In 1987 a company reportedly paid $250,000 for a Beatles composition, and another paid over $100,000 for a 1985 song by ZZ Top (Ecker, 1988).

If the advertiser wants to use existing music instead of an original piece of music, the issue of copyright must be considered. Creators who retain ownership of their songs hold the copyright for as long as they live, plus 50 years. Once the copyright expires, the song becomes public domain compositions and are available to anyone to use with no compensation required.

Copyright infringement applies to the use of a song

without permission or compensation. This can take the form of using the song in its original version, or it can take the form or changing the words and leaving the melody intact--sometimes called an "evergreen" or "knock-off". Adaptation rights must be secured even for evergreens. The willful use of a copyrighted song without permission can result in civil liability for damages plus criminal charges resulting in fines not to exceed $25,000, imprisonment for not more than one year, or both (Ecker, 1988).

The purpose of this study is to determine whether the liking of music is dependent upon age. When given the choice of top 40 music from 1954-1991, where will the preferences lie?

Liking is a complex reaction to music that may be a combination of several variables that need to be identified separately. This study will investigate the relationship between liking, familiarity, and memories for the music.

Finally, the attitude toward liked music in ads will be investigated to determine how favorably advertisers utilize consumers' favorite music.

CHAPTER II

LITERATURE REVIEW

Music Preference for Oldies Among Baby Boomers

Most research identifies baby boomers as people who were born between the years 1946 to 1964 (Hammond, 1986). Sources vary in their definition of the cut off year of 1964, but researchers generally agree upon 1946 as the year that marks the birth of the first baby boomers. The oldest baby boomers are currently 46 (in 1992), and the youngest boomers are approaching 30 years old.

This large and important demographic group has been analyzed from many perspectives for marketing research. Simmons Market Research Bureau (1989) profiles this age group with the following information. The current 35-44 year olds comprise 20% of the adult population. Eighty-six percent graduated from high school, and 28% are college graduates. The vast majority (75%) are employed full-time and they are more likely to be professionals or managers than any other occupational group.

The great majority (73%) are married and 64% have children. Eighty-seven percent are white, 10% are black, and 3% are "other". The majority (60%) earn $30,000 or more (41% earn $40,000 or more, 24% earn $50,000 or more, and 16% earn

$60,000 or more). These figures reflect total household income rather than personal income.

Fifty percent belong to households of 3-4 people, and 75% own their own residence. Most residences are valued above $70,000 (p. 0014).

Additional demographic information tells us that the oldest baby boomers can expect to live another 33 years. These people are generally concerned about health issues and enjoy better health than older adults do today (Waldrop, 1991).

Baby boomers put off having children until a later age than the previous generation, and consequently most baby-boom households will contain children in the 1990s.

According to Waldrop the median family income for older boomers (aged 35-44) in 1989 was over $40,000. "As baby boomers age, they will accumulate wealth through property ownership and investment. In 1986, the net worth of householders under the age of 35 averaged only $40,000, according to the Federal Reserve Board's Survey of Consumer Finances. While the average net worth of householders aged 35 to 44 was over $100,000, those aged 45 to 54 averaged nearly $175,000. And householders aged 55 to 64 averaged over $200,00 in net worth (p. 26).

Waldrop maintains that the baby boomers' most powerful financial advantage is education, particularly so for women. These women are far more likely than their predecessors to have gone to college. Instead of the earnings peaking at ages

35-44, they will be able to command higher salaries at the older ages.

Today's peak income years are from 45 to 54. Currently there are 25.6 million people this age. When all of the baby boomers pass their 45th birthday, in 2010, that number will increase by 47 percent to 37.7 million.

Waldrop predicts that the baby boomers will overwhelm the corporate structure with qualified applicants for top jobs.

> Compared with previous generations, a larger share of baby boomers will never realize their career goals. Some will go into business for themselves, thereby increasing competition in many markets.
>
> Because many baby boomers delayed childbirth until their 30s, they will have dependent children in their households later in life than did previous generations. The high cost of education and housing may force adult children to live in their parents' homes longer in the 1990s than they did in the 1980s. Many adult children will have their own incomes, but both dependent and grown children will nibble away at baby boomers' time and money (p. 27).

Although considerable demographic information is known about the 35-44 year olds, very little is known about their music preference. Oldies music, which is usually defined as music of the '50s, '60s and '70s, has usually been studied from the marketing perspective and through radio research. There continues to be a market for oldies music through compact discs and a host of related products including jukeboxes (Barrier, 1989). Data from Simmons Research provides information concerning the radio music formats chosen for the

35-44 year olds; however, this does not provide us with a total picture of their music preferences in other situations.

According to Simmons data for radio formats, 16% choose adult contemporary, 15% listen to country music, 12% choose Christian rock, 7% listen to golden oldies, and another 7% choose album oriented rock. Simmons' index of 113 for 35-44 year olds indicates that people in that age bracket are 13% more likely than the general population to listen to the oldies radio music format (p. 0018).

A New York oldies station, WCBS-FM, has recently become the number one station in that market. Unlike the oldies stations that sprang up in recent years, WCBS has had the oldies format since the early 1970s and has collected audience data since 1973. An examination of the ages of their listeners shows that the people who were 35-44 in 1990 have always been that station's largest audience. Instead of keeping an audience of people in the same age range, the age of their listeners has increased along with the passing years (Stipp, 1990).

Aside from media research audience figures, the only quantitative researchers who have looked at the issue of music preferences based on age are Holbrook and Schindler (1989). They theorized that the music that is popular during the time that the individual reaches adolescence or "comes of age" is the music that the individual will prefer over other styles of popular music. This preference will prevail over the course of

a lifetime. New York Times writer, Jon Pareles (1989, p.28), advanced a similar idea when he asked, "Is there some moment in our biological program when popular music means the most, when we bond to 'our song', 'Chances Are', 'I Second That Emotion', 'Fire and Rain' or 'Hand in Glove' the way baby birds bond to the nearest moving object?"

Holbrook and Schindler have continued to examine nostalgia, and they currently have two studies in progress researching an age preference factor. One study examines the influence of age on fashion styles and the second study examines the influence of age upon affective responses toward movie actors and actresses (1991). Thus far, they are the only researchers to test the influence of age on music preference and nostalgia.

Qualitative researcher James Lull describes music as a force that appeals to the emotional character of many adolescents.

> ...active participation with a medium increases its potential as an agent of socialization and there may be no more dramatic example of this than the actions of youth as they employ and enjoy popular music. The heavy beat, sexual lyrics, and aggressive tone of much popular music resonates with the emotional character of many adolescents, giving them abundant popular culture material with which to identify and a resource to exploit for personal and interpersonal objectives. Generally, young people use music to resist authority at all levels, assert their personalities, develop peer relationships and romantic entanglements, and learn about things that their parents and the schools aren't telling them. A fundamental adolescent use of music is the 'need' to declare independence from parents (Hebdige, 1979). This is often done by the adolescent in his or her own private way, but sometimes adolescents construct social bonds in the form of music-based subcultures that intensify the

conflict (Lull, 1992, p. 27).

Sociologist George H. Lewis explains music preferences on the basis that "we pretty much listen to, and enjoy, the same music listened to by other people we like or identify with" (Lull, 1989, p. 137).

Others who have studied nostalgia have concluded that "most people, as they approach middle age, sense that their lives have settled into patterns that may not change significantly for many years to come. They look back longingly at a time when youth seemed endless and opportunities boundless. We are now at a peak in the nostalgia cycle because so many people are reaching an age when nostalgia comes most naturally...The baby boomers, it's clear, share particularly strong, fond memories of the popular music of their youth" (Barrier, 1989, p. 20).

Music's Association with Memories

There is ample evidence that teenagers of yesterday and today place a high value on music. In particular, music that is listened to over a period of time can become associated with important and meaningful events in a person's life. The nineteenth-century philosopher Charles Pierce theorized that music can represent emotion through a type of sign or "index." An index "represents its referent by having been associated with it in the past, as lightning and thunder with a storm"

(Dowling and Harwood, 1986, p. 204). Dowling and Harwood suggest that music can become associated with previous emotion-laden experiences and that "indexical representation involves the direct association of a musical event with some extramusical object come to be associated with the music" (1986, p. 205). This use of music is analogous to the bell in Pavlov's classical conditioning model so that upon hearing familiar music associated with past memories, the music is capable of evoking the emotional response associated with past events.

Based on the writings of Dowling and Harwood, MacInnis and Park (1991) coined the term "indexicality" which they define as the extent to which music arouses emotion-laden memories. MacInnis and Park studied the effect of indexicality (and other factors) upon consumer's processing of advertising messages for products in both high and low involvement situations.

This research is important because it helps to unravel the role of indexicality in music used in advertising and how it relates to other factors, such as how well the music "fits" the product. Music which is high in indexicality may have a different effect upon consumers than other music that is liked but not particularly meaningful in evoking memories. Music high in indexicality could be more effective for advertising purposes because of the added emotional value, but it could also be hypothesized that indexically high music may be too

distracting to consumers so that they miss the advertising message.

Another interesting issue is that with the popularity of oldies music particularly in the last 5 years, many people who had fond memories of the music may also have new memories associated with the music. When certain songs from the past, e.g. "Unchained Melody" from the movie Ghost attain new levels of popularity, many people may enjoy the music for its current association with events rather than events of the past.

One marketer concluded that for many people nostalgia is not really at work when they buy oldies music. "If you think about America in the '50s and '60s, a lot of kids were growing up then who maybe heard rock 'n' roll a little bit, and maybe even liked it, but were living in households that were very repressive, and therefore they really couldn't celebrate the teen-age energy and all this music until much later in life. I can't call that nostalgic; it's really a postponement of the whole experience" (Barrier, 1989, p. 24).

Theories of Cyclical Behavior

Arthur Schlesinger Sr. observed a cyclic trend in politics--a swing from conservatism to liberalism followed by a return to conservatism. One full revolution requires approximately 30 years.

Arthur Schlesinger Jr. has continued the work of his

father and hypothesizes that the approximate 30 years of a cycle corresponds to a "generation." He acknowledges that births within the population occur continuously, which makes divisions according to generations rather arbitrary. Generations overlap and intertwine, yet epochal historical events establish boundaries between generations.

It is generally accepted that people experience a "coming of age" during the teen-age years. This applies to a political attitude, but it also applies to the total transition from childhood to adulthood. This is a time when most young people start dating, learn to drive, and generally become more independent of their parents. They reach an age at which they can vote, and they generally are exposed to situations that require adult judgment. Issues concerning sexual behavior and exposure to alcohol typically surface during these years. During these years they set goals for their future and typically prepare themselves for higher education, employment, marriage, and starting a family of their own.

Applying Schlesinger's prediction of a 30 year cycle, the following years (approximately 15) are spent working hard toward those goals. People in this age group (roughly 15-30 years old) work hard but are considered too young to hold positions of authority and leadership at work or within social organizations or groups. Those who do not work outside the home, e.g., female homemakers with young children, are also generally considered to be still "climbing the ladder" in the

activities they participate in. In their 20s they are still too inexperienced to hold positions of high authority in non-work situations such as social activities, property owner's associations, church organizations, etc. People who are employed are spending these years proving themselves to the people in authority, usually in the hopes that as positions become available they will be able to move up.

People who are in the next phase of the cycle, those who have achieved authority, usually maintain that position for a similar (15) number of years as the previous cycle. These people are typically the 30-45 year olds--the baby boomers.

After experiencing a period of time in positions of authority, new people advance into those positions--sometimes against the wishes of those in power, but in other cases with the blessing of those in power because they have become tired of the responsibility. They are often ready to pursue other interests such as spending more time in leisure activities and traveling, or spending more time with their family.

These factors affect preference for music in that the new generation rising to power during the first 15 years (the 15-30 year olds) will be inclined to leave the music and other parts of their past behind. However, after these individuals have risen to power and are nearer to being succeeded by the next generation, they may return to the music and styles associated with their youth. The music they cherished during their own coming of age may take on new significance again. If

preference for music follows a trend of a cyclical nature, it offers one theory to account for the current fascination for nostalgia music.

The leading twentieth-century theorist of generations, Ortega y Gasset, viewed each generation as "a new integration of the social body" and "the pivot responsible for the movements of historical evolution (Schlesinger, 1986, p. 30)."

It can be argued that members of the same generation often hold different views. Ortega denied that this objection invalidates the concept and holds that "...great as their differences may be, their mutual resemblances are still greater." "Members of the same generation, in Karl Mannheim's words, occupy 'a common location in the historical dimension of the social process' (Schlesinger, 1986, p. 30)."

When Schlesinger raised the question, "how long is a generation?" He answered by saying:

> For Ortega and Mannheim, a generation's political life lasts about thirty years. Each generation spends its first fifteen years after coming of political age in challenging the generation already entrenched in power. Then the new generation comes to power itself for another fifteen years, after which its policies pall and the generation coming up behind claims the succession. The Ortega-Mannheim fifteen-year oscillations roughly match Henry Adams's twelve years in the early republic (when life expectancy was shorter) and my father's sixteen and a half years.
>
> Ortega and Mannheim could have strengthened the analysis by noting the element of recurrence in the generational succession. For people tend to be shaped throughout their lives by the events and ideals dominating the time when they arrived at political consciousness. There is a feedback from the generation in power to the generation coming of political age, while in between an antagonistic generation clamors for change. Each new generation, when

> it attains power, tends to repudiate the work of the generation it has displaced and to reenact the ideals of its own formative days thirty years before.
>
> Cycles are not immutable but are fluctuations, rhythms, in the short-run politics of a single country. They may foreshadow but do not control the shape of things to come. Because the cycle is not a pendulum swinging between fixed points but a spiral, it admits novelties and therefore escapes determinism (and confounds prophecy). And the historical cycle is always relative to the historian (Schlesinger, 1949, pp. 30-31).

The work of Schlesinger is widely cited. A recent issue of Fortune Magazine dealing with a change in mental attitude among baby boomers from the "me" orientation to the "we" orientation quoted Schlesinger as follows. "There has been a kind of cyclical rhythm moving from the belief that having everyone make a fast buck for himself was the best way to save the nation to the notion that public service was the best way" (Henkoff, 1989, p. 43).

The Fortune article reveals that "American society, in the view of historian Arthur Schlesinger Jr., oscillates in 30-year cycles between periods where private pursuits and self-interest predominate (the Roaring Twenties, the Eisenhower Years, the Money Society of the 1980s) and periods where activism and common purpose prevail (the Progressive Era at the beginning of the century, the New Deal, the New Frontier of the early 1960s.)...The society avidly pursues personal wealth until, with our oft-chronicled propensity for excess, we burn ourselves out. Then the cycle turns, and we pursue commonwealth" (pp. 42-43).

Economic Theories that Account for Preference

History gives us good insight into the demographic and economic factors that influenced the rise of the rock and roll music of the '50s. There was an increasing number of teenagers in the '50s who had a great deal of leisure time; the record industry had resolved "the battle of the speeds" between CBS's 33 1/3 LPs and RCA's 45 rpm by deciding that all pop music would use the 45 rpm size record; and radio was quickly discovering the profitable teenage market. According to sociologist Simon Frith, the teenagers of the '50s had the need "to display a distinct teen culture--their own codes of dress and noise" (1992, p. 62).

With the advent of TV, radio needed to provide a new form of entertainment to keep the medium alive. This need brought forth the top 40 system in which 40 pieces of popular music about 2 to 3 minutes in length were rotated on a repeating basis.

Frith also reminds us that radio stations' first loyalty is to make a profit--not merely to serve the needs of adolescents. Many of the decisions as to which music to promote reflects a profit motive. This has been observed by broadcasters within the Knoxville market. No station offers an urban contemporary format because the advertisers are satisfied that they can reach that target market through the existing formats available. Thus, despite an interest among

certain listeners, the format is not available.

One Knoxville radio station, Z-93, has recently changed formats from heavy metal to young country. Sales people who work for the station say that they previously had difficulty selling enough ads, but with the young country format they find it much easier to sell ads. The format decision is clearly profit driven rather than based on the demand from listeners for certain types of music. Clearly, there is a connection between listeners and format--advertisers would not be willing to advertise on the young country format station if they didn't think anyone was listening--but the essential relationship is between radio station and advertiser rather than station and listeners.

It is important to be aware that the prevalence of "oldies" music on radio may be related to this profit motive rather than the actual demand for that format, although the sheer prevalence and availability of oldies music may help construct a preference for the music. The listeners of the "oldies" music represent a very coveted market. Because so many media buyers choose to place ads with radio stations that have an "oldies" format, this may draw many radio stations to that format somewhat independently of the size of the audience.

Lull provides insight into the interaction between radio programming and listenership.

> The radio term Top 40 persists even today (though now the format to which this originally referred is more often called "contemporary hits") and represents a manner of thinking that characterizes programmers' attitudes toward their listeners. The common belief is that people only want to hear their very favorite songs (the ones with the best hooks) over and over until they "burn out" on them. When this happens with a particular song it is replaced by another safe potential favorite in the station's music rotation. Rock, country-western, pop, urban, nostalgia and all other formats typically operate with rotation systems, and "tight playlists." In their attempts to create a consistent and predictable air sound, radio programmers have simultaneously indicated to their audiences that there is a limited, self-contained universe of popular music (Lull, 1992, p. 5).

Music in Classical Conditioning

One important body of research for the use of music in advertising involves examining whether music can form an association that influences a person's attitude toward a product. This would occur in a framework of the classical conditioning model.

In 1982 Gerald J. Gorn did a landmark study that included two experiments on the effects of music in advertising; however, the study is controversial because while other researchers have been able to obtain similar results for Gorn's second experiment, his first experiment has not been replicated (1982).

The purpose of his first experiment was to determine whether or not hearing liked or disliked music while being exposed to a product can directly affect product preferences. Gorn was interested in determining whether music directly

influences attitudes in the framework of a classical conditioning model. He hypothesized that subjects would prefer a product that had been presented to them (exposed) in favor of a product that had not been presented to them (unexposed) if the exposed product were paired with a positive unconditioned stimulus. In contrast, where the conditioned stimulus was paired with a negative unconditioned stimulus, subjects would choose the unexposed rather than exposed product.

Gorn performed several pilot studies to select "liked" and "disliked" music. The results led to the choice of a one-minute extract of the music from the movie Grease for the liked music (positive unconditioned stimulus) and one minute of classical music of India from Ravi Shankar as the disliked music (negative unconditioned stimulus).

Ball-point pens identical except for color were the conditioned stimuli. Rather than using two separate products, Gorn used two different colored versions for ball point pens to differentiate the products. The colors light blue and beige were chosen due to results of pilot studies that indicated that the two colors were neutral enough that subjects were equally likely to choose a blue pen as a beige pen.

Two hundred forty-four students were randomly assigned to one of four conditions: (1) liked music, blue pen: (2) liked music, beige pen: (3) disliked music, blue pen: (4) disliked music, beige pen. All subjects were told a cover story as the

purpose for the experiment and then shown a slide picture of the pen while hearing the background music. After the presentation subjects were told they could have a pen as a complimentary gift by choosing a blue pen from a box in a designated location in the room or a beige pen from an identical box also located in the room. Thus, the subjects had to leave their seats to select a pen.

The results of Gorn's study (p. 97) show that 79% of the subjects selected the pen that was the same color as the one presented in the slide in the liked music setting, while only 30% did so in the disliked music setting ($p<.001$).

Gorn interprets these results as support that an association between a product (conditioned stimulus) and another stimulus such as music (unconditioned stimulus) can affect product preferences as measured by product choice. This experiment has been cited in many studies as proof that consumer preferences can be classically conditioned.

Because Gorn's research has important implications, other researchers have tried to replicate these findings. In 1985 Allen and Madden conducted an approximate replication of Gorn's study but used humor rather than music as the unconditioned stimulus. When no conditioning effect was obtained, the authors speculated that music may have had some unique conditioning power that would account for Gorn's results.

A study by Bierley, McSweeney, and Vannieuwkerk was able

to demonstrate a preference for certain colored geometric figures when paired with liked music (the theme music from the movie Star Wars), but the effect was not as strong as that reported by Gorn even after multiple pairings (1985). The experimenters question how Gorn was able to obtain such significant effects with a single pairing.

It was not until 1989 that a research study tried to exactly replicate the first of Gorn's experiments. Kellaris and Cox reassessed Gorn's method and speculated that the results may have been due partially to demand artifacts. They designed three experiments that attempt to replicate Gorn's work with particular attention to the potential role that demand artifacts may have played.

In particular Kellaris and Cox questioned whether or not the cover story Gorn used (subjects were told that the study's purpose was to evaluate ad music) may have influenced their decisions. Kellaris and Cox also questioned the use of such an obtrusive procedure for choosing the different colored pens (asking the subjects to walk to a given location in the room depending on the color choice).

In their first experiment they essentially tried to replicate Gorn's study by exposing subjects to slides of a colored pen while listening to liked or disliked music and then giving the subjects the opportunity to select either the pen color in the slide or an alternate color. However, minor modifications were made.

The first modification was the manipulation of the liked or disliked music. The experimenters attempted to hold other music characteristics constant by choosing two recordings (a Mozart overture for the liked music and a selection by Milhaud for the disliked music) that were similar in instrumentation, tempo, and modality, but subjectively judged to differ in appeal.

A second modification involved pen color. Pretesting showed that two colors which did not differ significantly in appeal were yellow and white; thus, these were the two colors used in this experiment.

A third modification involved the subject's choice procedure for the pens. It was felt that Gorn's procedure may have introduced too many uncontrolled variables, and a less obtrusive procedure was used. Instead of having the subjects leave their seats, a box containing a mixture of the yellow and while pens was passed around. The subjects used these pens while filling out a questionnaire, and unknown to the subjects, the different colored pens wrote in different colored ink. Thus the experimenter was able to know what color pen the subjects chose from their questionnaires without having to observe or record their behavior at the time they selected the pens.

A final change involved varying the cover story. Half of the subjects received Gorn's cover story, and the other half was told simply that the study involved "assessing perceptions

of various products".

The results showed that 56% of the subjects in the liked music condition chose the advertised pen over the nonadvertised pen, and 59% of the subjects in the disliked condition chose the advertised pen over the non-advertised pen; thus, music appeal had no effect on choice behavior (Kellaris and Cox, 1989, p. 114).

An analysis of cover story treatments also failed to show any significance. Thus, contrary to expectations, the cover story treatment did not influence true hypothesis guessing. Kellaris and Cox interpret these findings to indicate that the change in procedure of having subjects select pens from a box passed around could explain the difference between their results and Gorn's. They point out that Allen and Madden used the same cover story as Gorn but used the choice method of pens mixed in a box. They, too, failed to get conditioning effects.

To further test this, Kellaris and Cox replicated Gorn's study including using Gorn's choice procedure of having boxes in two separate places in the room, for the purpose of settling the issue of the choice procedure once and for all. The only difference from Gorn's study and Kellaris and Cox's second study is the choice of music.

Kellaris and Cox expected that the music from Grease would not be as strongly liked in 1989 as in 1982 when it was more current. Pretesting confirmed this, and the Beatles'

rock-and-roll classic "Twist and Shout" was selected as the liked music. The Indian music was still disliked according to pretesting and was used again.

One hundred seventy-one subjects participated with half being placed in a reenactment of Gorn's experiment, the only difference being the liked music selection. The other half was given the same treatment conditions except that the choice procedure was the mixed box of pens rather than the two box locations.

Results again showed no significant relationship between music appeal and pen choice, even when popular music was used (56% of those hearing the liked music chose the advertised pen versus 54% of those hearing disliked music). The different choice procedures also failed to show any significant differences (p. 116).

After such exhaustive research attempting to show an influence upon choice behavior by manipulating a music variable, Kellaris and Cox were left to conclude that it is doubtful that product preferences can be conditioned reliably by a single exposure to appealing or unappealing music. They cautiously point out that it may occur under more ideal conditions, and that music may affect product preferences in other ways that are more indirect than classical conditioning.

It is important to note that in the traditional classical conditioning studies, an unconditioned stimulus is paired with the conditioned stimulus many times before one would expect to

see a response to the conditioned stimulus. If we analyze the influence that music may have upon the first presentation of the stimulus, this situation technically is outside the strict definition of classical conditioning. For example, in the typical advertising situation a person may hear the same ad many times. If music is paired with the product in the ad, then after several exposures to this pairing, it would be possible to see a classical conditioning effect. But upon the first presentation of the music and the product, any fondness for the music that carries over to an attitude toward the product must be explained on a basis other than classical conditioning.

The second part of Gorn's original experiment tested the hypothesis that people react differently to background music depending on whether they are in a decision-making mode or nondecision-making mode (1982). He predicted that information is more important than music in decision-making contexts and that the presence of music may be distracting or negative. In nondecision-making contexts, factors such as music that are assumed to arouse emotion are expected to be more important than information about the product.

One hundred twenty subjects were used in the two conditions (decision or nondecision) and were given the identical cover story. They were then presented with a slide of the blue pen while listening to the one minute selection of Grease. Afterward, they were presented with the slide of the

beige pen for one minute while being told some attributes of the pen. The only difference in the two conditions was that in the decision condition, subjects were initially told before viewing the slides of the two pens that they would be given the opportunity to choose a packet of pens, whereas subjects in the nondecision condition were not told that they would be able receive a packet of their choice of pens until after viewing the slides.

The results show that in the decision making condition, 71% chose the blue pen (advertised with information) while 29% chose the beige pen (advertised with music). In the nondecision condition 63% chose the beige pen (advertised with music) and 37% chose the blue pen (advertised with information). Results are significant at the .001 level. Thus, the results support Gorn's hypothesis that people respond more positively to music in nondecision making situations than when faced with a decision (p. 99).

The implications of this second experiment are important because it is assumed that most viewers are in a nondecision making mode while they are watching TV. Thus TV advertising may be more effective in reaching people through emotionally arousing background features such as music than through a presentation of straightforward information about the product. Although the first of Gorn's experiments has not been replicated, Gorn's second experiment investigating the effect of music in decision and nondecision situations has been

investigated with promising results. Park and Young designed an experiment to test how brand attitude formation is affected by the level of involvement of the consumer (high vs. low involvement), the type of involvement (affective vs. cognitive), and by the presence of background music (1986). The researchers hypothesize that "the effect of music on brand attitude and behavioral intention depends on whether subjects are cognitively involved, affectively involved, or uninvolved. Specifically, (a) subjects in the cognitive involvement group have more favorable brand attitudes and behavioral intentions toward the brand in the commercial with no music than toward the brand in the commercial with music and (b) subjects in the affective and low involvement conditions have less favorable brand attitudes and behavioral intentions toward the brand in the commercial with no music than toward the brand in the commercial with music (Park and Young, 1986, p. 14).

One hundred twenty women between the ages of 21 and 60 were assigned randomly to six experimental conditions, including low involvement, cognitive involvement, and affective involvement. Subjects then viewed an experimental shampoo commercial, with half of the subjects in each condition viewing a version with background music and the other half without music. Other than the presence of music (Blondie's "Tide is High"), the subjects were exposed to the same commercial. The different involvement situations were created by various types of information given to the subjects

prior to seeing the commercial.

The results support the experimenters' hypothesis and indicate that music served to distract subjects from brand attitude formation in the cognitive involvement condition, while for subjects in the low involvement condition, music facilitated the formation of brand attitude. These results also support Gorn's original hypothesis that the use of music plays a different role with decision and nondecision modes. Park and Young recommend that advertising should be designed in accordance with the anticipated level and type of consumer involvement.

A recent study by Blair and Shimp (1992) looked at the effect that disliked music had on brand preference. They conditioned a negative attitude toward a neutral piece of music and later associated it with a fictitious brand. Those subjects who were exposed to the unliked music did have a significantly more negative attitude toward the brand than the control group ($p<.01$). Subjects who heard the music associated with the brand but had never experienced the negative conditioning had a significantly more favorable attitude toward the brand than the subjects who experienced the negative conditioning ($p<.02$) (p. 40).

Two additional studies have looked at music used in commercials that have aired. A study by the Foote, Cone, and Belding agency has shown that the recall of "feeling" commercials, created through the use of music and visuals, was

equal to that obtained with "thinking" commercials, created through the rational presentation of product attributes (Honomichl, 1981). The day-after-recall (dar) copy tests were felt to be inaccurate in measuring recall for "feeling" ads, and new techniques were designed to better measure recall for this type of ad. Using the newer recall techniques shows that the "feeling" ads that rely on emotion and music are as effective as the "thinking" ads that take a more cognitive approach.

A 1990 study explored the recall effectiveness of three types of music currently being used in television commercials, including original music scored especially for the product (jingles), parody music, and the original versions of hit songs (Tom, 1990). Since originally scored music has been presented only in association with the advertised product whereas original hits and original versions of parody music have been presented in other contexts, it was hypothesized that originally scored music would be the most effective retrieval cue and hit songs to be the least effective retrieval cue, with parody music somewhere in between.

By replaying an audiotape of highly familiar commercials aired during prime time on network TV during 1987 (the product's name was deleted on the tape), it was found that 77.6% of the participants correctly identified the products advertised with music scored especially for the product, whereas 43.6% of the participants correctly identified

products paired with parody music, and only 23.6% correctly identified products advertised with original versions of hit songs (p. 50). The results supported the experimenter's hypothesis, and on face value would seem that original hits are far inferior to music specifically composed for an ad. However, the results may be misleading for several reasons. One is that while the "familiarity" of the music was controlled, nothing is reported concerning the length of time that the product has been advertised with that particular music. Some jingles are so successful, e.g., "The Heartbeat of America" for Chevrolet, that they are used for many years. Other music may not be part of the ad campaign for such a long period of time. Not knowing these details makes it difficult to weigh the findings from this study. Another aspect of this study is the focus upon recall. It is true that the recall for the name of the product was greater for original music (jingles) than for original hits, but the effectiveness of ads cannot be judged solely on recall. Advertisers have wrestled with the problem of recall, and studies such as Honomichl's help to clarify this issue.

Timeliness of Nostalgia Music

An interesting question concerns the length of time that must pass before music that was once popular can be brought

back successfully. Broadcasters observe an inverted U curve for popularity when music is first released. Liking of new music increases up to a point and then diminishes at some point when a burn out effect takes over (Rothenbuhler, 1987). A similar curve may be in effect that dictates when people are ready to hear music again. The cyclical pattern ascribed to the coming of age, which is followed first by a period of work directed toward a goal and then followed by a period of accomplishment before another shift occurs, may hold some predictive value for the length of time necessary to transpire before people want to hear the music of their past. If people experience music in a meaningful way when they come of age, but then they spend a period of time (roughly 15 years) working hard to get ahead, they may put aside that music. During the next 15 years they will have attained some of the goals they have set and they will be at a new crossroads in life. At that point in time, after the completion of a full cycle, they may be especially eager to re-experience the memories of their youth. The music that was once so important becomes something they find meaningful again.

The music of the '50s and '60s has always been available to listeners in search of nostalgia, but in the late '80s and '90s a growing number of radio stations changed their formats to play "oldies" along with some carefully selected newer music that is of a similar style as the older music (Stipp, 1990). Perhaps there was a critical period necessary for large

numbers of people to seek out this music. If the cycle theory holds, the large group of baby boomers was ready to re-experience their youth.

It may be too ambitious to attempt to unravel all the factors involved in the liking of music, but a good starting point might be to determine whether, in fact, the music of adolescence maintains its status as the best liked music, or whether consumers like new music better than the older music. A third possibility is that they maintain their liking for the music of their adolescence but also like other music.

Holbrook and Schindler's Study

Holbrook and Schindler (1989) are the only researchers to study music preference as a function of age. Their reason for researching this topic stemmed from the observation that wives and friends all liked the music of their teenage years. Though the age varied, the preference for music that was popular during their coming of age was clearly in effect. Holbrook and Schindler commented that they knew of no systematic empirical work that investigated the proposition that consumers tend to fixate on whatever popular music that they enjoyed as teenagers. They assumed that this music preference is in effect at all times rather than following a cyclical pattern. Thus, their hypothesis was based on observations within their circle of friends moreso than anchored in theory.

The method of their study included the selection of 28 top hits from the years 1932 to 1986 as stimuli. One selection of music was used for each two year interval. The music was selected from Billboard's top 10 hits for each year.

The respondents heard each of the 28 excerpts for 30 seconds before providing preference ratings. The selections were ordered randomly and later were counterbalanced by using a forward and reverse order. This was done to control for biases due to fatigue or to other artifacts associated with position in the sequence of exposures.

Their sample of 108 respondents included members of a rugby club, a women's church group, and a parent-teacher association. Respondents participated in groups that ranged in size from 14 to 61.

The respondents ranged in age from 16 to 86 years old. Forty-three percent were under the age of 50 and 57% were over the age of 50. The number of men and women was not specified.

Immediately after hearing each selection the respondents rated the music on a 10 point scale with a score of 1 indicating that "I dislike it a lot" and a score of 10 indicating that "I like it a lot."

Holbrook and Schindler acknowledge that some of the respondents may prefer other types of music more than popular music. There may be those who prefer jazz or classical music. But the researchers indicate that even though other music genres may be favored, it is still expected that within the

popular music genre respondents will favor the music that was popular during their coming of age than either older or more recent popular music.

To investigate this prediction the researchers used the age of the respondent and the year of each hit to create an interactive measure for each observation. They refer to this as the song-specific age of the respondent at the time when that particular piece of music became a hit.

For example, the respondent who was 16 in 1987 when the research was done would not have been born when "Smoke Rings" was popular in 1932. This respondent was born in 1971--39 years after "Smoke Rings" was popular. He received an age specific score of -39 for that song. Similarly, the oldest respondent was 86 at the time of the research, but he was 85 when "Sledgehammer" became a hit in 1986. Thus he received an age specific score of +85 for that song. The youngest person, the respondent who received a -39 for "Smoke Rings," would receive a +15 for "Sledgehammer" because he was 15 in 1986 when it became popular.

This independent variable provided a range of 125 song specific ages to use (from -39 to +85). For each song-specific age level the researchers computed the mean preference score (the dependent variable). The means were plotted, and the predicted inverted U shaped relationship was seen. The musical preference score was low for the low age-specific scores and low again for the high age-specific scores, but they were high

in the middle ranges. The peak music preference scores occurred at age-specific score of 23.47 years old.

To accommodate the curvilinear relationship, regression was used with both song-specific age and song-specific age squared. The multiple regression analysis produced a strong and highly significant relationship of popular musical preference to song-specific age in general [$R=0.84$, $F(2,121)=139.53$, $p<0.0001$]. They found a significant contribution from song-specific age squared [$t(121)=-16.52$, $p<0.0001$], but not from song-specific age [$t(121)=-1.44$, $p=0.15$]. This supports the curvilinear or inverted U-shaped effect of age on music preferences (p. 122).

Holbrook and Schindler discuss the limitations of their research and recommend that for external validity the study should be replicated on additional samples of consumers but also on wider and more diverse selections of music. They also recommend that the possibility of similar effects should be investigated in other product categories such as fashion, cosmetics, decor, and art. They also recommend studying different cultures to see whether this effect is ethno-specific or universal. If this effect continues to be observed, they raise the question of why a critical period or age-related preference peak occurs in the development of tastes for popular music in particular or in consumer tastes in general.

Holbrook and Schindler offer several interpretations and

explanations for this effect. They consider both the possibility of biological (internal or endogenous) and social (external or exogenous) factors.

In the case of endogenous factors the researchers cite Lorenz' work on imprinting which describes the manner in which a baby bird or other young animal forms irreversibly strong and lasting attachments to some socially appropriate object such as its mother, during a biologically fixed critical period of early development (Lorenz, 1951). Some researchers suggest that "human children also become attached to their mothers or other people during a critical period in infancy" (Clarke-Stewart and Friedman, 1987, p. 15). "Natural language acquisition can occur only during the critical period that begins at age 2 and ends around age 14" (Spreen, Tupper, Risser, Tuokko, and Edgell, 1984, p.98).

Emde and Harmon (1984, pp. 60-61) caution that "there is no reason to suppose that imprinting mechanisms play any significant role in environmental effects on socioemotional development." Yet they conclude that "the general observation that there are sensitive periods in development during which there is an enhanced sensitivity to particular environmental stimuli remains valid."

Holbrook and Schindler suggest that the exogenous factors include peer pressure, group norms, media exposure, and purchases of recorded music. One likely determinant is the familiarity that occurs from frequent exposure, e.g., when

everyone in a college dorm constantly listens to the same set of shared recordings.

Holbrook and Schindler say "another possibility is that musical tastes may evolve flexibly from infancy through the childhood and teenage years (Stipp, 1988, p. 29) but may finally 'consolidate,' 'crystallize,' or 'coalesce' in early adulthood (e.g., pressure from the consensus of predominant peer-group norms might be more influential when consumers leave home for the first time)."

Holbrook and Schindler also suggest that consumers associate musical preferences with certain emotionally powerful rites of passage such as fraternity parties, school dances, and other social gatherings that guide their coming of age during the years of college and graduate school. "For other consumers, especially those who do not attend advanced educational institutions, such rites of maturation might simply correspond to the relatively carefree period of socializing that occurs prior to settling down to a marriage, a career, and a family" (Holbrook and Schindler, 1989, p. 123).

One difficulty with this line of reasoning is that many of the events associated with the rites of passage they describe come earlier for most people than the age of 23.47. If preference for music is related to the coming of age, then coming of age is much later than is generally accepted. An alternate explanation is that liking of music is unrelated to

the coming of age and that liking peaks later. A third and more likely explanation is that the liking of music and coming of age are related, but that the observed peak age of liking was due to spurious variables or problems in methodology.

Finally, Holbrook and Schindler suggest that musical preference might reflect some consumers' periods of peak involvement with various social causes, e.g., civil rights--or political parties, e.g., the Democratic primary--and current events, e.g., protesting the Vietnam war.

At a more general level Crosby, Gill, and Lee (1984) reviewed evidence that consumer values depend on "cohort-historical influences" such as the economic conditions, historical events, and other life experiences that occur during the period of primary socialization, and therefore tend to vary with age.

"Our study confirms previous findings that indeed there are age group differences in values. Recognizing that age is a surrogate predictor and that it accounts for a unique portion of the variance in values over and above life status, we conclude that cohort-historical, maturational, or some other age-related influence on values is present" (Crosby, Gill, and Lee, 1984, pp. 209, 214).

Holbrook and Schindler suggest that exploration of a critical period in the development of consumer preferences should enhance a basic understanding of critical periods in general as well as giving marketers and advertisers a better

ability to use demographic variables to predict key aspects of consumer behavior.

Evaluation of Holbrook and Schindler's Research

Holbrook and Schindler pioneered an area of research that has not been investigated, yet is of interest to several disciplines within social science (psychology, sociology, cultural anthropology, and communications) and within business (marketing and advertising).

A new study is proposed in order to continue researching this area but with certain modifications.

Holbrook and Schindler used a time span of music that covered 54 years. The music selections from 1932 on up to the '50s were of a very different style than the music from the '50s to the present. Music from 1955 to 1991 will be used in the current study to keep the music within the natural boundary that began with rock and roll in the '50s and that continues today. Rather than using one selection for a two year period, two selections will be used for each year--thereby providing a better basis for evaluating the music for the given years. Each selection will play for a 5 to 15 second "hook"--a representative sample of the song--instead of the 30 seconds previously used, since radio research follows the short time span of the 5 to 15 second hook (Wimmer and Dominick, 1991, p. 302; Sherman, 1987, p. 321).

A total of 76 selections of music will be used which is considerably more than the 28 selections used by Holbrook and Schindler. The larger number of selections can easily be justified since radio research typically tests between 200 and 400 hooks in one 60-90 minute session. This research has found that fatigue becomes evident after 400 songs (Wimmer and Dominick, p. 303). The use of the 76 selections of music will only require about 30 minutes of the respondent's time.

Respondents for this research will also include members of local organizations and college students who will be tested in groups, as did Holbrook and Schindler. These respondents will only include people 20-50 years old rather than the 16-86 year age span previously used. Of primary interest are the baby boomers (the 30-45 year olds), but the inclusion of people younger and older will allow for comparisons. If a preference for music popular during the coming of age period is demonstrated not only for baby boomers but also for younger people and older people, it strengthens the theory that people prefer the music popular during their coming of age. On the other hand, any differences between age groups will require alternate explanations to account for this finding. The cut-off age of 50 was adopted because people older than 50 would not have the opportunity to rate music from their teen-age years without extending the selection of music to cover earlier years. Theoretically, it is important that everyone in the sample be provided with the opportunity to hear music

popular during their coming of age. This was not possible in Holbrook and Schindler's study because the age range was too great for the span of years for the music.

In order to provide music that would have been popular during the coming of age for a person 86 years old in 1992, music from around 1920 would be needed. By extending the years of music to be included, the number of selections per year would have to be fewer in order to avoid fatigue for the respondents. It was felt that it is more important to have an adequate representation of music over a shorter span of years than to extend the number of years and sacrifice the number of selections per year.

Each respondent will rate each piece of music after each selection, but in addition to rating the music on a scale that measures liking, they will rate the music on the basis of familiarity, and on the basis of positive and negative memories associated with the music. Finally, the respondents will answer an open ended question asking them to describe the emotion they feel when music they like is used in a commercial.

Holbrook and Schindler's use of age-specific scores is acceptable and will be utilized again. Regression analysis will again be the statistical tool used to analyze the data. Analysis of the group as a whole is the main objective, but whenever possible subgroup analysis will be performed.

If the assumption is correct that people form preferences for music that was popular during the person's coming of age, we expect to see an earlier age than Schindler and Holbrook found--probably in the teenage years. The 23.47 year age that they observed is older than the age typically expected for the coming of age.

If the age effect is repeated in this study, but it occurs at an earlier age than Holbrook and Schindler reported, then the exogenous theories of socialization and cohort-historical influences would be supported over the endogenous theories of imprinting.

CHAPTER III

METHOD

Four hypotheses will be tested in this study, and the issue of the emotional response to the commercialization of music will be investigated.

Hypotheses

1. That people respond to music with greater preference (liking) for music from their teen-age years than the music from other years. Recalling popular music should produce liking scores that increase through childhood, reach a peak during the teen-age years, and decline during adulthood.

2. That people have the greatest familiarity for the music popular during their teen-age years than the music from other years. Recalling popular music should produce familiarity scores that also increase through childhood, peak during the teen-age years and decline during adulthood.

3. That people have stronger memories (both positive and negative) of music from their teen-age years. Recalling popular music should produce fewer memories of music popular during childhood and adulthood than the music of the teen-age years.

4. That the global response to music (a combination of liking, familiarity, and memories) will be greatest for music

popular during the teen-age years. The global score, too, is expected to increase during childhood, peak during the teen-age years and decline during adulthood.

Objectives

Testing these hypotheses will reveal whether trends or patterns exist in preference for music based on the age of the individual. To what extent nostalgia, memories or familiarity play a role will be examined. Furthermore, the issue of people's reaction to hearing liked music in advertising will be explored. As a result of this research advertisers will have a clearer concept of when to use "oldies" music for targeting consumers in the 35-44 year age group. They will know if this music is actually better liked than current music, and to what extent the older music triggers memories of the past. The response to oldies music among younger people is also important. The younger people experience this music not as nostalgia but as new music, and to what extent they like this music is important for advertisers to know.

Advertisers will know how extensively liking is associated with familiarity and memories, and they will gain some insight into whether people readily accept the commercialization of liked music.

Description of Subjects

Convenience sampling was used to obtain 101 respondents 20-50 years old including 72 women and 29 men. Groups of people from local organizations were sampled. These groups included a women's circle group from a local United Methodist church, a Sunday school class, a group of clinic volunteer workers at a middle school, a parents group who are employed at U.T., and U.T. students from religious studies, public health, music education, marketing, and American studies classes.

Materials Used

A cassette tape of 76 selections of music was produced and used in coordination with survey forms. The 76 pieces of music were two songs each for the years 1954-1991 from the top five hits of the year according to Billboard's Hits. The choice of which two of the top five songs to use was made solely on the basis of the availability of the music. After exhausting the researcher's collection of music, additional pieces were borrowed from friends, faculty members, and the public library until a complete list was obtained.

Efforts at producing a high quality tape using home recording equipment proved futile, and it became necessary to use the U.T. broadcasting department equipment available to

the New Rock 90 FM radio station and the All News 850 AM radio station. Broadcast equipment minimized the distortion from old records, and more importantly, allowed the music to fade up and under at the beginning and end of the selection. This allowed each song to flow well on the tape rather than the abrupt stop and start heard when using home equipment. The hook of each selection lasted approximately 10-15 seconds which was followed by about 5 seconds of silence to allow for respondents to rate the music. Each selection took about 15-20 total seconds. Most respondents began rating the music immediately upon hearing the first seconds of the selection and appeared to have ample time to rate each selection despite the brief time spent per selection.

To avoid a potential bias, the music was presented randomly instead of chronologically. A table of random digits was used to generate the order in which the songs were played. The complete list of music selected is presented in chronological order in Table 1, and the randomized list that shows the actual order of presentation in shown in Table 2.

Survey Instrument

A survey instrument was created to allow each respondent to rate each piece of music as it was presented. A seven point semantic differential scale was used to rate (1) whether or not the song was liked, (2) whether or not the music was

TABLE 1

THE MUSICAL SELECTIONS

YEAR	TITLE	PERFORMER
1954	HEY, THERE	ROSEMARY CLOONEY
1954	SH-BOOM	CREW CUTS
1955	UNCHAINED MELODY	L. BAXTER
1955	ROCK AROUND THE CLOCK	B. HALEY
1956	HEARTBREAK HOTEL	ELVIS PRESLEY
1956	THE WAYWARD WIND	GOGI GRANT
1957	LOVE LETTERS IN THE SAND	PAT BOONE
1957	JAILHOUSE ROCK	ELVIS PRESLEY
1958	AT THE HOP	DANNY & THE JUNIORS
1958	TEQUILA	THE CHAMPS
1959	SMOKE GETS IN YOUR EYES	THE PLATTERS
1959	VENUS	FRANKIE AVALON
1960	IT'S NOW OR NEVER	ELVIS PRESLEY
1960	THE TWIST	CHUBBY CHECKER
1961	TOSSIN' AND TURNIN'	BOBBY LEWIS
1961	TRAVELIN' MAN	RICKY NELSON
1962	I CAN'T STOP LOVING YOU	RAY CHARLES
1962	BIG GIRLS DON'T CRY	THE FOUR SEASONS
1963	HE'S SO FINE	CHIFFONS
1963	HEY PAULA	PAUL AND PAULA
1964	OH, PRETTY WOMAN	ROY ORBISON
1964	I GET AROUND	THE BEACH BOYS
1965	YOU'VE LOST THAT LOVIN'FEELIN'	RIGHTEOUS BROTHERS
1965	WOLLY BULLY	SAM THE SHAM & THE PHARAOHS
1966	I'M A BELIEVER	MONKEES
1966	GOOD VIBRATIONS	BEACH BOYS
1967	LIGHT MY FIRE	DOORS
1967	THE LETTER	THE BOX TOPS
1968	I HEARD IT THROUGH THE GRAPEVINE	MARVIN GAYE
1968	LOVE CHILD	DIANA ROSS
1969	HONKY TONK WOMEN	THE ROLLING STONES
1969	COME TOGETHER	THE BEATLES
1970	I'LL BE THERE	JACKSON FIVE
1970	BRIDGE OVER TROUBLED WATERS	SIMON AND GARFUNKEL
1971	IT'S TOO LATE	CAROLE KING
1971	JOY TO THE WORLD	THREE DOG NIGHT

TABLE 1

THE MUSICAL SELECTIONS

YEAR	TITLE	PERFORMER
1972	AMERICAN PIE	DON MCLEAN
1972	THE FIRST TIME EVER I SAW YOUR FACE	ROBERTA FLACK
1973	KEEP ON TRUCKIN' PART 1	EDDIE KENDRICKS
1973	CROCODILE ROCK	ELTON JOHN
1974	THE WAY WE WERE	BARBRA STREISAND
1974	BENNIE AND THE JETS	ELTON JOHN
1975	PHILADELPHIA FREEDOM	ELTON JOHN BAND
1975	LOVE WILL KEEP US TOGETHER	CAPTAIN & TENNILLE
1976	TONIGHT'S THE NIGHT	ROD STEWART
1976	A FIFTH OF BEETHOVEN	WALTER MURRY & THE BIG APPLE BAND
1977	LOVE THEME FROM "A STAR IS BORN"	BARBRA STREISAND
1977	YOU MAKE ME FEEL LIKE DANCING	LEO SAYER
1978	NIGHT FEVER	BEE GEES
1978	KISS YOU ALL OVER	EXILE
1979	MY SHARONA	THE KNACK
1979	DA YA THINK I'M SEXY	ROD STEWART
1980	ANOTHER ONE BITES THE DUST	QUEEN
1980	CALL ME	BLONDIE
1981	PHYSICAL	OLIVIA NEWTON-JOHN
1981	JESSIE'S GIRL	RICK SPRINGFIELD
1982	ABRACADABRA	STEVE MILLER BAND
1982	DON'T YOU WANT ME	HUMAN LEAGUE
1983	EVERY BREATH YOU TAKE	THE POLICE
1983	BILLIE JEAN	MICHAEL JACKSON
1984	WHEN DOVES CRY	PRINCE
1984	LIKE A VIRGIN	MADONNA
1985	CARELESS WHISPER	WHAM
1985	MONEY FOR NOTHING	DIRE STRAIGHTS
1986	WALK LIKE AN EGYPTIAN	BANGLES
1986	YOU GIVE LOVE A BAD NAME	BON JOVI
1987	FAITH	GEORGE MICHAEL
1987	I WANNA DANCE WITH SOMEBODY	WHITNEY HOUSTON
1988	NEED YOU TONIGHT	INXS
1988	GOT MY MIND SET ON YOU	GEORGE HARRISON

TABLE 1

THE MUSICAL SELECTIONS

YEAR	TITLE	PERFORMER
1989	MISS YOU MUCH	JANET JACKSON
1989	BLAME IT ON THE RAIN	MILLI VANILLI
1990	VISION OF LOVE	MARIAH CAREY
1990	HOLD ON	WILSON PHILLIPS
1991	EVERYTHING I DO, I DO IT FOR YOU	BRYAN ADAMS
1991	I WANNA SEX YOU UP	COLOR ME BADD

Source: Billboard's Hottest Hot 100 Hits, 1991.

TABLE 2

THE MUSICAL SELECTIONS IN ORDER OF PRESENTATION

	YEAR	TITLE
A.	1968	BORN TO BE WILD
B.	1991	LOSING MY RELIGION
C.	1956	TUTTI FRUTTI
1.	1957	JAILHOUSE ROCK
2.	1963	HEY PAULA
3.	1985	CARELESS WHISPER
4.	1984	LIKE A VIRGIN
5.	1974	BENNIE AND THE JETS
6.	1969	HONKY TONK WOMEN
7.	1972	ITS TOO LATE
8.	1971	JOY TO THE WORLD
9.	1968	I HEARD IT THROUGH THE GRAPEVINE
10.	1977	LOVE THEME FROM "A STAR IS BORN"
11.	1964	OH, PRETTY WOMEN
12.	1955	ROCK AROUND THE CLOCK
13.	1984	WHEN DOVES CRY
14.	1988	NEED YOU TONIGHT
15.	1967	THE LETTER
16.	1972	AMERICAN PIE
17.	1970	BRIDGE OVER TROUBLED WATERS
18.	1973	KEEP ON TRUCKIN'
19.	1985	MONEY FOR NOTHING
20.	1962	BIG GIRLS DON'T CRY
21.	1991	I WANNA SEX YOU UP
22.	1982	DON'T YOU WANT ME
23.	1976	TONIGHT'S THE NIGHT
24.	1965	WOLLY BULLY
25.	1956	THE WAYWARD WIND
26.	1991	EVERYTHING I DO, I DO IT FOR YOU
27.	1986	WALK LIKE AN EGYPTIAN
28.	1981	JESSIE'S GIRL
29.	1979	MY SHARONA
30.	1989	BLAME IT ON THE RAIN
31.	1967	LIGHT MY FIRE
32.	1983	EVERY BREATH YOU TAKE
33.	1987	I WANNA DANCE WITH SOMEBODY
34.	1976	A FIFTH OF BEETHOVEN
35.	1955	UNCHAINED MELODY
36.	1965	YOU'VE LOST THAT LOVIN' FEELIN'
37.	1969	COME TOGETHER
38.	1964	I GET AROUND
39.	1974	THE WAY WE WERE
40.	1988	GOT MY MIND SET ON YOU
41.	1989	MISS YOU MUCH
42.	1977	YOU MAKE ME FEEL LIKE DANCING
43.	1980	ANOTHER ONE BITES THE DUST
44.	1983	BILLIE JEAN
45.	1966	GOOD VIBRATIONS
46.	1990	HOLD ON
47.	1970	I'LL BE THERE
48.	1979	DA YA THINK I'M SEXY

TABLE 2

THE MUSICAL SELECTIONS IN ORDER OF PRESENTATION

	YEAR	TITLE
49.	1961	TRAVELIN' MAN
50.	1954	HEY, THERE
51.	1957	LOVE LETTERS IN THE SAND
52.	1986	YOU GIVE LOVE A BAD NAME
53.	1956	HEARTBREAK HOTEL
54.	1975	LOVE WILL KEEP US TOGETHER
55.	1958	TEQUILA
56.	1987	FAITH
57.	1972	THE FIRST TIME EVER I SAW YOUR FACE
58.	1963	HE'S SO FINE
59.	1978	NIGHT FEVER
60.	1958	AT THE HOP
61.	1960	THE TWIST
62.	1978	KISS YOU ALL OVER
63.	1973	CROCODILE ROCK
64.	1980	CALL ME
65.	1954	SH-BOOM
66.	1959	VENUS
67.	1961	TOSSIN' AND TURNIN'
68.	1981	PHYSICAL
69.	1968	LOVE CHILD
70.	1966	I'M A BELIEVER
71.	1982	ABRACADABRA
72.	1960	IT'S NOW OR NEVER
73.	1975	PHILADELPHIA FREEDOM
74.	1962	I CAN'T STOP LOVING YOU
75.	1990	VISION OF LOVE
76.	1959	SMOKE GETS IN YOUR EYES

Source: Billboard's Hottest Hot 100 Hits, 1991.

familiar, and (3) whether positive memories, negative memories, or no memories were triggered by the music.

These three items were repeated for the 76 music selections. The last page asked the respondent's sex and year of birth. Finally, the open ended question was asked regarding their emotional response to liked music being used in commercials. About 1/3 of an 8 1/2 x 11 inch page was allowed for respondents to write in responses to this question.

Three practice songs were played for the respondents prior to the actual survey, so that they could fully understand how to use the rating scale and ask questions of the researcher. These practice pieces were listed A, B, and C on a separate paper that preceded the other selections.
A cover sheet was included that satisfied the informed consent requirements and stressed the anonymity of participation in the study. A survey form is shown in its entirety in the appendix.

Pretest

The seven point rating scale with the three response items was pretested on family members and friends in order to determine whether the scale was workable with the music. Instructions were given concerning how to use the scales. Liking and familiarity were immediately clear to the pretest respondents. The third measure for memories required the

explanation that music that elicits no memories would be rated at the center of the scale.

Three practice selections of music were deliberately selected from different time periods so that one was recent (1991), one was from the distant past (1956), and the other was somewhere between those extremes (1968). This allowed for pieces of music of different degrees of familiarity. The recent selection probably had few if no memories, whereas the other two would most likely evoke some memories. This selection of practice songs was designed to give the respondents the opportunity to have the widest range of responses to the scale, so they would clearly understand what was asked of them during the actual presentation of music.

The selection of the 10-15 second hook followed by a few seconds of silence was tested out to see if the time allowed for rating the music was sufficient. The time allowed was clearly adequate. Often the respondents finished rating the music while the music was playing rather than wait for the silence that followed. Respondents were attentively waiting for the next selection before it was presented.

Questions were asked regarding whether the 76 pieces of music seemed too long or tiring. Respondents were enthusiastic toward the survey process, apparently enjoying most of the music, and they showed no evidence of fatigue.

Research Group 1

The initial group included six members of a Methodist women's meeting at the home of one of the members. After a business meeting and dinner, the researcher played the tape and administered the survey. The women sat around a dining room table and filled out the survey. Some discussion occurred during the survey, e.g., one woman commented, "that song was popular when my children were babies. I hardly ever listened to music during those years."

Research Group 2

The second group included 5 women who volunteer at a middle school clinic, and the survey was administered in the home of one of the members. Coffee and doughnuts were provided and after about 1/2 hour of socializing, the respondents completed the survey.

Research Group 3

The third group included 5 women and 4 men who are members of a Sunday school class from a local Methodist church. The survey was administered during their class time on Sunday morning. The respondents were enthusiastic toward the music and appeared to enjoy completing the survey. One member of the group was 64 years old, and although she completed the

survey, her data were not analyzed with that of the other respondents.

Research Group 4

Sixteen students enrolled in religious studies including 8 women and 8 men 20-50 years old were surveyed during class time. The class met from 6:00 p.m. to 9:30 p.m., and the researcher was permitted to administer the survey at 9:00 p.m. after the lecture. Three students of a class of 22 left without participating, and three more students only filled out part of the survey. Their incomplete surveys could not be scored and were discarded.

Research Group 5

Sixteen students enrolled in music education for elementary teaching including 14 women and 2 men 21-47 years old were surveyed during class time. The class met at 9:10 a.m. and typically ended at 10:30 a.m., but the instructor announced to the class that morning that they would be doing a music survey rather than having their usual class. All students participated happily knowing that after the music survey was finished the instructor would dismiss class.

Research Group 6

Thirty senior level management students (22-43 years old) including 18 women and 12 men were surveyed during class time (11:45 a.m. -1:15 p.m.). Participation in the survey gave the students extra credit for their coursework, and the students were generally very enthusiastic about the survey. They asked insightful questions regarding the use of the rating scale, (does familiarity mean knowing the name of the artist or the name of the song?), and they were eager to be debriefed and learn the results of the study.

Research Group 7

Parents of children enrolled in the Child Development Center agreed to participate in the survey. Four women 30-35 years old completed the survey as a lunchtime activity which preceeded their business meeting. The respondents appeared to enjoy completing the survey. Following the survey they held a brief business meeting and then adjourned.

Research Group 8

Six out of 30 graduate students enrolled in a public health course agreed to come 30 minutes early before their 5:00 p.m. class to complete the survey. The six students were

all women 24-30 years old. They, too, were enthusiastic toward the music and asked questions about the purpose of the research after completing the survey.

Research Group 9

Twelve seniors enrolled in American studies completed the survey during the last 30 minutes of their class which met from 6:00 p.m. to 9:30 p.m. Six men and six women aged 22-50 participated.

The nine research groups provided a total of 101 subjects ranging in age from 20-50 years old.

CHAPTER IV

RESULTS

Sample Size

One hundred one respondents participated in the study--72 females and 29 males. The larger number of females was a chance occurrence since only two small groups totaling 11 respondents had all women membership. The remaining 90 people were drawn from groups composed of both men and women. Table 3 shows the number of respondents grouped by age and sex.

TABLE 3

SAMPLE SIZES FOR GROUPS

	20-34	35-45	46-50	TOTAL
MALES	23	6	0	29
FEMALES	42	23	7	72
TOTAL	65	29	7	101

The larger number of women to men (72 to 29) and the larger number of younger to older respondents (65 to 36) was a result of the difficulty in obtaining respondents for the study. The collection of data occurred during the summer months when many clubs and singles groups, which would have been ideal sources of people 35-50 years old, held outdoor

recreational programs such as rafting trips, thereby making it impossible to gain access to the group to administer the survey. Several clubs that would have been accommodating didn't meet during the summer months. Also the researcher found that many groups plan their programs as much as one year in advance, which made it impossible to gain access to those groups. Many groups would have given the researcher up to ten minutes for a supplemental item on the agenda, still allowing the club to proceed with the planned program, but they were unable to give up the entire program time to the researcher.

College students proved to be the best source of respondents, once outside groups had exhaustively failed to turn up enough respondents. Every effort was made to use night classes and graduate classes to optimize the chance of getting older people. Despite these efforts the total sample still favored young females.

The original analysis was designed for the sample as a whole; however, additional analysis was performed to investigate differences between men and women, and differences between the baby boomers and other members. Six groups emerged which received separate analysis--the whole sample, baby boomers (35-45 year olds), the young group (20-34 year olds), all males, all females, and female baby boomers. Because there were only six male baby boomers and only seven people 46-50 years, all of whom were females, these groups were not analyzed separately.

Statistical Analysis

Statistical analysis was performed using SAS on the PC. Regression and correlation were used on the raw data which included a total of 7,676 responses (76 songs X 101 respondents) for each of the four variables. The variables included liking, familiarity, memories, and global (an overall representation of the other three variables calculated by adding the three scores together and dividing by 3).

Regression and correlation were also performed on the mean score data. A mean score was obtained for each song-specific age which ranged from -18 to +49 and totaled 68 responses. Holbrook and Schindler also used regression on raw scores and mean scores, but their study only included one dependent variable. Thus, they did not perform any correlations.

Tables 4-9 show a summary of the song-specific age (ssage), the number of responses obtained (freq) for that song-specific age, which in turn generated a mean liking score (mlike), a mean familiarity score (mfamil), a mean memories score (mmem), and a mean global score (mglob). Also appearing on Tables 4-9 are mean song-specific ages squared (mssage2) which were used in the regression analysis. Regression and correlation were performed on the mean scores for the four dependent variables as well as on the raw scores for those

TABLE 4

MEAN SCORES FOR ALL VARIABLES--WHOLE GROUP

OBS	SSAGE	FREQ	MLIKE	MFAMIL	MMEM	MGLOB	MSSAGE2
1	-18	2	3.50	3.00	4.00	3.50	324
2	-17	8	2.75	2.88	4.63	3.42	289
3	-16	50	3.22	2.44	4.06	3.24	256
4	-15	65	4.75	5.32	5.05	5.08	225
5	-14	72	4.17	4.39	4.83	4.50	196
6	-13	73	4.26	4.86	4.89	4.66	169
7	-12	84	4.37	5.36	4.95	4.94	144
8	-11	88	4.00	4.56	4.57	4.38	121
9	-10	92	4.37	5.33	4.99	4.89	100
10	-9	95	4.15	5.00	4.53	4.56	81
11	-8	97	4.20	5.24	4.59	4.67	64
12	-7	120	4.97	5.41	5.04	5.14	49
13	-6	83	5.02	5.65	5.04	5.26	36
14	-5	106	5.01	5.88	4.98	5.31	25
15	-4	106	4.99	6.23	5.09	5.44	16
16	-3	112	4.75	5.66	4.96	5.17	9
17	-2	116	5.03	6.04	5.03	5.37	4
18	-1	117	4.90	5.84	4.92	5.27	1
19	0	120	4.98	6.16	4.85	5.33	0
20	1	106	4.67	5.76	4.86	5.12	1
21	2	144	4.69	5.76	4.80	5.09	4
22	3	137	4.68	5.31	5.10	5.04	9
23	4	136	4.74	5.88	4.79	5.16	16
24	5	148	4.86	5.91	5.17	5.33	25
25	6	156	4.92	6.06	5.20	5.39	36
26	7	164	4.91	5.96	5.04	5.32	49
27	8	173	4.81	6.24	5.04	5.36	64
28	9	174	4.94	6.40	5.18	5.51	81
29	10	172	5.30	6.60	5.56	5.82	100
30	11	178	5.06	6.60	5.41	5.69	121
31	12	182	5.18	6.55	5.43	5.74	144
32	13	190	5.32	6.41	5.27	5.67	169
33	14	179	5.32	6.73	5.45	5.84	196
34	15	183	5.07	6.69	5.21	5.67	225
35	16	183	5.15	6.70	5.34	5.73	256
36	17	181	5.45	6.73	5.56	5.91	289
37	18	183	5.40	6.72	5.35	5.84	324
38	19	180	5.16	6.58	5.13	5.63	361
39	20	181	5.34	6.43	5.02	5.60	400
40	21	175	4.77	6.37	4.99	5.38	441
41	22	130	5.22	6.36	5.32	5.63	484
42	23	116	5.38	6.29	5.28	5.65	529
43	24	111	5.10	5.90	5.05	5.35	576
44	25	102	5.13	5.95	5.24	5.44	625
45	26	101	4.94	5.72	4.96	5.21	676
46	27	95	4.97	5.62	4.77	5.12	729
47	28	89	4.98	5.92	4.93	5.28	784
48	29	86	5.27	6.05	5.08	5.47	841
49	30	89	5.18	5.87	4.93	5.33	900
50	31	80	4.86	5.63	4.81	5.10	961
51	32	78	4.91	5.99	4.72	5.21	1024
52	33	76	4.79	5.25	4.74	4.93	1089
53	34	76	4.74	5.22	4.91	4.96	1156
54	35	70	4.50	5.53	4.57	4.87	1225
55	36	66	4.50	4.92	4.82	4.75	1296
56	37	64	4.19	5.13	4.61	4.64	1369
57	38	60	4.77	4.65	4.60	4.67	1444
58	39	58	4.66	5.33	4.78	4.92	1521
59	40	52	3.79	4.44	4.58	4.27	1600
60	41	48	4.48	4.44	4.63	4.51	1681
61	42	46	4.20	4.29	4.51	4.33	1764
62	43	36	3.64	3.72	4.33	3.90	1849

TABLE 4 (cont.)

OBS	SSAGE	FREQ	MLIKE	MFAMIL	MMEM	MGLOB	MSSAGE2
63	44	26	3.65	4.54	4.19	4.13	1936
64	45	18	4.33	4.33	4.78	4.48	2025
65	46	10	4.00	3.60	4.40	4.00	2116
66	47	8	4.75	3.75	4.75	4.42	2209
67	48	8	4.63	3.63	4.75	4.33	2304
68	49	6	3.33	4.50	4.00	3.94	2401

Key:OBS=Observation
SSAGE=Song Specific Age
FREQ=Frequency
MLIKE=Mean Liking
MFAMIL=Mean Familiarity
MMEM=Mean Memories
MGLOB=Mean Global
MSSAGE2=Mean Song Specific Age Squared

TABLE 5

MEAN SCORES FOR DEPENDENT VARIABLES--BABY BOOMERS

OBS	SSAGE	FREQ	MLIKE	MFAMIL	MMEM	MGLOB	MSSAGE2
1	-3	6	4.00	3.33	4.50	3.94	9
2	-2	10	5.60	6.80	5.50	5.97	4
3	-1	12	5.00	6.17	5.33	5.50	1
4	0	16	4.69	5.94	4.88	5.17	0
5	1	18	4.72	6.06	5.00	5.26	1
6	2	24	4.38	5.58	4.83	4.93	4
7	3	28	4.86	5.96	5.32	5.38	9
8	4	30	4.87	6.57	4.87	5.43	16
9	5	39	5.00	6.10	4.97	5.36	25
10	6	52	4.90	6.02	5.37	5.43	36
11	7	52	5.62	6.23	5.52	5.79	49
12	8	52	5.19	6.75	5.33	5.76	64
13	9	52	5.21	6.75	5.33	5.76	81
14	10	50	5.28	6.76	5.56	5.87	100
15	11	50	5.50	6.74	5.46	5.90	121
16	12	51	5.63	6.90	5.73	6.08	144
17	13	51	5.84	6.61	5.59	6.01	169
18	14	49	5.88	6.82	5.63	6.11	196
19	15	53	5.75	6.79	5.60	6.05	225
20	16	53	5.83	6.72	5.51	6.02	256
21	17	50	5.78	6.80	5.66	6.08	289
22	18	53	5.68	6.68	5.26	5.87	324
23	19	49	4.88	6.47	5.10	5.48	361
24	20	53	5.49	6.06	4.98	5.51	400
25	21	53	4.85	6.02	5.06	5.32	441
26	22	48	5.48	6.52	5.40	5.80	484
27	23	51	5.43	6.31	5.47	5.74	529
28	24	57	5.19	6.09	4.95	5.41	576
29	25	52	4.92	5.85	5.25	5.34	625
30	26	51	4.84	6.14	4.96	5.31	676
31	27	52	5.35	6.27	5.02	5.54	729
32	28	52	4.96	6.17	4.90	5.35	784
33	29	51	5.16	6.22	5.00	5.46	841
34	30	52	4.83	5.85	4.69	5.12	900
35	31	51	4.88	5.92	4.84	5.22	961
36	32	51	4.88	6.22	4.73	5.27	1024
37	33	51	4.80	5.20	4.67	4.89	1089
38	34	52	4.73	4.96	4.96	4.88	1156
39	35	46	4.41	5.72	4.48	4.87	1225
40	36	42	4.50	5.17	4.79	4.82	1296
41	37	40	4.65	5.43	4.70	4.93	1369
42	38	36	4.86	5.00	4.69	4.85	1444
43	39	34	4.59	5.38	4.85	4.94	1521
44	40	28	3.71	4.86	4.71	4.43	1600
45	41	23	4.09	4.74	4.52	4.45	1681
46	42	22	4.09	4.77	4.64	4.50	1764
47	43	12	3.00	4.17	4.50	3.89	1849

Key:OBS=Observation
SSAGE=Song Specific Age
FREQ=Frequency
MLIKE=Mean Liking
MFAMIL=Mean Familiarity
MMEM=Mean Memories
MGLOB=Mean Global
MSSAGE2=Mean Song Specific Age Squared

TABLE 6

MEAN SCORES FOR DEPENDENT VARIABLES--MALES

OBS	SSAGE	FREQ	MLIKE	MFAMIL	MMEM	MGLOB	MSSAGE2
1	-18	2	3.50	3.00	4.00	3.50	324
2	-17	4	4.00	3.75	5.25	4.33	289
3	-16	20	3.55	3.05	4.25	3.62	256
4	-15	30	4.07	4.57	4.87	4.50	225
5	-14	36	4.06	4.67	4.67	4.46	196
6	-13	33	4.45	5.06	5.06	4.86	169
7	-12	37	3.95	4.89	4.97	4.60	144
8	-11	40	3.65	4.38	4.30	4.11	121
9	-10	42	4.19	5.10	4.90	4.73	100
10	-9	45	3.62	4.51	4.22	4.12	81
11	-8	44	3.82	5.11	4.41	4.45	64
12	-7	55	4.53	5.02	4.87	4.81	49
13	-6	40	4.60	5.30	4.85	4.92	36
14	-5	48	5.08	5.81	4.98	5.29	25
15	-4	48	5.13	6.04	5.23	5.47	16
16	-3	50	4.80	5.62	4.92	5.11	9
17	-2	50	4.88	5.74	4.94	5.19	4
18	-1	49	5.04	5.92	4.61	5.19	1
19	0	50	5.08	5.90	4.82	5.27	0
20	1	43	4.40	5.53	4.60	4.84	1
21	2	53	4.17	5.58	4.57	4.77	4
22	3	52	4.48	5.10	4.90	4.83	9
23	4	51	4.20	5.16	4.63	4.66	16
24	5	52	4.40	5.29	5.02	4.90	25
25	6	55	4.60	5.64	4.89	5.04	36
26	7	58	4.09	5.53	4.57	4.73	49
27	8	62	4.10	5.58	4.71	4.80	64
28	9	63	4.65	5.90	4.83	5.13	81
29	10	58	5.03	6.28	5.19	5.50	100
30	11	62	4.92	6.27	5.18	5.46	121
31	12	61	4.64	6.15	5.10	5.30	144
32	13	66	4.76	5.89	4.89	5.18	169
33	14	61	4.90	6.46	5.11	5.49	196
34	15	63	4.70	6.52	5.00	5.41	225
35	16	62	5.11	6.55	5.31	5.66	256
36	17	61	4.95	6.61	5.13	5.56	289
37	18	62	5.08	6.53	4.94	5.52	324
38	19	61	4.74	6.62	5.08	5.48	361
39	20	60	4.77	6.17	4.82	5.25	400
40	21	58	4.14	6.28	4.55	4.99	441
41	22	41	5.20	6.44	5.07	5.57	484
42	23	31	5.16	6.42	4.81	5.46	529
43	24	26	4.38	6.12	4.88	5.13	576
44	25	23	4.91	5.04	4.78	4.91	625
45	26	25	4.76	5.68	4.64	5.03	676
46	27	22	4.82	5.59	4.45	4.95	729
47	28	20	4.80	5.65	4.85	5.10	784
48	29	17	4.82	5.65	4.82	5.10	841
49	30	18	5.06	5.94	4.56	5.19	900
50	31	13	4.54	6.31	4.62	5.15	961
51	32	13	4.92	6.15	4.62	5.23	1024
52	33	13	4.23	5.23	4.15	4.54	1089
53	34	14	4.29	4.79	4.29	4.45	1156
54	35	12	3.92	5.00	4.17	4.36	1225
55	36	12	3.92	3.92	4.33	4.06	1295
56	37	12	3.50	4.33	4.25	4.03	1369
57	38	12	4.33	4.50	4.17	4.33	1444
58	39	12	4.75	4.33	4.42	4.50	1521
59	40	12	3.42	3.67	4.42	3.83	1600
60	41	11	4.18	3.73	4.36	4.09	1681
61	42	12	4.00	3.58	4.08	3.89	1764
62	43	10	3.10	3.80	4.20	3.70	1849

TABLE 6 (cont.)

OBS	SSAGE	FREQ	MLIKE	MFAMIL	MMEM	MGLOB	MSSAGE2
63	44	6	4.17	5.83	4.33	4.78	1936
64	45	4	3.25	3.25	4.75	3.75	2025

Key:OBS=Observation
SSAGE=Song Specific Age
FREQ=Frequency
MLIKE=Mean Liking
MFAMIL=Mean Familiarity
MMEM=Mean Memories
MGLOB=Mean Global
MSSAGE2=Mean Song Specific Age Squared

TABLE 7

MEAN SCORES FOR DEPENDENT VARIABLES--FEMALES

OBS	SSAGE	FREQ	MLIKE	MFAMIL	MMEM	MGLOB	MSSAGE2
1	-17	6	2.67	2.83	4.17	3.22	289
2	-16	34	3.32	2.41	4.12	3.28	256
3	-15	41	5.39	5.85	5.07	5.44	225
4	-14	42	4.48	4.29	5.03	4.68	196
5	-13	47	4.19	4.67	4.72	4.51	169
6	-12	59	4.64	5.46	4.98	5.11	144
7	-11	64	4.41	4.75	4.80	4.65	121
8	-10	64	4.52	5.25	5.06	4.94	100
9	-9	64	4.69	5.47	4.97	5.04	81
10	-8	72	4.43	5.13	4.74	4.76	64
11	-7	81	5.25	5.77	5.20	5.40	49
12	-6	60	5.15	5.75	5.07	5.36	36
13	-5	76	4.92	5.92	5.00	5.31	25
14	-4	76	4.80	6.21	4.93	5.32	16
15	-3	80	4.64	5.60	4.95	5.12	9
16	-2	84	5.00	6.04	5.07	5.37	4
17	-1	86	4.88	5.81	5.07	5.33	1
18	0	87	4.91	6.31	4.89	5.37	0
19	1	81	4.80	5.94	4.95	5.26	1
20	2	109	5.07	5.94	5.05	5.37	4
21	3	104	4.80	5.55	5.15	5.18	9
22	4	101	5.02	6.27	4.87	5.42	16
23	5	112	5.04	6.27	5.10	5.50	25
24	6	122	5.05	6.30	5.32	5.56	36
25	7	127	5.23	6.15	5.25	5.56	49
26	8	131	5.15	6.50	5.24	5.63	64
27	9	129	5.02	6.60	5.32	5.65	81
28	10	134	5.38	6.73	5.60	5.91	100
29	11	134	5.00	6.74	5.44	5.73	121
30	12	140	5.35	6.73	5.47	5.87	144
31	13	144	5.56	6.63	5.43	5.87	169
32	14	138	5.43	6.81	5.54	5.94	196
33	15	140	5.21	6.76	5.25	5.76	225
34	16	141	5.13	6.77	5.30	5.73	256
35	17	139	5.69	6.77	5.72	6.06	289
36	18	140	5.46	6.75	5.49	5.92	324
37	19	138	5.31	6.58	5.12	5.67	361
38	20	141	5.43	6.51	5.10	5.68	400
39	21	135	5.16	6.47	5.22	5.62	441
40	22	105	5.21	6.41	5.37	5.66	484
41	23	98	5.49	6.29	5.37	5.71	529
42	24	99	5.29	5.94	5.16	5.46	576
43	25	91	5.04	6.22	5.26	5.51	625
44	26	83	4.78	5.84	4.95	5.19	676
45	27	79	5.08	5.71	4.85	5.21	729
46	28	75	5.16	6.08	4.89	5.38	784
47	29	74	5.32	6.16	5.12	5.54	841
48	30	73	5.16	5.88	5.03	5.36	900
49	31	68	4.97	5.51	4.88	5.12	961
50	32	66	4.89	6.00	4.74	5.21	1024
51	33	64	4.91	5.31	4.88	5.03	1089
52	34	64	4.81	5.28	5.02	5.04	1156
53	35	60	4.70	5.68	4.62	5.00	1225
54	36	56	4.61	5.21	4.89	4.90	1296
55	37	54	4.37	5.37	4.67	4.80	1369
56	38	50	4.84	4.78	4.68	4.77	1444
57	39	48	4.60	5.65	4.85	5.03	1521
58	40	42	3.90	4.79	4.67	4.45	1600
59	41	38	4.47	4.76	4.68	4.64	1681
60	42	36	4.23	4.69	4.63	4.51	1764
61	43	28	3.86	3.93	4.36	4.05	1849
62	44	20	3.50	4.15	4.15	3.93	1936

TABLE 7 (cont.)

OBS	SSAGE	FREQ	MLIKE	MFAMIL	MMEM	MGLOB	MSSAGE2
63	45	14	4.64	4.64	4.79	4.69	2025
64	46	10	4.00	3.60	4.40	4.00	2116
65	47	8	4.75	3.75	4.75	4.42	2209
66	48	8	4.63	3.63	4.75	4.33	2304
67	49	6	3.33	4.50	4.00	3.94	2401

Key:OBS=Observation
SSAGE=Song Specific Age
FREQ=Frequency
MLIKE=Mean Liking
MFAMIL=Mean Familiarity
MMEM=Mean Memories
MGLOB=Mean Global
MSSAGE2=Mean Song Specific Age Squared

TABLE 8

MEAN SCORES FOR DEPENDENT VARIABLES--FEMALE BOOMERS

OBS	SSAGE	FREQ	MLIKE	MFAMIL	MMEM	MGLOB	MSSAGE2
1	-3	4	4.00	3.75	4.75	4.17	9
2	-2	8	5.38	6.75	5.25	5.79	4
3	-1	10	5.00	6.10	5.60	5.57	1
4	0	14	4.36	5.86	4.79	5.00	0
5	1	16	4.44	5.94	4.75	5.04	1
6	2	22	4.32	5.55	4.91	4.92	4
7	3	26	4.69	5.88	5.19	5.26	9
8	4	28	4.82	6.57	4.82	5.40	16
9	5	36	4.97	6.08	4.89	5.31	25
10	6	44	4.89	6.11	5.41	5.47	36
11	7	44	5.66	6.23	5.55	5.81	49
12	8	44	5.14	6.82	5.34	5.77	64
13	9	44	5.11	6.84	5.32	5.76	81
14	10	44	5.23	6.75	5.59	5.86	100
15	11	44	5.52	6.93	5.50	5.98	121
16	12	44	5.66	6.93	5.80	6.13	144
17	13	44	5.93	6.84	5.68	6.15	169
18	14	42	6.05	6.98	5.86	6.29	196
19	15	44	5.91	6.93	5.64	6.16	225
20	16	45	5.76	6.76	5.51	6.01	256
21	17	43	5.81	6.77	5.72	6.10	289
22	18	45	5.80	6.80	5.36	5.99	324
23	19	42	4.90	6.43	5.14	5.49	361
24	20	45	5.69	6.38	5.09	5.72	400
25	21	45	5.00	6.18	5.22	5.47	441
26	22	41	5.51	6.68	5.51	5.90	484
27	23	44	5.39	6.45	5.50	5.78	529
28	24	48	5.19	6.10	4.94	5.41	576
29	25	44	5.00	6.30	5.41	5.57	625
30	26	44	4.86	6.34	4.98	5.39	676
31	27	44	5.41	6.36	5.05	5.61	729
32	28	44	4.91	6.41	4.91	5.41	784
33	29	44	5.25	6.45	5.09	5.60	841
34	30	44	4.91	6.00	4.80	5.23	900
35	31	44	5.05	5.93	4.91	5.30	961
36	32	44	5.05	6.32	4.84	5.40	1024
37	33	44	4.95	5.39	4.77	5.04	1089
38	34	44	4.84	5.23	5.11	5.06	1156
39	35	40	4.48	5.90	4.53	4.97	1225
40	36	36	4.69	5.56	4.89	5.05	1296
41	37	34	4.88	5.82	4.85	5.19	1369
42	38	30	5.00	5.13	4.83	4.99	1444
43	39	28	4.61	5.71	5.00	5.11	1521
44	40	22	4.00	5.45	4.86	4.77	1600
45	41	18	4.28	5.33	4.67	4.76	1681
46	42	16	4.44	5.75	4.88	5.02	1764
47	43	8	3.50	5.00	4.75	4.42	1849

Key:OBS=Observation
SSAGE=Song Specific Age
FREQ=Frequency
MLIKE=Mean Liking
MFAMIL=Mean Familiarity
MMEM=Mean Memories
MGLOB=Mean Global
MSSAGE2=Mean Song Specific Age Squared

TABLE 9

MEAN SCORES FOR DEPENDENT VARIABLES--YOUNG GROUP

OBS	SSAGE	FREQ	MLIKE	MFAMIL	MMEM	MGLOB	MSSAGE2
1	-18	2	3.50	3.00	4.00	3.50	324
2	-17	10	3.20	3.20	4.60	3.67	289
3	-16	54	3.41	2.65	4.17	3.41	256
4	-15	71	4.83	5.31	4.99	5.04	225
5	-14	78	4.28	4.46	4.86	4.57	196
6	-13	80	4.30	4.84	4.86	4.65	169
7	-12	96	4.38	5.24	4.98	4.91	144
8	-11	104	4.12	4.61	4.61	4.44	121
9	-10	106	4.39	5.19	5.00	4.86	100
10	-9	109	4.25	5.07	4.66	4.66	81
11	-8	116	4.20	5.12	4.61	4.64	64
12	-7	136	4.96	5.46	5.07	5.16	49
13	-6	100	4.93	5.57	4.98	5.18	36
14	-5	124	4.98	5.88	4.99	5.30	25
15	-4	124	4.93	6.15	5.05	5.37	16
16	-3	124	4.73	5.72	4.96	5.17	9
17	-2	124	4.90	5.85	4.98	5.25	4
18	-1	123	4.93	5.82	4.86	5.25	1
19	0	121	5.01	6.19	4.86	5.35	0
20	1	106	4.65	5.75	4.80	5.09	1
21	2	138	4.85	5.87	4.90	5.21	4
22	3	128	4.66	5.27	5.01	4.99	9
23	4	123	4.72	5.74	4.77	5.10	16
24	5	125	4.79	5.91	5.10	5.29	25
25	6	125	4.91	6.13	5.11	5.38	36
26	7	125	4.52	5.86	4.84	5.09	49
27	8	125	4.52	5.93	4.88	5.11	64
28	9	122	4.64	6.20	4.96	5.27	81
29	10	124	5.19	6.48	5.39	5.69	100
30	11	126	4.71	6.47	5.27	5.49	121
31	12	124	4.85	6.39	5.09	5.47	144
32	13	133	4.93	6.23	4.99	5.38	169
33	14	124	4.85	6.64	5.16	5.56	196
34	15	124	4.54	6.65	4.79	5.35	225
35	16	124	4.65	6.65	5.07	5.46	256
36	17	124	5.25	6.67	5.44	5.79	289
37	18	124	5.02	6.63	5.22	5.65	324
38	19	124	5.05	6.69	4.97	5.57	361
39	20	122	5.04	6.57	4.96	5.52	400
40	21	114	4.87	6.64	4.96	5.49	441
41	22	70	4.83	6.46	5.09	5.46	484
42	23	54	5.41	6.63	4.93	5.65	529
43	24	46	4.76	6.02	5.02	5.27	576
44	25	36	4.58	5.97	4.69	5.08	625
45	26	28	4.04	5.25	4.21	4.50	676
46	27	22	4.59	5.27	4.41	4.76	729
47	28	18	5.33	5.89	4.50	5.24	784
48	29	16	5.31	5.75	4.81	5.29	841
49	30	10	5.20	5.60	4.90	5.23	900
50	31	4	6.00	5.50	4.75	5.42	961
51	32	2	4.50	7.00	5.50	5.67	1024

Key:OBS=Observation
SSAGE=Song Specific Age
FREQ=Frequency
MLIKE=Mean Liking
MFAMIL=Mean Familiarity
MMEM=Mean Memories
MGLOB=Mean Global
MSSAGE2=Mean Song Specific Age Squared

squared were used as independent variables in the regression analysis.

By analyzing the number of responses for each song-specific age (freq and ssage columns) in Tables 4-9, it is clear that certain song-specific ages generated more responses than others. Those at the extremes had fewer responses than those in the middle range because only the oldest respondents could obtain a high ssage score, e.g. 49, and only the youngest respondents could obtain a low ssage score, e.g. -18. By definition a ssage score of 49 requires the respondent to be 49 years old at the time the song is popular; a younger person cannot obtain that ssage score. Similarly a ssage score of -18 indicates that the song was released 18 years before the respondent was born. Only the youngest respondents were able to receive that score.

The song-specific age of most respondents fell in the middle rather than at the extreme. Thus, because of the different ages of the respondents in relation to the release date of the music selections, certain song-specific ages had heavier representation. However, the years of greatest interest are the teens to early 20's, and those years received ample representation. Figures 1-6 are frequency distributions for each of the six groups based on the ssage and freq columns of Tables 4-9. These distributions visualize the relationship between ssage and frequency.

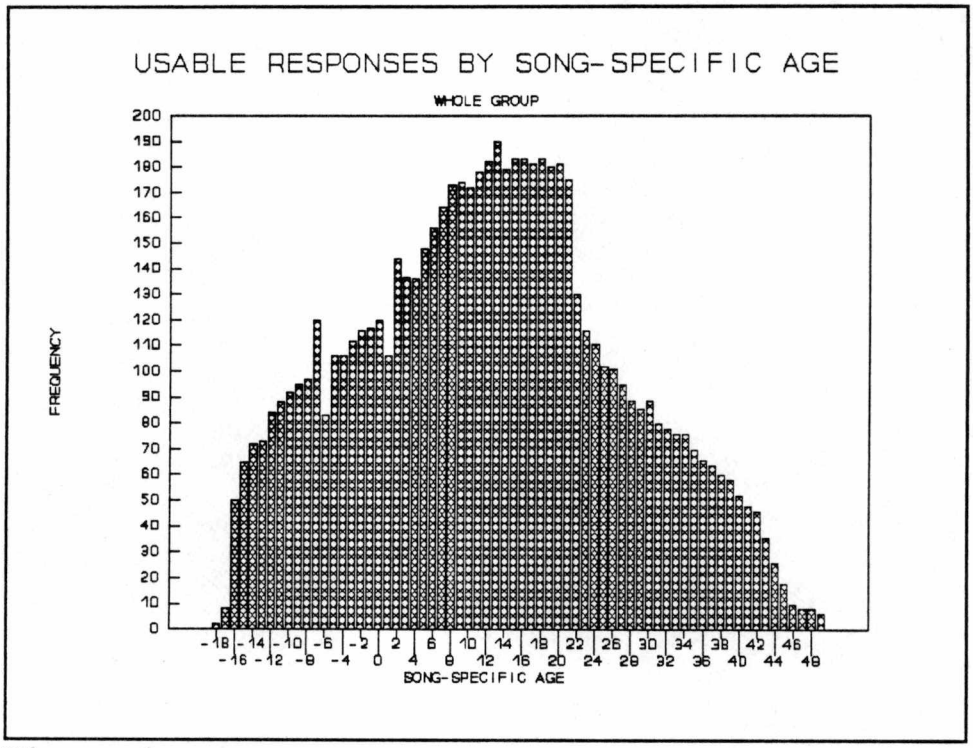


Figure 1

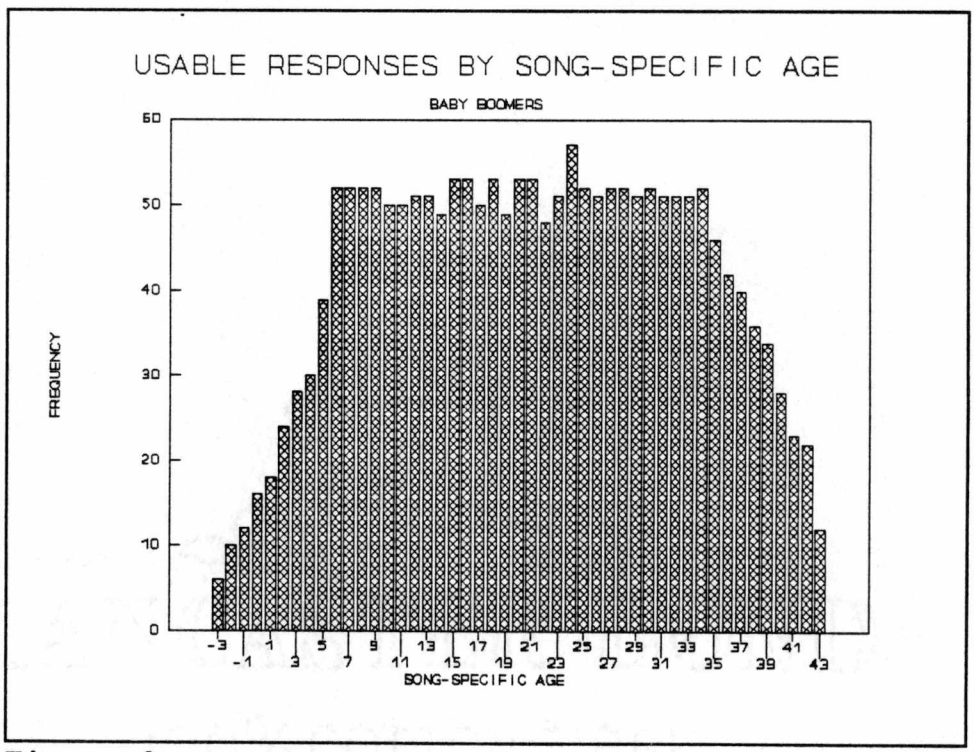


Figure 2

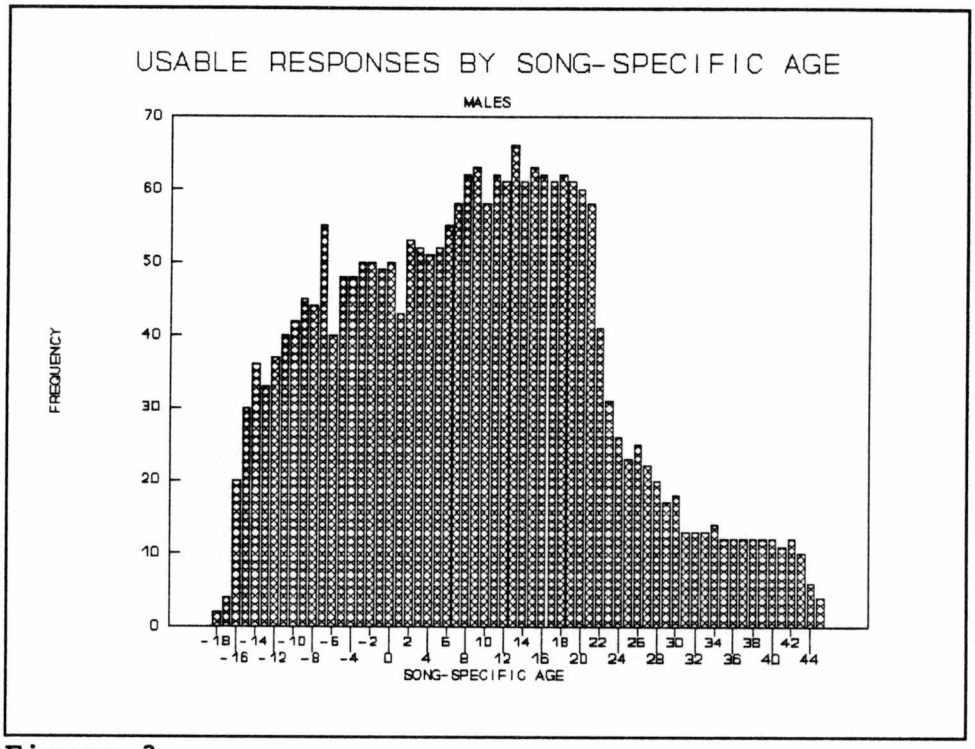


Figure 3

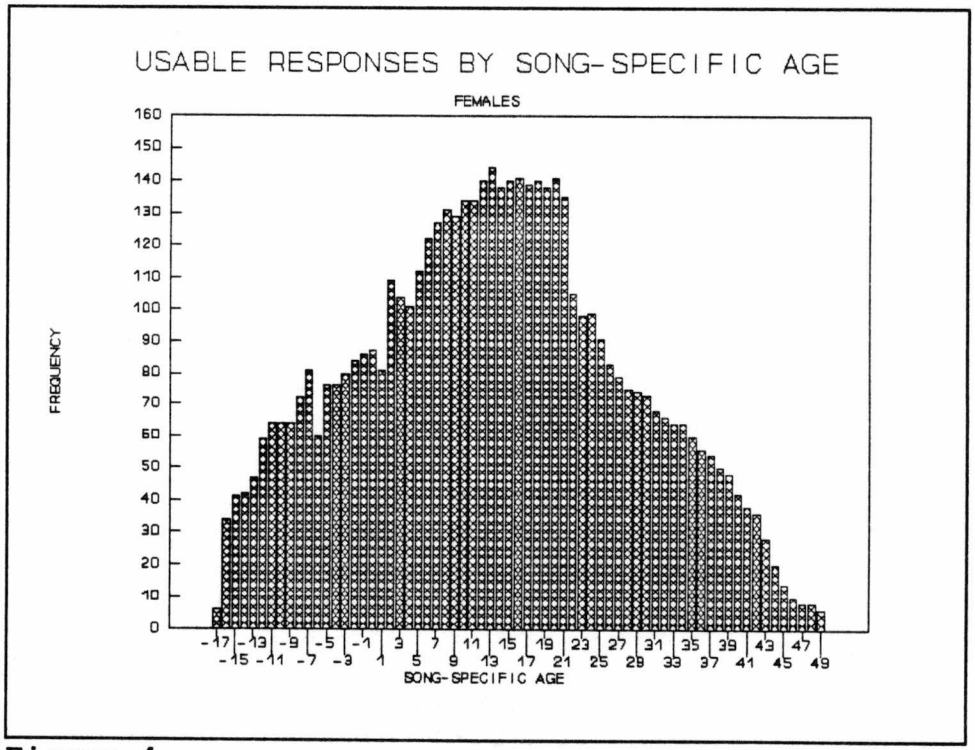


Figure 4

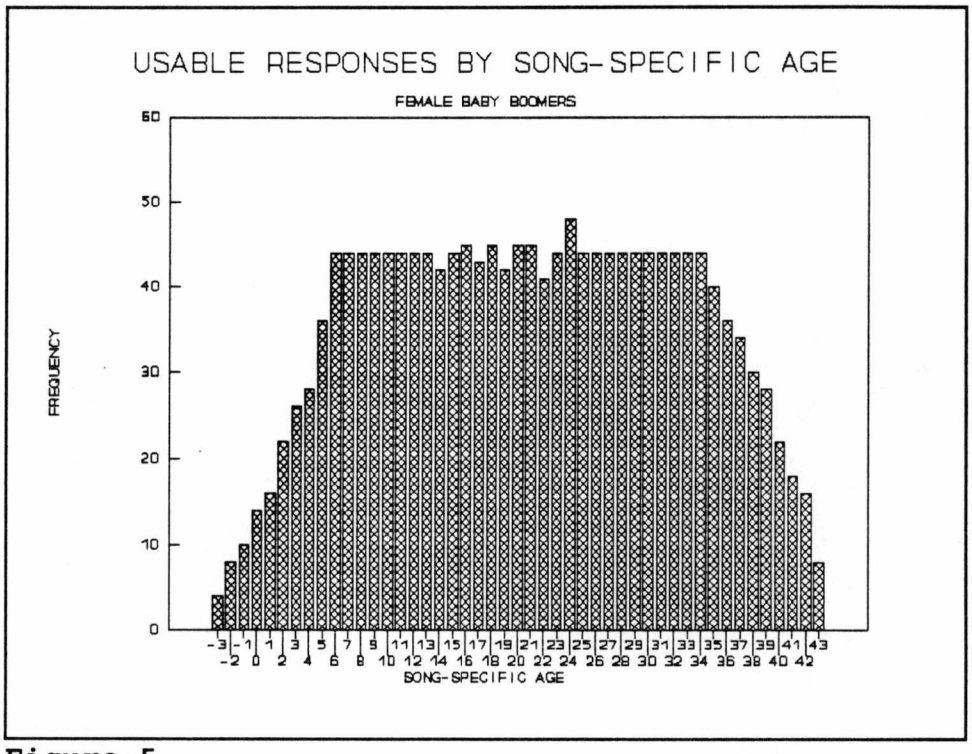


Figure 5

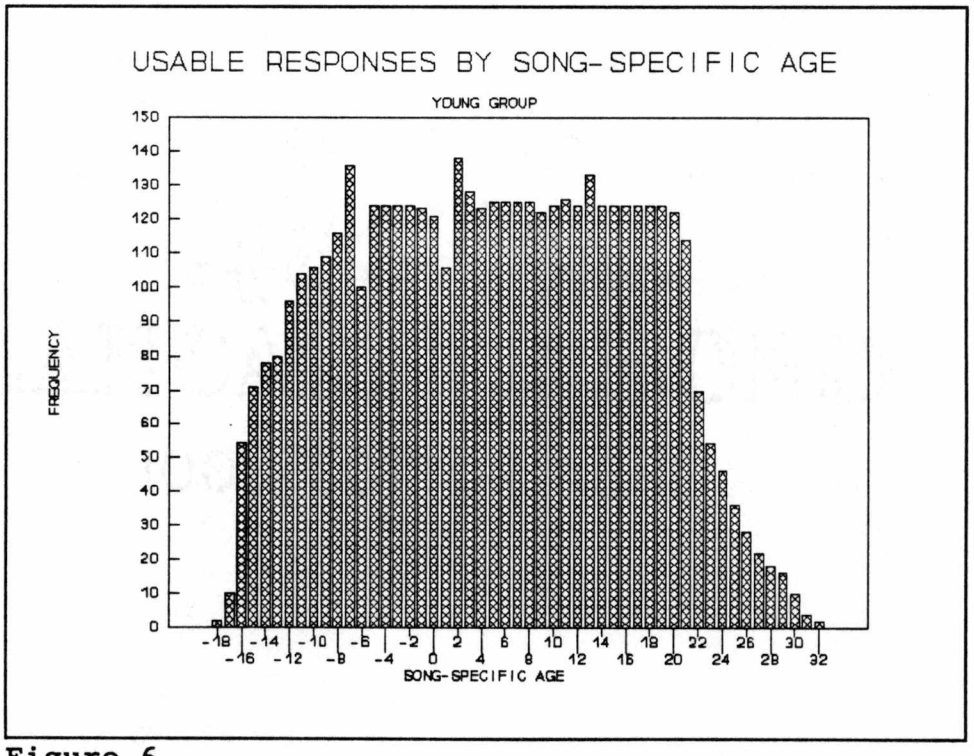


Figure 6

Regression Analysis

Two models were used in the regression analysis--one using song-specific age only and a second using both song-specific age and song-specific age squared. Using song-specific age only produces a model in which liking (as well as the other dependent variables) increases with age and does not reach a peak and decline. Since conventional wisdom expects liking to peak and eventually decline at some point, the inclusion of song-specific age squared in the model would accommodate this outcome.

As in Holbrook and Schindler's study, the model containing only song-specific age was not significant (p=.9091, R-square=0.0002 for mlike, p=.5195, R-square=0.0063 for mfamil, p=.0910, R-square=0.0427 for mmem, and p=.4871, R-square=0.0073 for mglob). The model containing both song-specific age and song-specific age squared was highly significant (p=.0001, R-square=0.6720 for mlike, p=.0001 R-square=0.8480 for mfamil, p=.0001, R-square=0.6282 for mmem, and p=.0001, R-square=0.8230 for mglob.) Note that these p values were obtained for the data from the whole sample and by using the mean scores of the dependent variables. The regression analysis was repeated using the raw scores to determine whether the significance was a function of the means procedure. P values for the model were identical regardless of raw scores and mean scores; however, minor differences in the

parameters and the p values for those parameters were noted depending on whether raw scores or mean scores were used. Tables 10-15 summarize this information by group. Noteworthy is the extreme difference in R-square value for the raw data in comparison to the mean scores data. The low R-square values for the raw data are attributed to the difficulty of discerning a pattern among so many points plotted (7,676 points per variable when analyzing the whole sample). A line plotted through the points will actually cross relatively few of the 7,676 points. In contrast, the mean scores data plotted one point for each of the 68 song specific ages (-18 to +49 including zero). A line plotted through these 68 points would be expected to cross several more points than with the raw scores data. Figures 7-30 show the curves plotted through the mean scores data points for each of the four dependent variables for each of the six groups of respondents.

Three Methods for Calculating Dependent Variables

It is possible to calculate the age at which liking, familiarity, memories, and global reach their peak using any one of three methods. First, by using calculus the first derivative of the regression equation can be set equal to zero, and the song-specific age can be solved precisely in the equation. Second, by creating a spreadsheet containing the song-specific age scores, song-specific age squared scores and

TABLE 10

REGRESSION DATA FOR WHOLE GROUP

Regression Figures Based on Mean Scores for Dependent Variables

DEPENDENT VARIABLES

MODEL	MLIKE	MFAMIL	MMEM	MGLOB
R-SQUARE	0.6720	0.8480	0.6282	0.8230
F	66.5930	181.3200	54.9240	151.0850
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	4.8535	5.9011	5.0441	5.2744
T	97.9390	93.8410	152.7450	130.3040
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE	0.0387	0.0761	0.0190	0.0445
T	10.1390	15.7000	7.4600	14.2500
PROB	0.0001	0.0001	0.0001	0.0001
MSSAGE2	-0.0012	-0.0026	-0.0007	-0.0015
T	-11.5390	-18.9720	-10.1190	-17.3050
PROB	0.0001	0.0001	0.0001	0.0001

Regression Figures based on raw data of Dependent Variables

DEPENDENT VARIABLES

MODEL	LIKE	FAMILIAR	MEMORY	GLOBAL
R-SQUARE	0.0220	0.1118	0.0196	0.0657
F	85.8600	481.2300	76.4960	268.7200
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	4.8834	5.9820	5.0735	5.3130
T	162.7930	226.1230	241.1620	251.8250
PROB	0.0000	0.0000	0.0000	0.0000
SSAGE	0.0356	0.0770	0.0202	0.0422
T	12.3430	27.8030	9.9530	20.7790
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE2	-0.0012	-0.0025	-0.0008	-0.0015
T	-12.7440	-30.8090	-12.3480	-23.0210
PROB	0.0001	0.0001	0.0001	0.0001

TABLE 11

REGRESSION DATA FOR BABY BOOMERS

Regression Figures Based on Mean Scores for Dependent Variables

	DEPENDENT VARIABLES			
MODEL	MLIKE	MFAMIL	MMEM	MGLOB
R-SQUARE	0.6842	0.6516	0.5721	0.7195
F	47.6720	41.1540	29.4120	56.4300
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	4.7902	5.7948	5.1196	5.2347
T	43.4770	38.4750	65.4550	55.0900
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE	0.0834	0.1002	0.0311	0.0716
T	6.5960	5.7910	3.4640	6.5660
PROB	0.0001	0.0001	0.0012	0.0001
MSSAGE2	-0.0025	-0.0031	-0.0011	-0.0023
T	-8.4010	-7.5680	-5.3000	-8.7060
PROB	0.0001	0.0001	0.0001	0.0001

Regression Figures based on raw data of Dependent Variables

	DEPENDENT VARIABLES			
MODEL	LIKE	FAMILIAR	MEMORY	GLOBAL
R-SQUARE	0.0406	0.0905	0.0346	0.0780
F	41.7660	98.0600	35.3890	83.4030
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	4.7984	5.9772	5.2017	5.3258
T	34.0990	50.2230	51.4560	54.7110
PROB	0.0001	0.0000	0.0000	0.0000
SSAGE	0.0815	0.0806	0.0258	0.0626
T	5.4520	6.3750	2.4000	6.0560
PROB	0.0001	0.0001	0.0165	0.0001
SSAGE2	-0.0025	-0.0027	-0.0011	-0.0021
T	-7.1720	-9.4000	-4.4150	-8.8150
PROB	0.0001	0.0001	0.0001	0.0001

TABLE 12

REGRESSION DATA FOR MALES

Regression Figures Based on Mean Scores for Dependent Variables

	DEPENDENT VARIABLES			
MODEL	MLIKE	MFAMIL	MMEM	MGLOB
R-SQUARE	0.4867	0.7100	0.3924	0.6730
F	28.9190	74.6640	19.6960	62.7730
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	4.6205	5.7260	4.8790	5.0752
T	71.3470	65.0390	110.1110	94.4100
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE	0.0321	0.0712	0.0091	0.0375
T	6.4270	10.4700	2.6610	9.0290
PROB	0.0001	0.0001	0.0099	0.0001
MSSAGE2	-0.0012	-0.0026	-0.0006	-0.0015
T	-7.6040	-12.2200	-5.2370	-11.1650
PROB	0.0001	0.0001	0.0001	0.0001

Regression Figures based on raw data of Dependent Variables

	DEPENDENT VARIABLES			
MODEL	LIKE	FAMILIAR	MEMORY	GLOBAL
R-SQUARE	0.0172	0.0994	0.0151	0.0540
F	20.5990	129.6790	18.0640	67.1450
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	4.5882	5.7221	4.8884	5.0662
T	91.3590	124.0250	151.9760	142.6230
PROB	0.0000	0.0000	0.0000	0.0000
SSAGE	0.0290	0.0667	0.0120	0.0360
T	6.1530	15.2840	3.9540	10.7100
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE2	-0.0010	-0.0024	-0.0007	-0.0014
T	-5.9810	-15.1860	-5.8990	-11.1740
PROB	0.0001	0.0001	0.0001	0.0001

TABLE 13

REGRESSION DATA FOR FEMALES

Regression Figures Based on Mean Scores for Dependent Variables

DEPENDENT VARIABLES				
MODEL	MLIKE	MFAMIL	MMEM	MGLOB
R-SQUARE	0.6021	0.8061	0.6511	0.7776
F	48.4240	133.1000	59.7230	111.8740
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	4.9977	6.0305	5.1420	5.4039
T	83.2940	82.7020	147.5880	112.2970
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE	0.0396	0.0756	0.0210	0.0450
T	8.1550	12.8160	7.4560	11.5620
PROB	0.0001	0.0001	0.0001	0.0001
MSSAGE2	-0.0013	-0.0026	-0.0008	-0.0016
T	-9.7930	-16.0750	-10.3580	-14.6840
PROB	0.0001	0.0001	0.0001	0.0001

Regression Figures based on raw data of Dependent Variables

DEPENDENT VARIABLES				
MODEL	LIKE	FAMILIAR	MEMORY	GLOBAL
R-SQUARE	0.0236	0.1186	0.0233	0.0720
F	64.0860	355.9410	63.1910	205.3620
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	5.0450	6.1254	5.1721	5.4475
T	134.7580	188.9180	190.4120	208.2010
PROB	0.0000	0.0000	0.0000	0.0000
SSAGE	0.0361	0.0704	0.0227	0.0431
T	9.9630	22.4090	8.6410	16.9990
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE2	-0.0013	-0.0026	-0.0009	-0.0016
T	-11.3060	-26.6720	-11.1220	-20.2580
PROB	0.0001	0.0001	0.0001	0.0001

TABLE 14

REGRESSION DATA FOR FEMALE BOOMERS

Regression Figures Based on Mean Scores for Dependent Variables

DEPENDENT VARIABLES				
MODEL	MLIKE	MFAMIL	MMEM	MGLOB
R-SQUARE	0.6269	0.5518	0.4363	0.6441
F	36.9620	27.0850	17.0270	39.8110
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	4.6871	5.8489	5.1172	5.2177
T	41.8570	41.1700	59.3870	56.0720
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE	0.0902	0.0919	0.0329	0.0717
T	7.0150	5.6310	3.3280	6.7070
PROB	0.0001	0.0001	0.0018	0.0001
MSSAGE2	-0.0025	-0.0026	-0.0011	-0.0021
T	-8.1560	-6.7630	-4.5760	-8.1260
PROB	0.0001	0.0001	0.0001	0.0001

Regression Figures based on raw data of Dependent Variables

DEPENDENT VARIABLES				
MODEL	LIKE	FAMILIAR	MEMORY	GLOBAL
R-SQUARE	0.0304	0.0640	0.0252	0.0562
F	26.1530	57.0440	21.5910	49.6730
PROB	0.0001	0.0001	0.0001	0.0001
PARAMETERS				
INTERCEPT	4.7036	6.0325	5.1692	5.3018
T	30.0680	49.3790	45.6640	50.4660
PROB	0.0001	0.0000	0.0001	0.0000
SSAGE	0.0896	0.0781	0.0330	0.0669
T	5.3340	5.9510	2.7160	5.9290
PROB	0.0001	0.0001	0.0067	0.0001
SSAGE2	-0.0025	-0.0025	-0.0012	-0.0021
T	-6.4190	-8.0490	-4.1760	-7.8060
PROB	0.0001	0.0001	0.0001	0.0001

TABLE 15

REGRESSION DATA FOR YOUNG GROUP

Regression Figures Based on Mean Scores for Dependent Variables

	DEPENDENT VARIABLES			
MODEL	MLIKE	MFAMIL	MMEM	MGLOB
R-SQUARE	0.4255	0.7393	0.2673	0.6440
F	17.7760	68.0620	8.7540	43.4250
PROB	0.0001	0.0001	0.0006	0.0001
	DEPENDENT VARIABLES			
	PARAMETERS			
INTERCEPT	4.6984	5.8924	4.9790	5.2018
T	62.7440	62.8250	99.9630	84.6130
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE	0.0297	0.0769	0.0140	0.0402
T	5.6260	11.6140	3.9870	9.2740
PROB	0.0001	0.0001	0.0002	0.0001
MSSAGE2	-0.0008	-0.0027	-0.0007	-0.0014
T	-2.7460	-7.7010	-3.7740	-6.1270
PROB	0.0085	0.0001	0.0004	0.0001

Regression Figures based on raw data of Dependent Variables

	DEPENDENT VARIABLES			
MODEL	LIKE	FAMILIAR	MEMORY	GLOBAL
R-SQUARE	0.0086	0.0990	0.0051	0.0402
F	20.2830	257.4450	12.0980	98.0810
PROB	0.0001	0.0001	0.0001	0.0001
	PARAMETERS			
INTERCEPT	4.7588	5.9083	4.9916	5.2195
T	117.4050	169.0900	177.8720	185.7740
PROB	0.0000	0.0000	0.0000	0.0000
SSAGE	0.0217	0.0660	0.0118	0.0332
T	6.2260	21.9460	4.8800	13.7160
PROB	0.0001	0.0001	0.0001	0.0001
SSAGE2	-0.0007	-0.0020	-0.0006	-0.0011
T	-3.1250	-10.2430	-3.6980	-6.9800
PROB	0.0018	0.0001	0.0002	0.0001

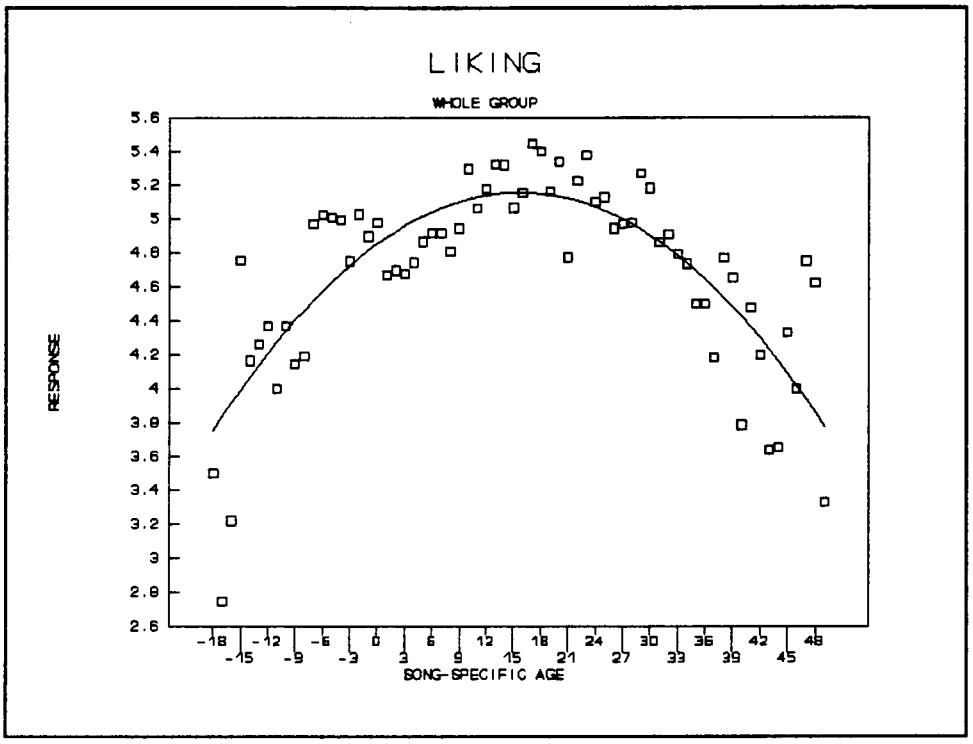


Figure 7

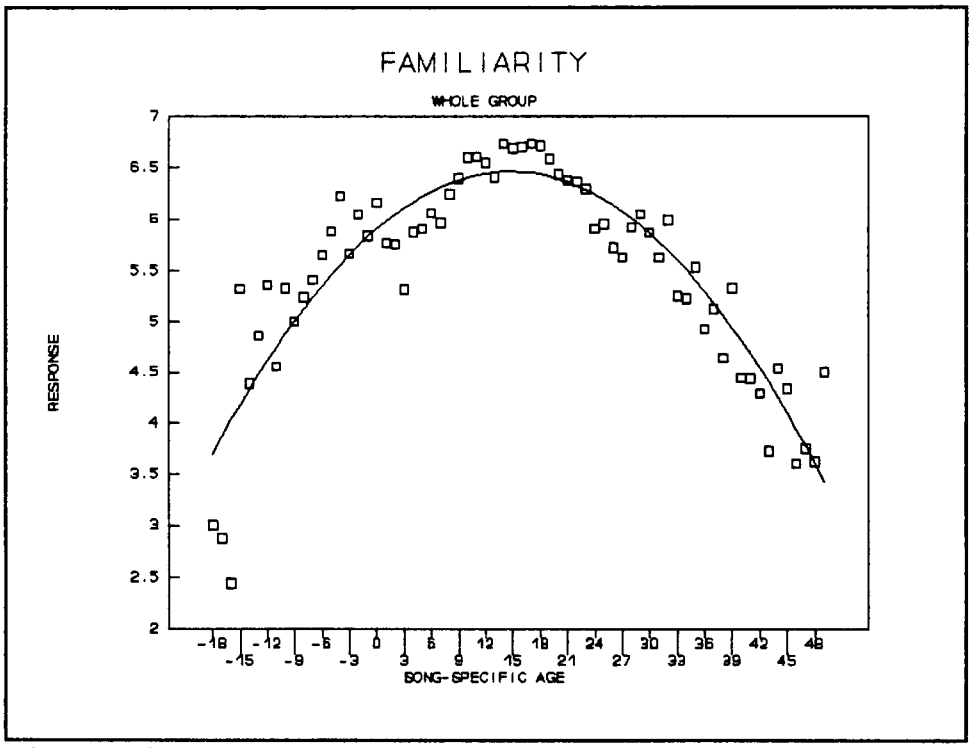


Figure 8

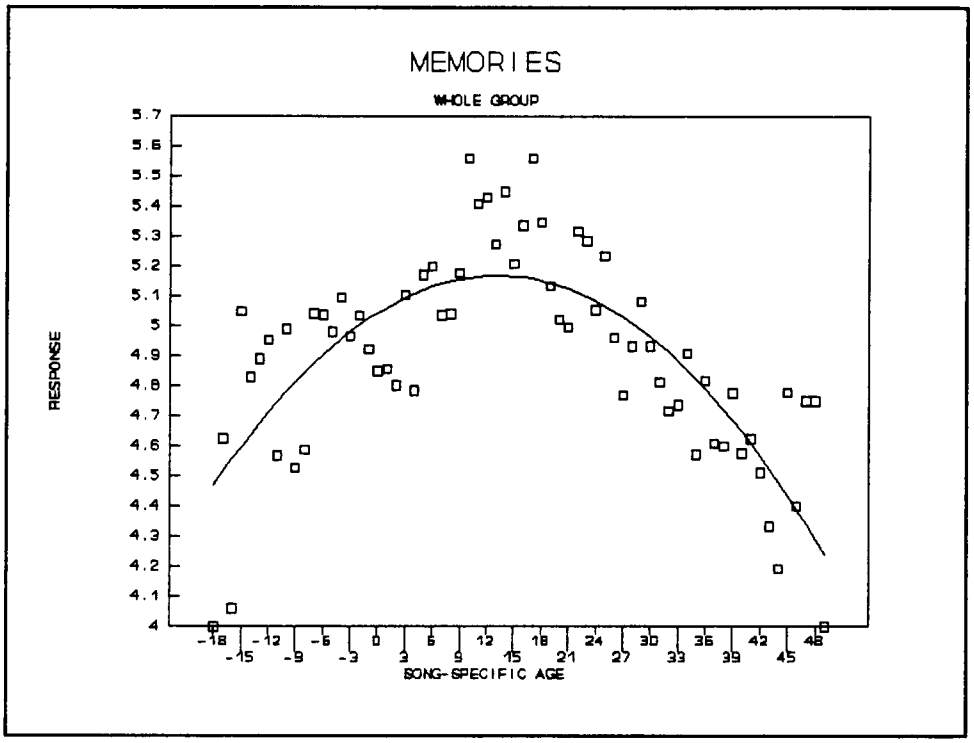


Figure 9

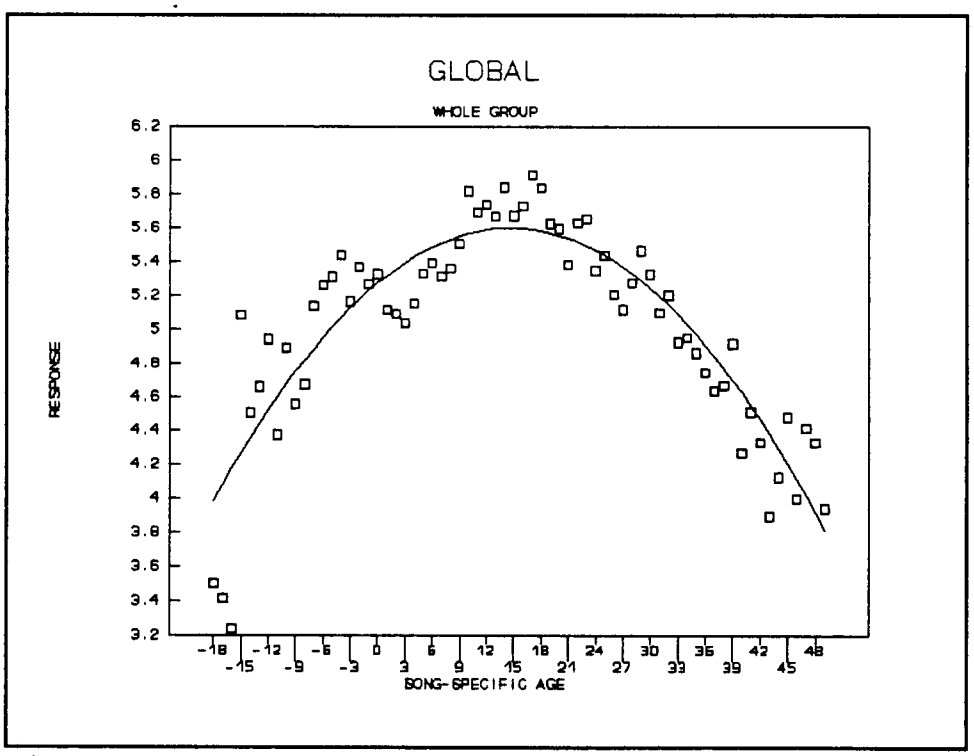


Figure 10

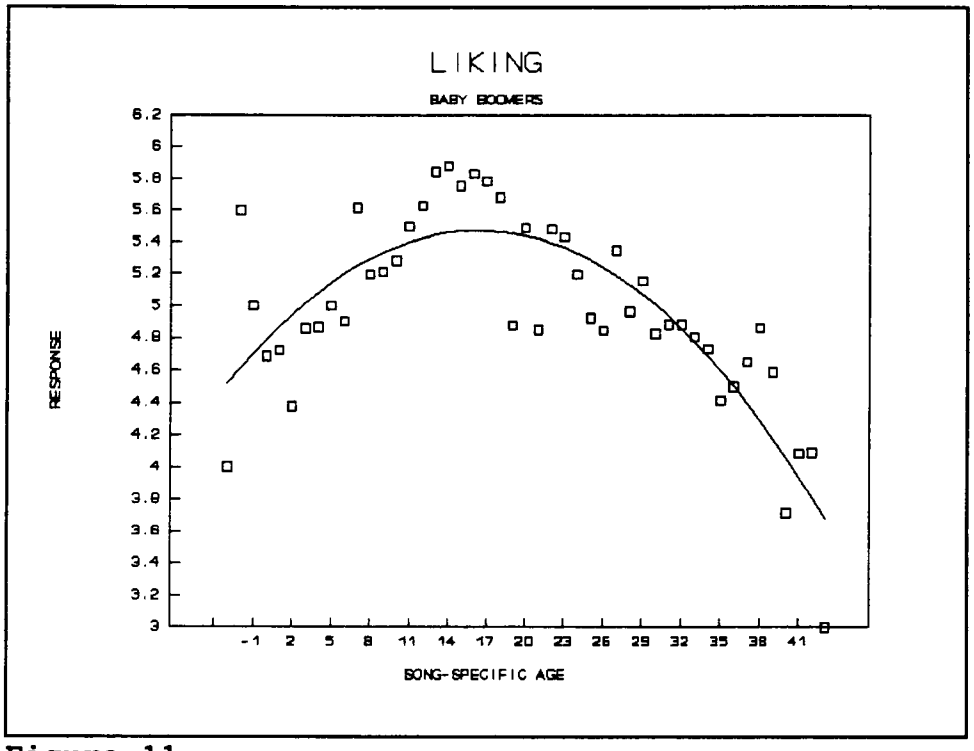


Figure 11

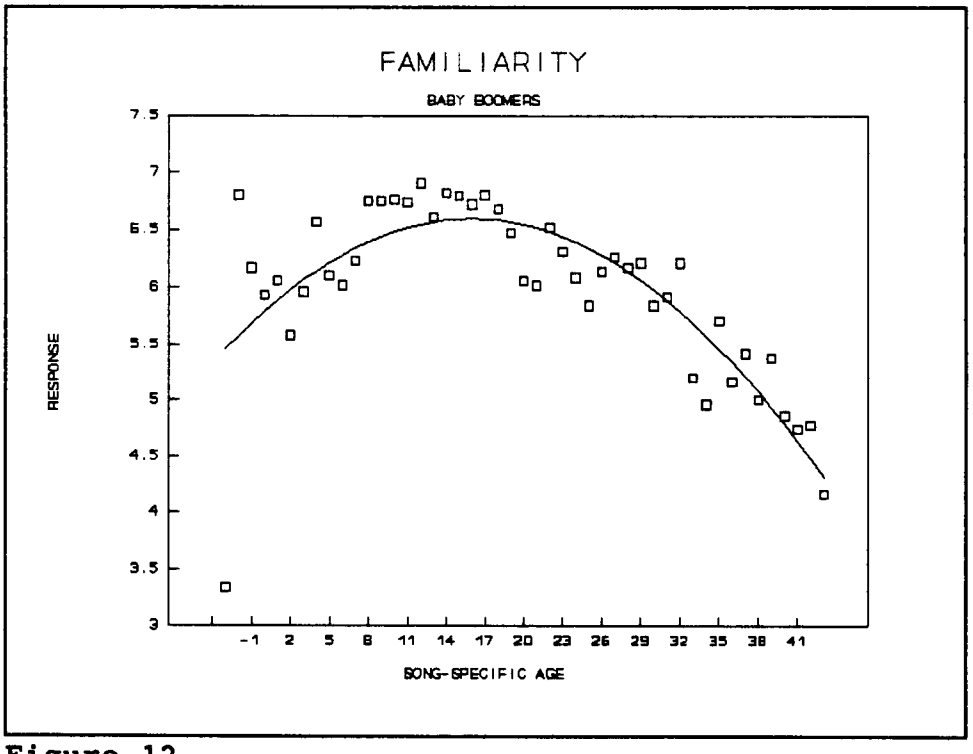


Figure 12

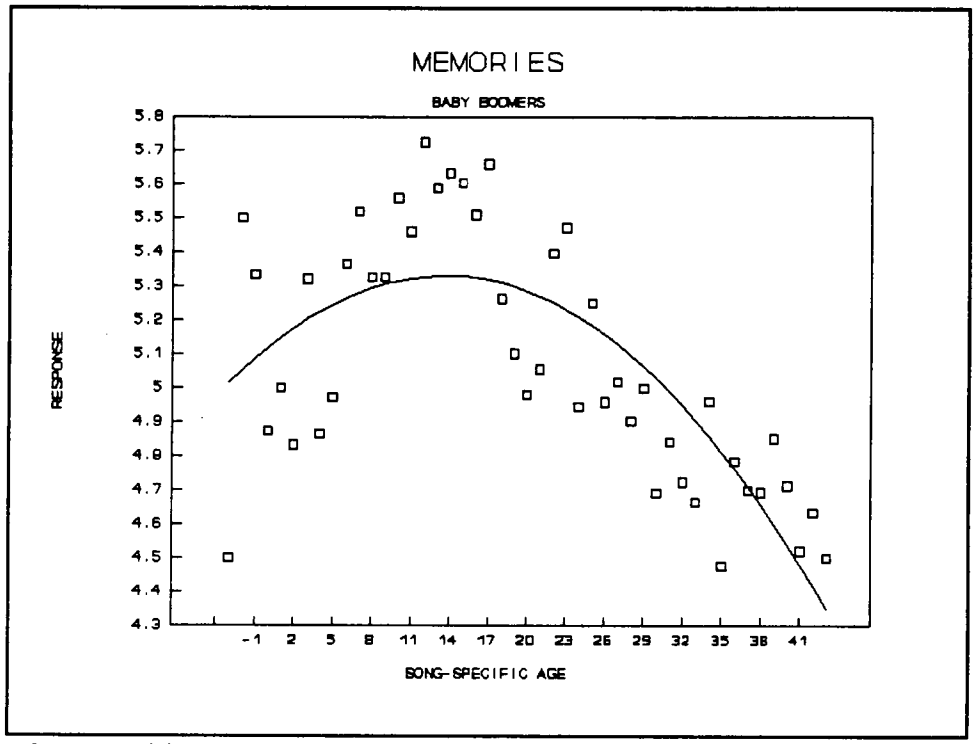
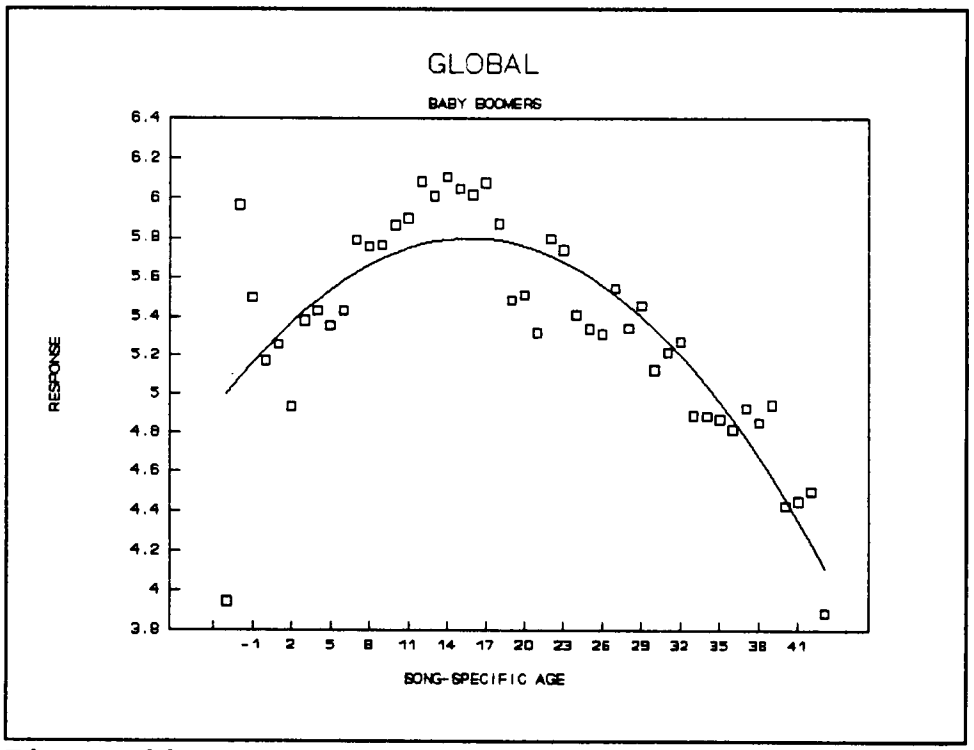


Figure 13



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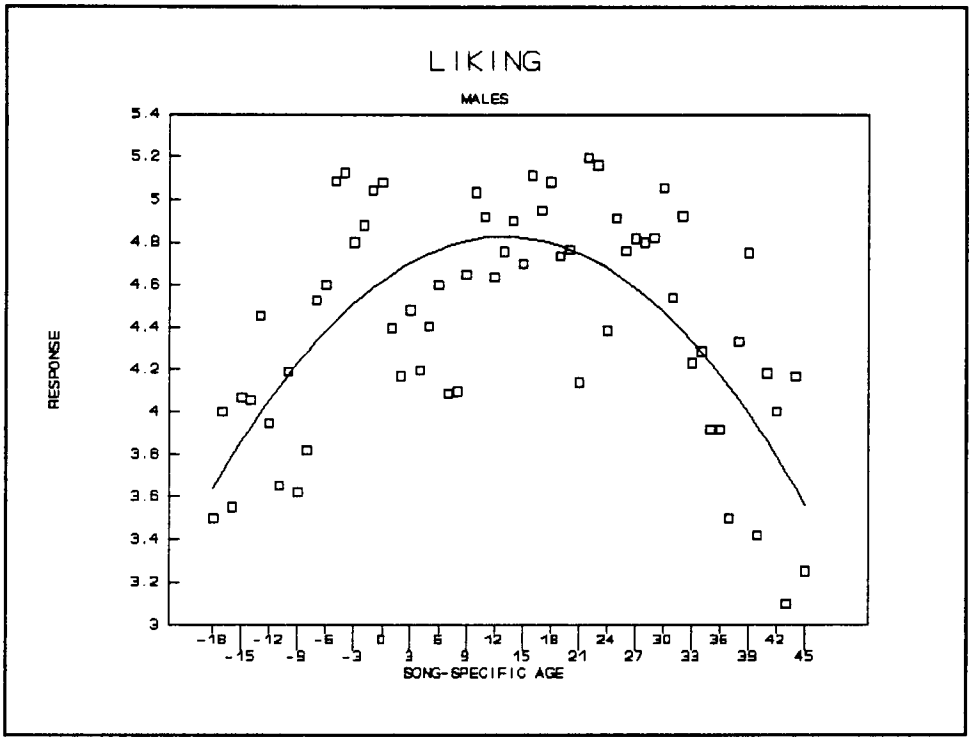

Figure 15

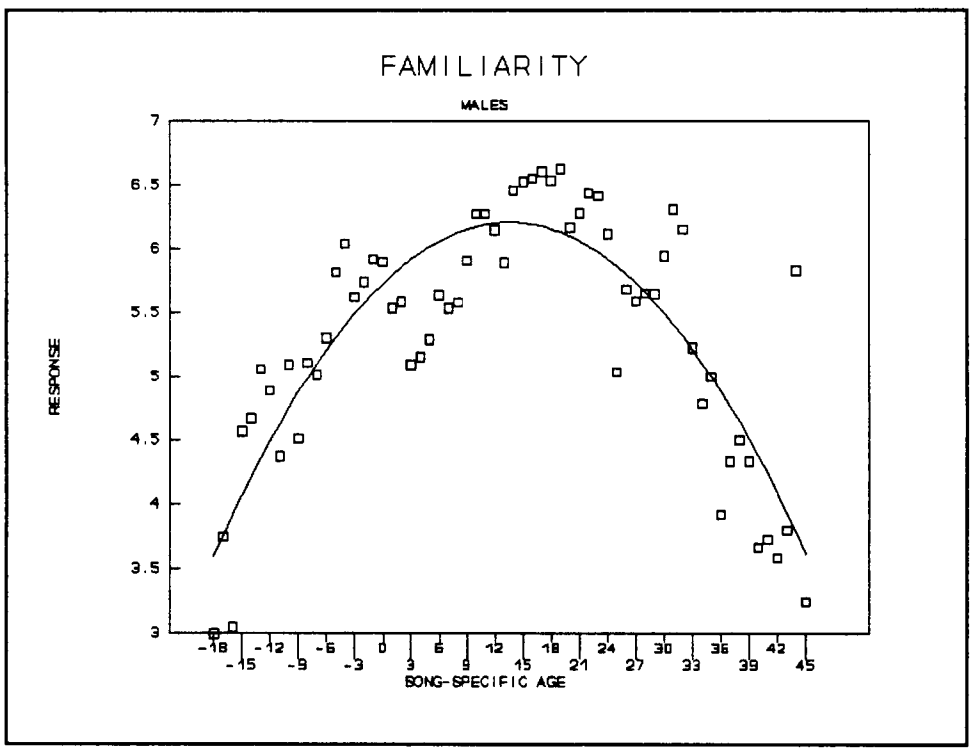

Figure 16

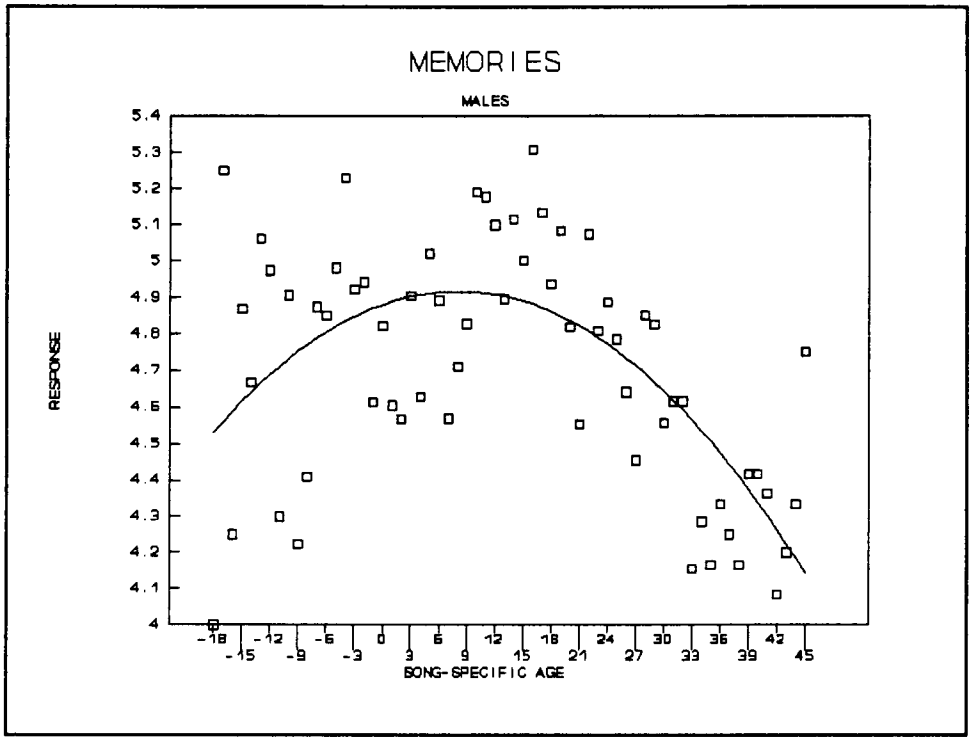

Figure 17

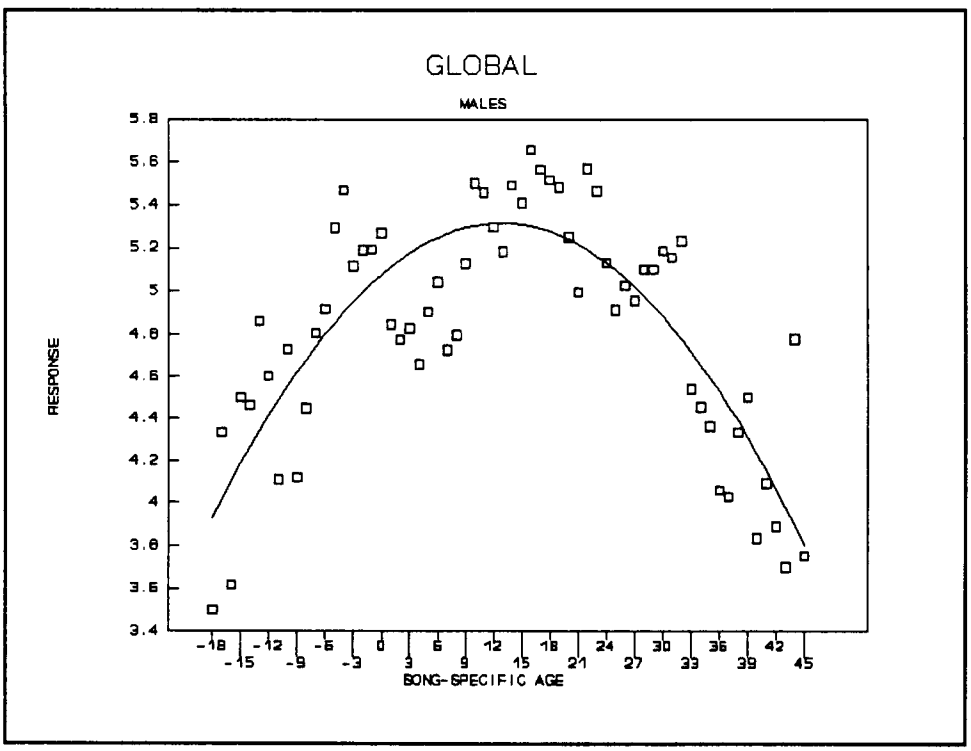

Figure 18

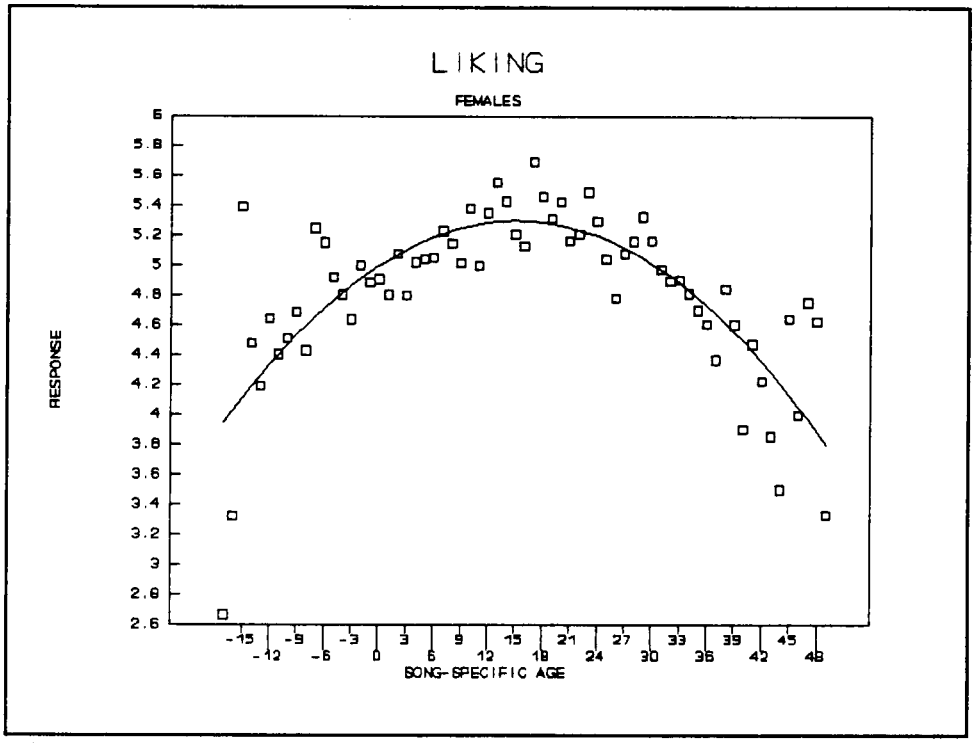

Figure 19

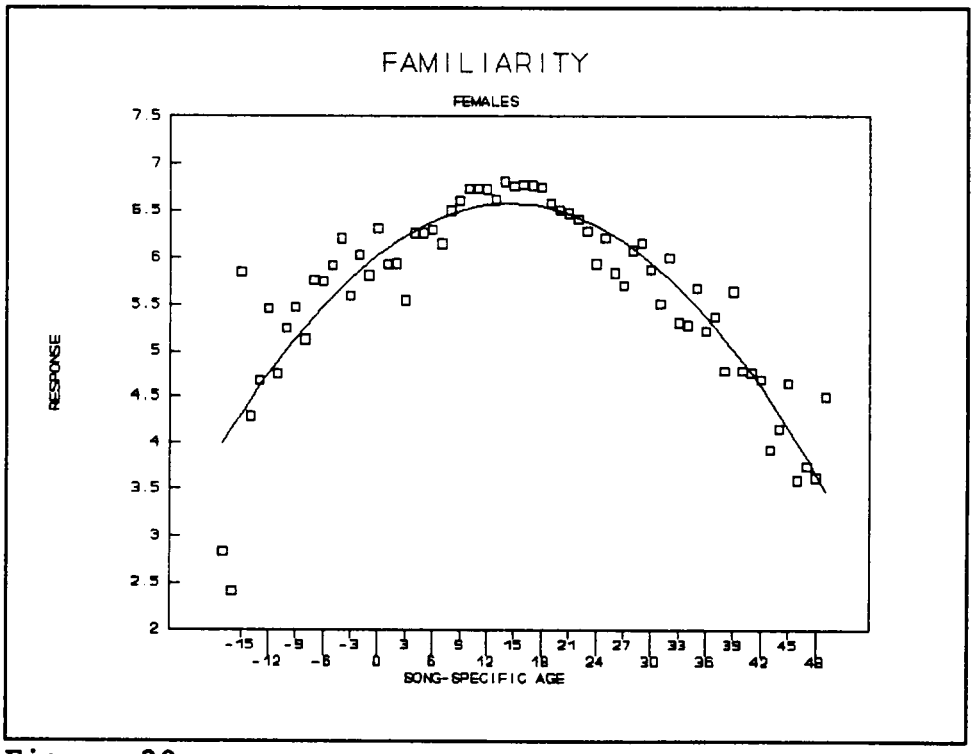

Figure 20

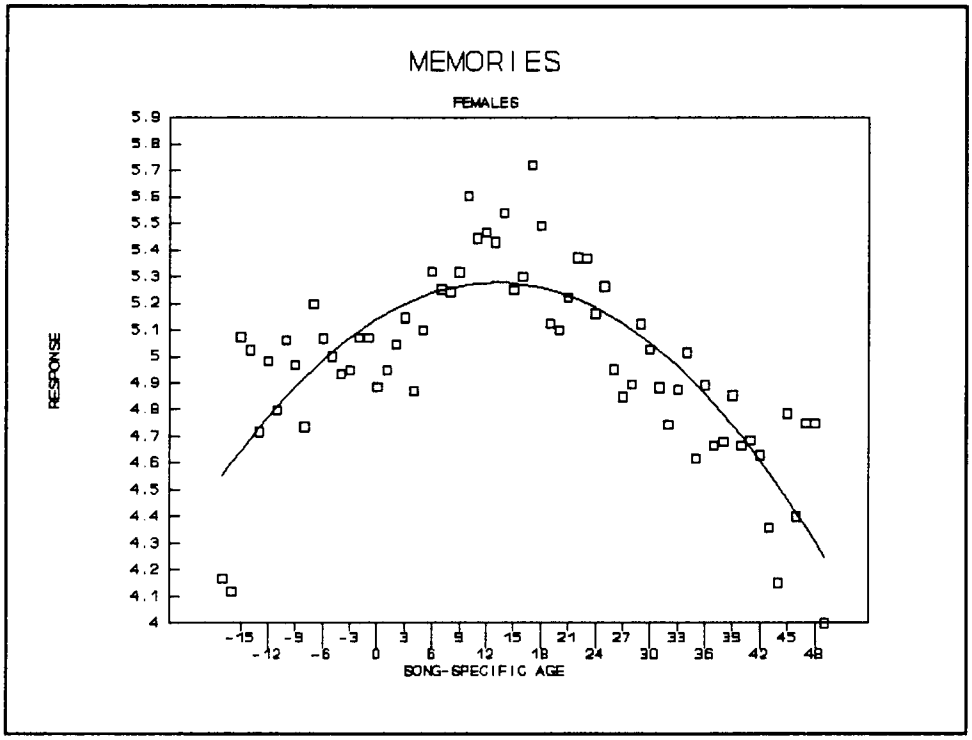

Figure 21

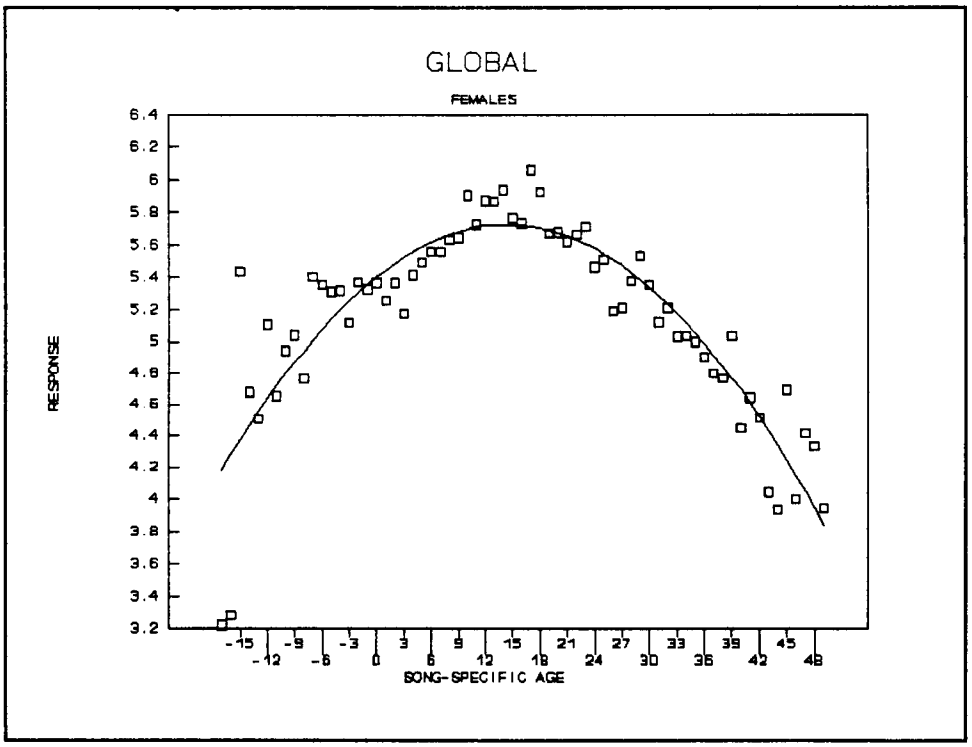

Figure 22

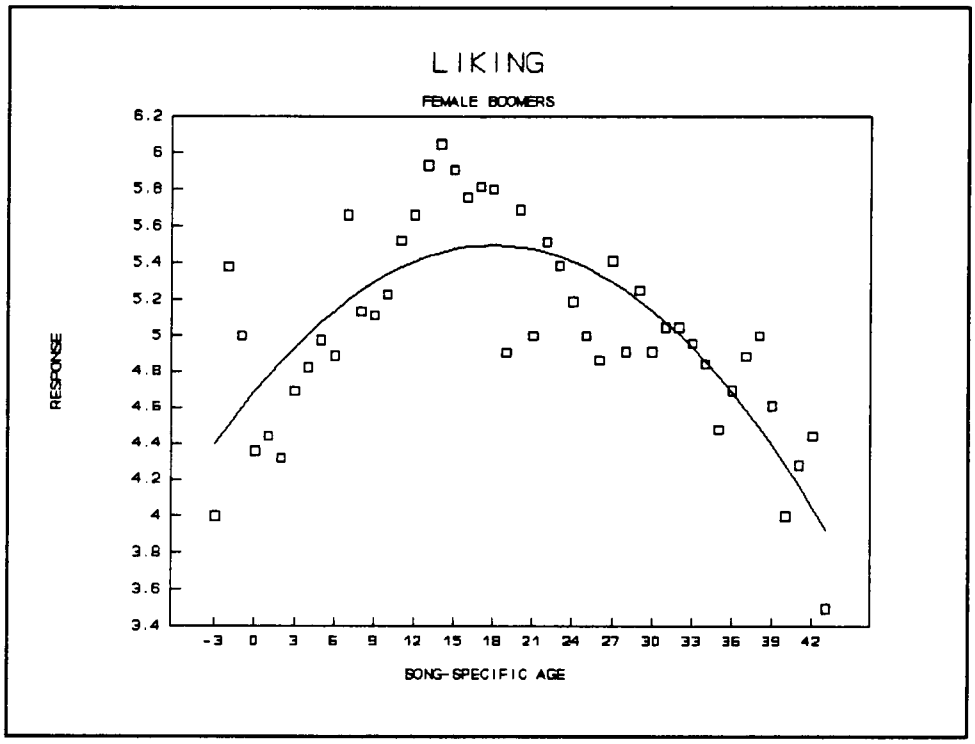

Figure 23

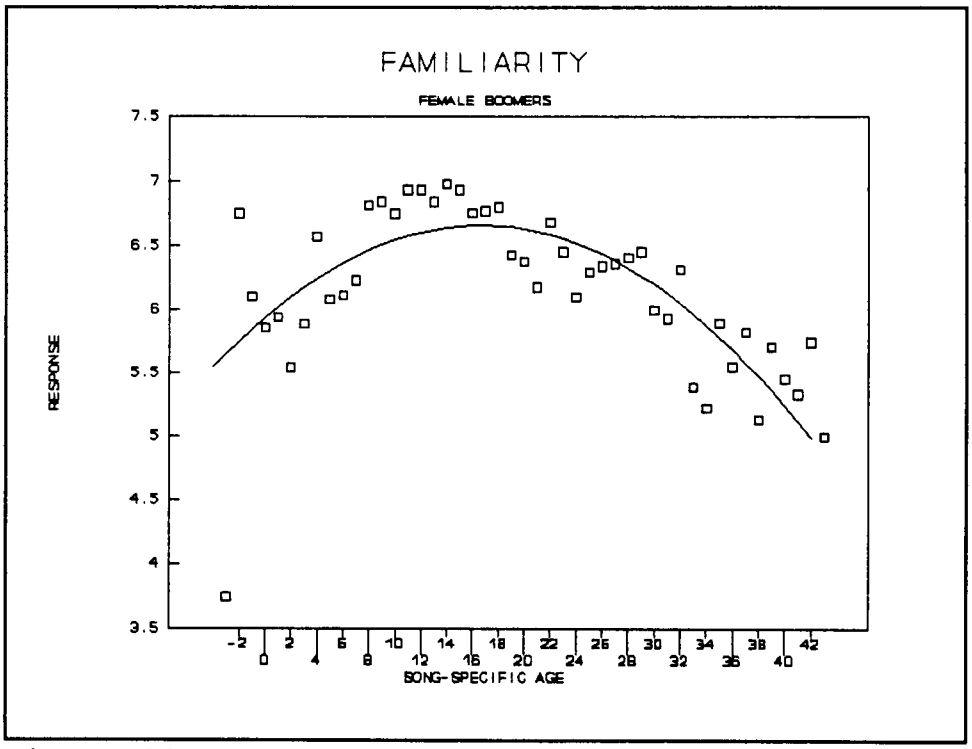

Figure 24

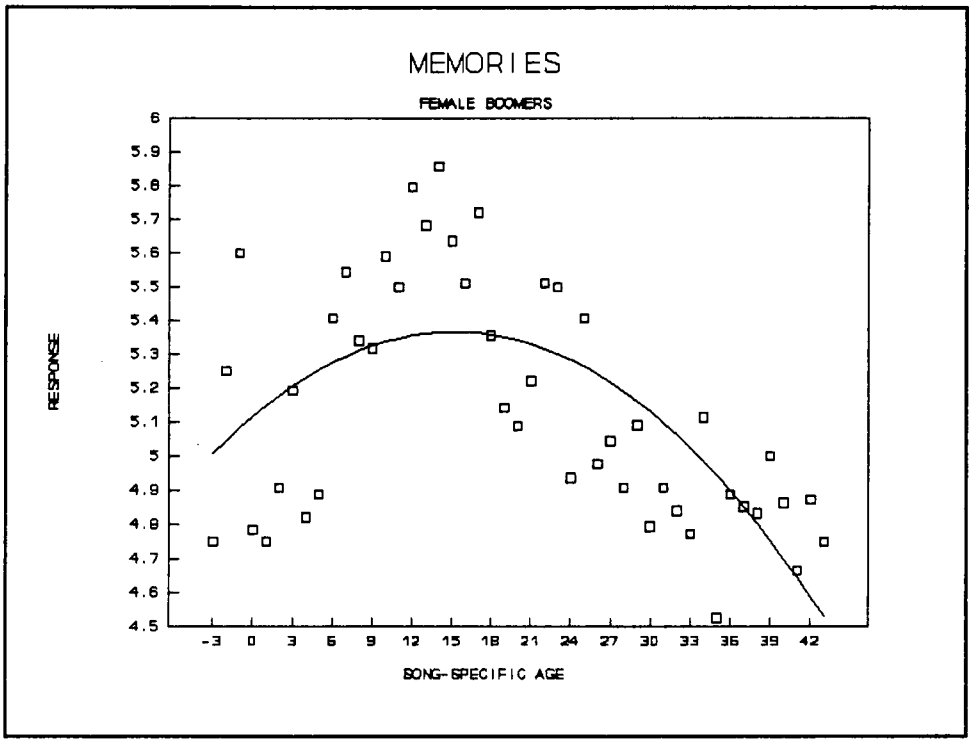

Figure 25

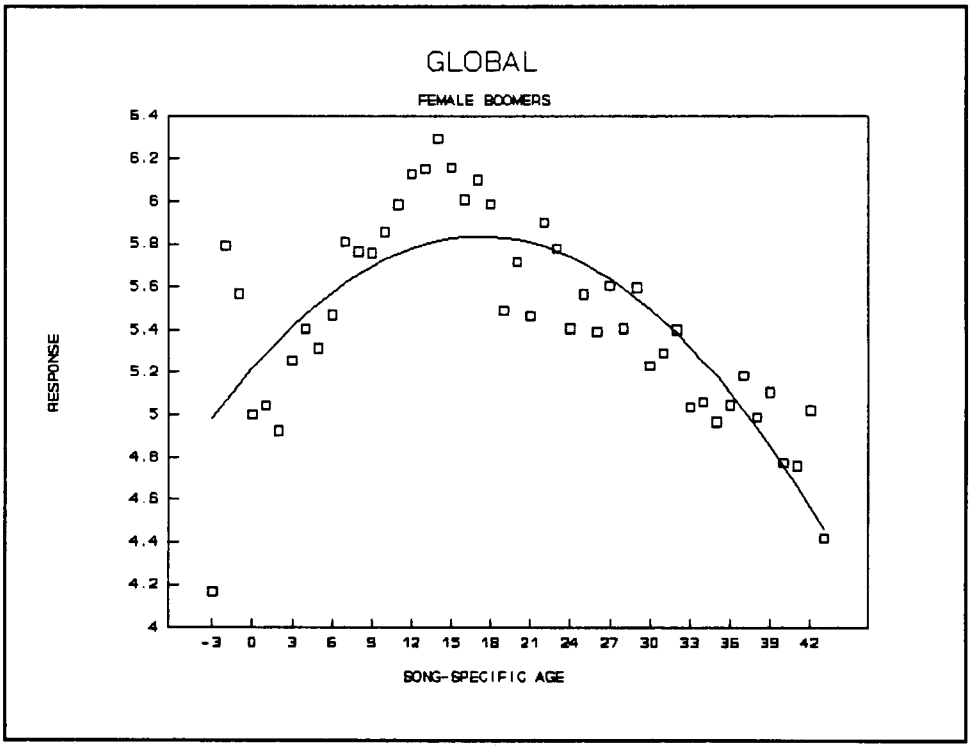

Figure 26

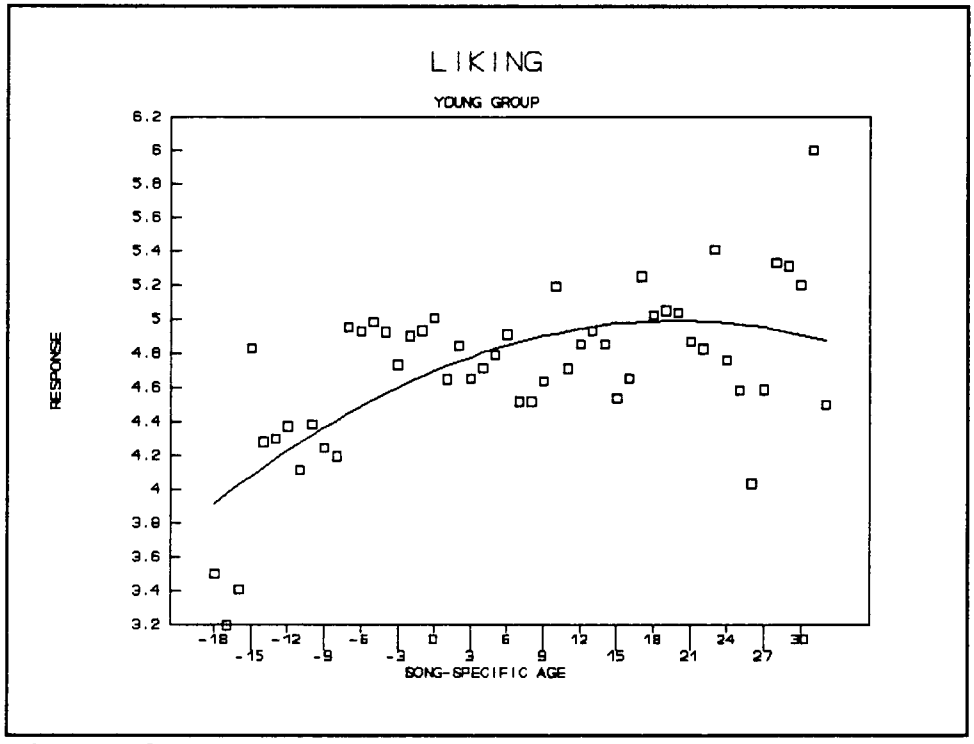

Figure 27

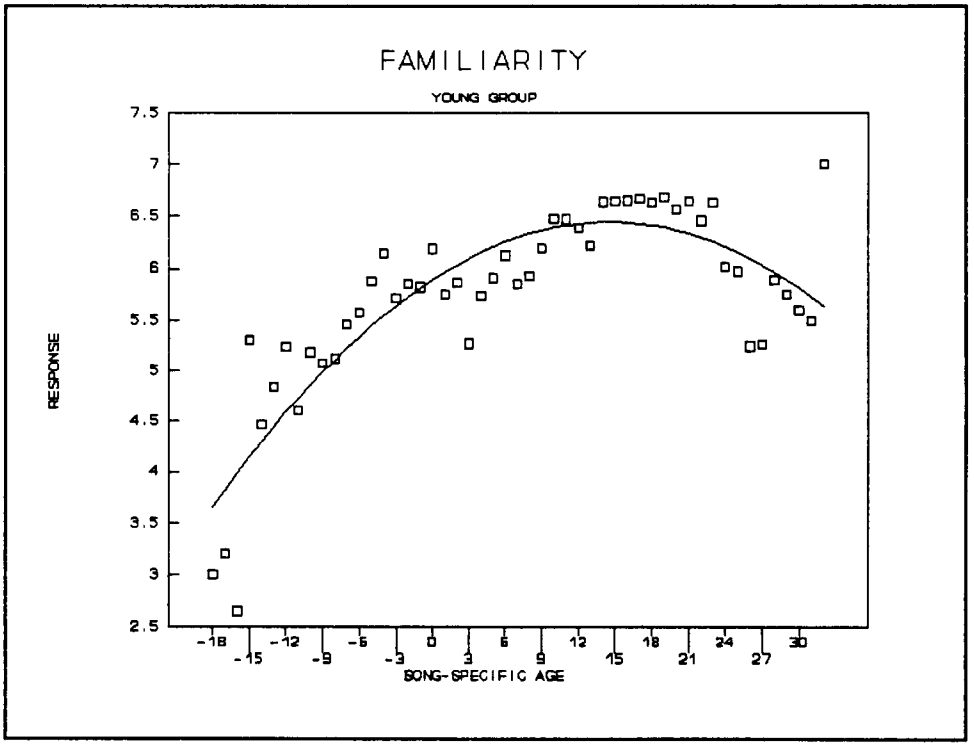

Figure 28

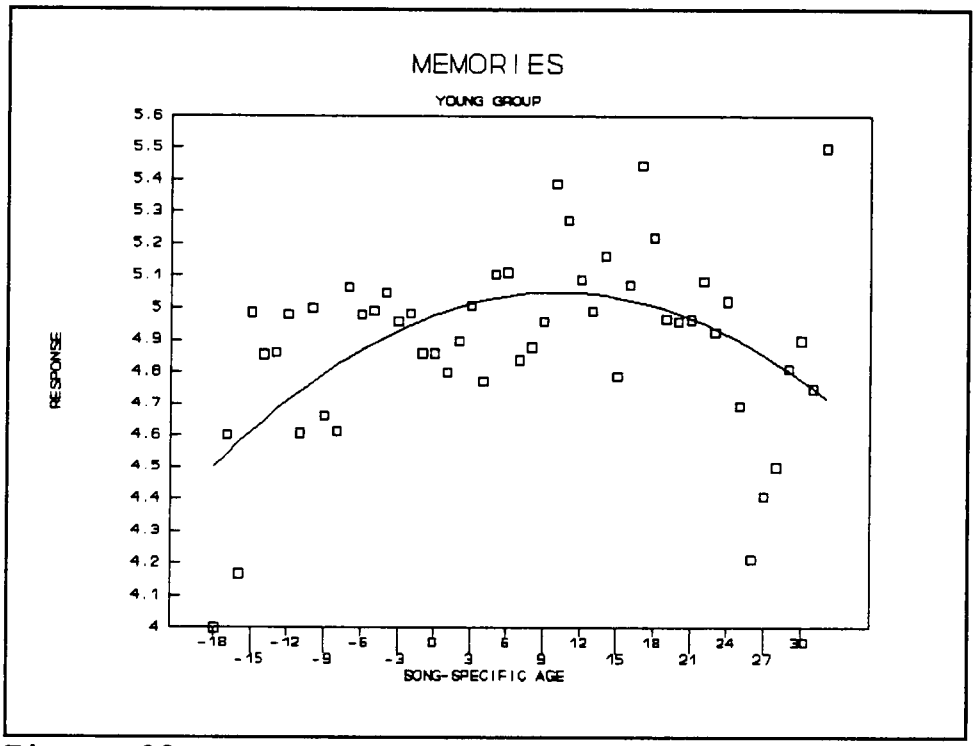

Figure 29

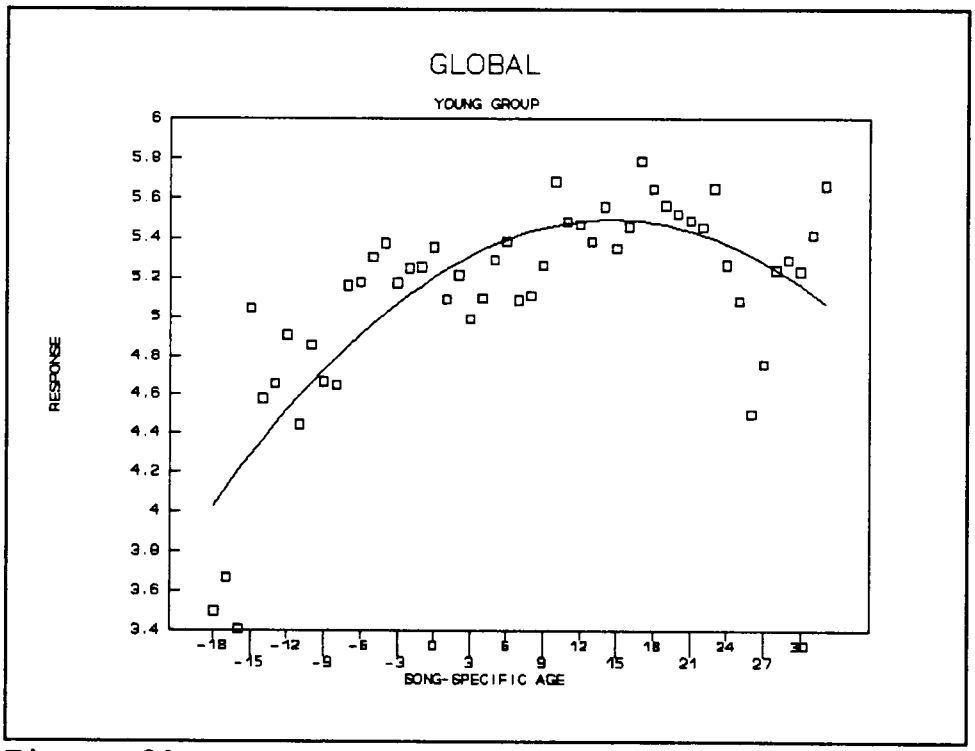

Figure 30

parameters from the regression analysis, the regression equation can be solved for each dependent variable. For example, a liking score can be obtained for each song-specific age from -18 to 49; the song-specific age that corresponds to the highest liking score will be the peak age for liking. The precise age can be found by visually inspecting the spreadsheet. Tables 16-21 include data from each of the six groups and shows the values obtained by this method for the four dependent variables. The variable names clike, cfamil, cmem, and cglob refer to the calculated scores for estimating liking, familiarity, memories, and global through the regression formula. Peak values in each column are underlined in bold print. Table 22 summarizes the age peaks from Tables 16-21 across groups for the four dependent variables.

The third but less precise method is to visually inspect the graphs in Figures 7-30 showing the curvilinear relationship between song-specific age and liking, familiarity, memories, and global. These graphs display the data points and the regression line against song-specific age. Regardless of the method used the results are the same. For the whole group, liking peaked at age 16, familiarity at age 15, memories at age 13, and global at age 15. This is not to say that the respondents liked music more at age 16 than at other ages--rather, the music they currently like best was released when they were 16. Similarly, the music they are most familiar with was released when they were 15.

TABLE 16

CALCULATED VARIABLE SCORES-WHOLE GROUP

OBS	SSAGE	CLIKE	CFAMIL	CMEM	CGLOB
1	-18	3.7557	3.6953	4.4682	3.9834
2	-17	3.8378	3.8617	4.5125	4.0809
3	-16	3.9173	4.0230	4.5553	4.1753
4	-15	3.9944	4.1791	4.5967	4.2667
5	-14	4.0690	4.3300	4.6367	4.3551
6	-13	4.1411	4.4758	4.6752	4.4405
7	-12	4.2107	4.6164	4.7122	4.5228
8	-11	4.2779	4.7518	4.7478	4.6021
9	-10	4.3426	4.8821	4.7820	4.6784
10	-9	4.4048	5.0072	4.8147	4.7516
11	-8	4.4646	5.1272	4.8460	4.8218
12	-7	4.5219	5.2420	4.8758	4.8890
13	-6	4.5767	5.3516	4.9042	4.9531
14	-5	4.6290	5.4561	4.9312	5.0143
15	-4	4.6788	5.5554	4.9566	5.0723
16	-3	4.7262	5.6496	4.9807	5.1274
17	-2	4.7711	5.7386	5.0033	5.1794
18	-1	4.8136	5.8224	5.0244	5.2284
19	0	4.8535	5.9011	5.0441	5.2744
20	1	4.8910	5.9746	5.0624	5.3173
21	2	4.9260	6.0429	5.0792	5.3572
22	3	4.9586	6.1061	5.0946	5.3941
23	4	4.9886	6.1641	5.1085	5.4280
24	5	5.0162	6.2169	5.1210	5.4588
25	6	5.0413	6.2646	5.1320	5.4866
26	7	5.0640	6.3072	5.1416	5.5113
27	8	5.0841	6.3445	5.1497	5.5331
28	9	5.1018	6.3767	5.1564	5.5517
29	10	5.1170	6.4038	5.1617	5.5674
30	11	5.1298	6.4257	5.1655	5.5801
31	12	5.1401	6.4424	5.1678	5.5897
32	13	5.1479	6.4540	5.1688	5.5962
33	14	5.1532	6.4604	5.1682	5.5998
34	15	5.1560	6.4616	5.1662	5.6003
35	16	5.1564	6.4577	5.1628	5.5978
36	17	5.1543	6.4486	5.1579	5.5922
37	18	5.1497	6.4343	5.1516	5.5837
38	19	5.1427	6.4149	5.1438	5.5721
39	20	5.1332	6.3903	5.1346	5.5574
40	21	5.1212	6.3606	5.1240	5.5398
41	22	5.1067	6.3257	5.1119	5.5191
42	23	5.0898	6.2856	5.0983	5.4954
43	24	5.0703	6.2404	5.0833	5.4686
44	25	5.0485	6.1900	5.0669	5.4388
45	26	5.0241	6.1345	5.0490	5.4060
46	27	4.9973	6.0738	5.0296	5.3702
47	28	4.9679	6.0079	5.0089	5.3313
48	29	4.9362	5.9369	4.9866	5.2894
49	30	4.9019	5.8607	4.9630	5.2445
50	31	4.8652	5.7793	4.9378	5.1965
51	32	4.8259	5.6928	4.9113	5.1455
52	33	4.7843	5.6011	4.8833	5.0915
53	34	4.7401	5.5043	4.8538	5.0344
54	35	4.6935	5.4023	4.8229	4.9743
55	36	4.6444	5.2951	4.7906	4.9112
56	37	4.5928	5.1828	4.7568	4.8451
57	38	4.5387	5.0653	4.7215	4.7759
58	39	4.4822	4.9426	4.6848	4.7037
59	40	4.4232	4.8148	4.6467	4.6285
60	41	4.3617	4.6818	4.6071	4.5502
61	42	4.2978	4.5437	4.5661	4.4689
62	43	4.2314	4.4004	4.5236	4.3846

TABLE 16 (cont.)

CALCULATED VARIABLE SCORES-WHOLE GROUP

OBS	SSAGE	CLIKE	CFAMIL	CMEM	CGLOB
63	44	4.1625	4.2519	4.4797	4.2972
64	45	4.0911	4.0983	4.4344	4.2069
65	46	4.0172	3.9395	4.3875	4.1134
66	47	3.9409	3.7756	4.3393	4.0170
67	48	3.8621	3.6065	4.2896	3.9175
68	49	3.7809	3.4322	4.2384	3.8150

Key: OBS=Observation
SSAGE=Song Specific Age
CLIKE=Calculated Liking Score
CFAMIL=Calculated Familiarity Score
CMEM=Calculated Memory Score
CGLOB=Calculated Global Score

TABLE 17

CALCULATED VARIABLE SCORES-BABY BOOMERS

OBS	SSAGE	CLIKE	CFAMIL	CMEM	CGLOB
1	-3	4.5170	5.4661	5.0160	4.9993
2	-2	4.6132	5.5819	5.0528	5.0823
3	-1	4.7042	5.6915	5.0874	5.1608
4	0	4.7902	5.7948	5.1196	5.2347
5	1	4.8711	5.8918	5.1496	5.3041
6	2	4.9469	5.9826	5.1773	5.3689
7	3	5.0177	6.0671	5.2027	5.4292
8	4	5.0833	6.1453	5.2258	5.4849
9	5	5.1439	6.2173	5.2467	5.5361
10	6	5.1994	6.2830	5.2653	5.5827
11	7	5.2497	6.3424	5.2816	5.6248
12	8	5.2950	6.3956	5.2956	5.6624
13	9	5.3353	6.4426	5.3073	5.6954
14	10	5.3704	6.4832	5.3168	5.7238
15	11	5.4004	6.5176	5.3240	5.7478
16	12	5.4254	6.5458	5.3289	5.7671
17	13	5.4453	6.5677	5.3315	5.7819
18	14	5.4600	6.5833	5.3319	5.7922
19	15	5.4697	6.5926	5.3300	5.7979
20	16	5.4744	6.5957	5.3258	5.7991
21	17	5.4739	6.5926	5.3193	5.7957
22	18	5.4683	6.5831	5.3106	5.7878
23	19	5.4577	6.5674	5.2995	5.7754
24	20	5.4419	6.5455	5.2862	5.7584
25	21	5.4211	6.5173	5.2706	5.7368
26	22	5.3952	6.4828	5.2528	5.7107
27	23	5.3642	6.4420	5.2326	5.6801
28	24	5.3282	6.3950	5.2102	5.6449
29	25	5.2870	6.3418	5.1855	5.6051
30	26	5.2408	6.2822	5.1585	5.5609
31	27	5.1894	6.2165	5.1292	5.5120
32	28	5.1330	6.1444	5.0977	5.4587
33	29	5.0715	6.0661	5.0639	5.4007
34	30	5.0049	5.9815	5.0278	5.3383
35	31	4.9332	5.8907	4.9894	5.2713
36	32	4.8565	5.7936	4.9488	5.1997
37	33	4.7746	5.6902	4.9059	5.1236
38	34	4.6877	5.5806	4.8607	5.0430
39	35	4.5957	5.4647	4.8132	4.9578
40	36	4.4986	5.3426	4.7634	4.8680
41	37	4.3964	5.2142	4.7114	4.7737
42	38	4.2891	5.0795	4.6571	4.6749
43	39	4.1767	4.9386	4.6005	4.5715
44	40	4.0593	4.7914	4.5416	4.4636
45	41	3.9367	4.6379	4.4805	4.3511
46	42	3.8091	4.4782	4.4170	4.2341

Key: OBS=Observation
SSAGE=Song Specific Age
CLIKE=Calculated Liking Score
CFAMIL=Calculated Familiarity Score
CMEM=Calculated Memory Score
CGLOB=Calculated Global Score

TABLE 18

CALCULATED VARIABLE SCORES-MALES

OBS	SSAGE	CLIKE	CFAMIL	CMEM	CGLOB
1	-18	3.6413	3.5950	4.5318	3.9264
2	-17	3.7167	3.7580	4.5607	4.0151
3	-16	3.7897	3.9157	4.5884	4.1009
4	-15	3.8602	4.0682	4.6151	4.1838
5	-14	3.9282	4.2155	4.6406	4.2637
6	-13	3.9937	4.3575	4.6650	4.3407
7	-12	4.0568	4.4943	4.6883	4.4148
8	-11	4.1174	4.6258	4.7104	4.4859
9	-10	4.1755	4.7520	4.7314	4.5541
10	-9	4.2311	4.8731	4.7512	4.6194
11	-8	4.2843	4.9888	4.7700	4.6818
12	-7	4.3349	5.0993	4.7875	4.7412
13	-6	4.3832	5.2046	4.8040	4.7977
14	-5	4.4289	5.3046	4.8193	4.8513
15	-4	4.4722	5.3994	4.8335	4.9019
16	-3	4.5129	5.4889	4.8466	4.9497
17	-2	4.5513	5.5732	4.8585	4.9944
18	-1	4.5871	5.6522	4.8693	5.0363
19	0	4.6205	5.7260	4.8790	5.0752
20	1	4.6514	5.7946	4.8875	5.1113
21	2	4.6798	5.8578	4.8950	5.1443
22	3	4.7057	5.9159	4.9012	5.1745
23	4	4.7292	5.9687	4.9064	5.2017
24	5	4.7502	6.0162	4.9104	5.2260
25	6	4.7687	6.0585	4.9133	5.2474
26	7	4.7848	6.0956	4.9150	5.2658
27	8	4.7983	6.1274	**4.9156**	5.2813
28	9	4.8095	6.1539	4.9151	5.2939
29	10	4.8181	6.1752	4.9134	5.3036
30	11	4.8242	6.1913	4.9107	5.3103
31	12	4.8279	6.2021	4.9068	5.3141
32	13	**4.8291**	6.2076	4.9017	**5.3150**
33	14	4.8279	**6.2079**	4.8955	5.3129
34	15	4.8241	6.2030	4.8882	5.3079
35	16	4.8179	6.1928	4.8798	5.3000
36	17	4.8092	6.1774	4.8702	5.2892
37	18	4.7980	6.1567	4.8595	5.2754
38	19	4.7844	6.1308	4.8477	5.2587
39	20	4.7683	6.0996	4.8347	5.2391
40	21	4.7497	6.0632	4.8206	5.2165
41	22	4.7286	6.0215	4.8054	5.1911
42	23	4.7051	5.9746	4.7890	5.1626
43	24	4.6791	5.9224	4.7715	5.1313
44	25	4.6506	5.8650	4.7529	5.0970
45	26	4.6197	5.8023	4.7331	5.0599
46	27	4.5862	5.7344	4.7122	5.0197
47	28	4.5503	5.6613	4.6902	4.9767
48	29	4.5120	5.5829	4.6670	4.9307
49	30	4.4711	5.4992	4.6427	4.8818
50	31	4.4278	5.4103	4.6173	4.8300
51	32	4.3820	5.3161	4.5908	4.7752
52	33	4.3337	5.2167	4.5631	4.7175
53	34	4.2830	5.1121	4.5342	4.6569
54	35	4.2297	5.0022	4.5043	4.5934
55	36	4.1740	4.8870	4.4732	4.5269
56	37	4.1159	4.7667	4.4410	4.4575
57	38	4.0552	4.6410	4.4077	4.3852
58	39	3.9921	4.5101	4.3732	4.3099
59	40	3.9265	4.3740	4.3376	4.2317
60	41	3.8584	4.2326	4.3008	4.1506
61	42	3.7879	4.0860	4.2630	4.0666
62	43	3.7149	3.9341	4.2239	3.9796

TABLE 18 (cont.)

CALCULATED VARIABLE SCORES-MALES

OBS	SSAGE	CLIKE	CFAMIL	CMEM	CGLOB
63	44	3.6394	3.7770	4.1838	3.8897
64	45	3.5614	3.6146	4.1425	3.7969

Key: OBS=Observation
SSAGE=Song Specific Age
CLIKE=Calculated Liking Score
CFAMIL=Calculated Familiarity Score
CMEM=Calculated Memory Score
CGLOB=Calculated Global Score

TABLE 19

CALCULATED VARIABLE SCORES-FEMALES

OBS	SSAGE	CLIKE	CFAMIL	CMEM	CGLOB
1	-17	3.9476	3.9926	4.5531	4.1850
2	-16	4.0303	4.1541	4.6006	4.2819
3	-15	4.1103	4.3105	4.6465	4.3756
4	-14	4.1878	4.4617	4.6907	4.4661
5	-13	4.2626	4.6076	4.7334	4.5535
6	-12	4.3348	4.7483	4.7745	4.6378
7	-11	4.4044	4.8838	4.8139	4.7189
8	-10	4.4714	5.0141	4.8518	4.7969
9	-9	4.5358	5.1392	4.8880	4.8717
10	-8	4.5976	5.2591	4.9226	4.9434
11	-7	4.6567	5.3738	4.9557	5.0120
12	-6	4.7133	5.4832	4.9871	5.0774
13	-5	4.7672	5.5875	5.0169	5.1397
14	-4	4.8185	5.6865	5.0452	5.1988
15	-3	4.8672	5.7803	5.0718	5.2548
16	-2	4.9133	5.8689	5.0968	5.3077
17	-1	4.9568	5.9523	5.1202	5.3574
18	0	4.9977	6.0305	5.1420	5.4039
19	1	5.0360	6.1035	5.1622	5.4474
20	2	5.0716	6.1713	5.1808	5.4876
21	3	5.1047	6.2338	5.1978	5.5248
22	4	5.1351	6.2911	5.2132	5.5588
23	5	5.1629	6.3433	5.2270	5.5896
24	6	5.1881	6.3902	5.2392	5.6173
25	7	5.2107	6.4319	5.2498	5.6419
26	8	5.2307	6.4684	5.2588	5.6633
27	9	5.2481	6.4996	5.2661	5.6816
28	10	5.2628	6.5257	5.2719	5.6968
29	11	5.2750	6.5466	5.2761	5.7088
30	12	5.2845	6.5622	5.2786	5.7176
31	13	5.2914	6.5726	5.2796	5.7234
32	14	5.2957	6.5777	5.2789	5.7259
33	15	5.2974	6.5778	5.2767	5.7254
34	16	5.2965	6.5726	5.2728	5.7217
35	17	5.2930	6.5622	5.2674	5.7148
36	18	5.2868	6.5466	5.2603	5.7048
37	19	5.2781	6.5257	5.2516	5.6917
38	20	5.2667	6.4997	5.2414	5.6754
39	21	5.2527	6.4684	5.2295	5.6560
40	22	5.2361	6.4319	5.2160	5.6334
41	23	5.2169	6.3902	5.2009	5.6077
42	24	5.1951	6.3433	5.1842	5.5789
43	25	5.1707	6.2912	5.1660	5.5469
44	26	5.1437	6.2339	5.1461	5.5118
45	27	5.1140	6.1714	5.1246	5.4735
46	28	5.0818	6.1036	5.1015	5.4321
47	29	5.0469	6.0306	5.0768	5.3876
48	30	5.0094	5.9525	5.0504	5.3399
49	31	4.9693	5.8691	5.0225	5.2890
50	32	4.9266	5.7805	4.9930	5.2350
51	33	4.8813	5.6867	4.9619	5.1779
52	34	4.8334	5.5876	4.9292	5.1177
53	35	4.7828	5.4834	4.8948	5.0543
54	36	4.7297	5.3740	4.8589	4.9877
55	37	4.6739	5.2593	4.8214	4.9180
56	38	4.6155	5.1394	4.7822	4.8452
57	39	4.5545	5.0143	4.7415	4.7692
58	40	4.4909	4.8840	4.6991	4.6901
59	41	4.4247	4.7485	4.6552	4.6078
60	42	4.3559	4.6078	4.6096	4.5224
61	43	4.2844	4.4619	4.5624	4.4339
62	44	4.2104	4.3107	4.5137	4.3422

TABLE 19 (cont.)

CALCULATED VARIABLE SCORES-FEMALES

OBS	SSAGE	CLIKE	CFAMIL	CMEM	CGLOB
63	45	4.1337	4.1544	4.4633	4.2474
64	46	4.0544	3.9928	4.4113	4.1494
65	47	3.9725	3.8260	4.3577	4.0483
66	48	3.8880	3.6540	4.3026	3.9441
67	49	3.8009	3.4768	4.2458	3.8367

Key: OBS=Observation
SSAGE=Song Specific Age
CLIKE=Calculated Liking Score
CFAMIL=Calculated Familiarity Score
CMEM=Calculated Memory Score
CGLOB=Calculated Global Score

TABLE 20

CALCULATED VARIABLE SCORES--FEMALE BOOMERS

OBS	SSAGE	CLIKE	CFAMIL	CMEM	CGLOB
1	-3	4.3939	5.5498	5.0087	4.9840
2	-2	4.4966	5.6547	5.0470	5.0661
3	-1	4.5944	5.7544	5.0832	5.1440
4	0	4.6871	5.8489	5.1172	5.2177
5	1	4.7748	5.9382	5.1491	5.2873
6	2	4.8574	6.0223	5.1787	5.3527
7	3	4.9351	6.1012	5.2063	5.4140
8	4	5.0077	6.1749	5.2316	5.4711
9	5	5.0754	6.2434	5.2548	5.5241
10	6	5.1380	6.3067	5.2758	5.5729
11	7	5.1955	6.3648	5.2946	5.6176
12	8	5.2481	6.4177	5.3113	5.6581
13	9	5.2957	6.4654	5.3258	5.6944
14	10	5.3382	6.5079	5.3382	5.7266
15	11	5.3757	6.5452	5.3484	5.7547
16	12	5.4082	6.5773	5.3564	5.7785
17	13	5.4357	6.6042	5.3623	5.7983
18	14	5.4581	6.6259	5.3659	5.8139
19	15	5.4756	6.6424	5.3675	5.8253
20	16	5.4880	6.6537	5.3668	5.8326
21	17	5.4954	6.6598	5.3640	5.8357
22	18	5.4978	6.6607	5.3590	5.8346
23	19	5.4951	6.6564	5.3519	5.8295
24	20	5.4875	6.6469	5.3426	5.8201
25	21	5.4748	6.6322	5.3311	5.8066
26	22	5.4571	6.6123	5.3175	5.7890
27	23	5.4344	6.5872	5.3017	5.7672
28	24	5.4067	6.5569	5.2837	5.7412
29	25	5.3740	6.5214	5.2636	5.7111
30	26	5.3362	6.4807	5.2413	5.6768
31	27	5.2934	6.4348	5.2168	5.6384
32	28	5.2456	6.3837	5.1902	5.5958
33	29	5.1928	6.3274	5.1613	5.5491
34	30	5.1350	6.2659	5.1304	5.4982
35	31	5.0721	6.1992	5.0972	5.4432
36	32	5.0043	6.1273	5.0619	5.3840
37	33	4.9314	6.0502	5.0245	5.3206
38	34	4.8535	5.9679	4.9848	5.2531
39	35	4.7706	5.8804	4.9431	5.1815
40	36	4.6826	5.7877	4.8991	5.1057
41	37	4.5897	5.6898	4.8530	5.0257
42	38	4.4917	5.5867	4.8047	4.9416
43	39	4.3887	5.4784	4.7542	4.8533
44	40	4.2807	5.3649	4.7016	4.7609
45	41	4.1677	5.2462	4.6468	4.6643
46	42	4.0496	5.1223	4.5898	4.5636
47	43	3.9265	4.9932	4.5307	4.4587

Key: OBS=Observation
SSAGE=Song Specific Age
CLIKE=Calculated Liking Score
CFAMIL=Calculated Familiarity Score
CMEM=Calculated Memory Score
CGLOB=Calculated Global Score

TABLE 21

CALCULATED VARIABLE SCORES-YOUNG GROUP

OBS	SSAGE	CLIKE	CFAMIL	CMEM	CGLOB
1	-18	3.9187	3.6491	4.5028	4.0291
2	-17	3.9748	3.8188	4.5410	4.1178
3	-16	4.0295	3.9832	4.5779	4.2037
4	-15	4.0826	4.1423	4.6133	4.2868
5	-14	4.1342	4.2962	4.6474	4.3672
6	-13	4.1843	4.4447	4.6800	4.4448
7	-12	4.2329	4.5879	4.7113	4.5196
8	-11	4.2800	4.7258	4.7412	4.5917
9	-10	4.3256	4.8584	4.7698	4.6610
10	-9	4.3697	4.9856	4.7969	4.7275
11	-8	4.4123	5.1076	4.8227	4.7913
12	-7	4.4533	5.2243	4.8470	4.8523
13	-6	4.4929	5.3357	4.8700	4.9105
14	-5	4.5309	5.4417	4.8917	4.9660
15	-4	4.5674	5.5425	4.9119	5.0187
16	-3	4.6024	5.6379	4.9307	5.0686
17	-2	4.6359	5.7281	4.9482	5.1158
18	-1	4.6679	5.8129	4.9643	5.1602
19	0	4.6984	5.8924	4.9790	5.2018
20	1	4.7274	5.9667	4.9923	5.2406
21	2	4.7549	6.0356	5.0043	5.2767
22	3	4.7808	6.0992	5.0148	5.3100
23	4	4.8053	6.1575	5.0240	5.3406
24	5	4.8282	6.2105	5.0318	5.3684
25	6	4.8496	6.2582	5.0382	5.3934
26	7	4.8696	6.3006	5.0433	5.4156
27	8	4.8880	6.3377	5.0469	5.4351
28	9	4.9049	6.3695	5.0492	5.4518
29	10	4.9202	6.3959	5.0501	5.4657
30	11	4.9341	6.4171	5.0496	5.4769
31	12	4.9465	6.4330	5.0477	5.4853
32	13	4.9573	6.4435	5.0444	5.4910
33	14	4.9667	6.4488	5.0398	5.4938
34	15	4.9745	6.4487	5.0338	5.4939
35	16	4.9808	6.4433	5.0264	5.4913
36	17	4.9857	6.4327	5.0176	5.4858
37	18	4.9890	6.4167	5.0074	5.4776
38	19	4.9908	6.3954	4.9959	5.4667
39	20	4.9911	6.3688	4.9829	5.4529
40	21	4.9898	6.3369	4.9686	5.4364
41	22	4.9871	6.2997	4.9529	5.4171
42	23	4.9828	6.2572	4.9358	5.3951
43	24	4.9771	6.2094	4.9174	5.3703
44	25	4.9698	6.1563	4.8975	5.3427
45	26	4.9611	6.0979	4.8763	5.3124
46	27	4.9508	6.0341	4.8537	5.2792
47	28	4.9390	5.9651	4.8297	5.2434
48	29	4.9257	5.8908	4.8043	5.2047
49	30	4.9109	5.8111	4.7776	5.1633
50	31	4.8945	5.7262	4.7495	5.1191
51	32	4.8767	5.6359	4.7199	5.0721

Key: OBS=Observation
SSAGE=Song Specific Age
CLIKE=Calculated Liking Score
CFAMIL=Calculated Familiarity Score
CMEM=Calculated Memory Score
CGLOB=Calculated Global Score

TABLE 22

PEAK AGE IN YEARS FOR VARIABLES ACCORDING TO GROUPS

Variables	Whole	Boomers	Males
Liking	16	16	13
Familiarity	15	16	14
Memories	13	14	8
Global	15	16	13

Variables	Females	Female Boomers	Young Group
Liking	15	18	20
Familiarity	15	18	14
Memories	13	15	10
Global	14	17	15

Results of the Three Methods

To clarify any differences in age peaks obtained from each of the three methods--the calculus method, the spreadsheet method, and inspection of graphs method--Table 23 summarizes the peak ages for the four dependent variables across methods for the whole group. The final column indicates whether the results supports the hypothesis for that variable that the peak would occur in the teen-age years.

TABLE 23

AGE PEAKS ACROSS METHODS USING MEAN SCORE DATA
WHOLE GROUP

Variables	Calculus	Spreadsheet	Graph	Hypothesis Accepted
Liking	16 (15.65)	16	15	Yes
Familiarity	15 (14.74)	15	15	Yes
Memories	13 (13.13)	13	14	Yes
Global	15 (14.67)	15	14	Yes

The spreadsheet method and the calculus method produce the same results when the calculus figures are rounded off. It

is felt that carrying the ages out to fractions is impractical not only because it is inconvenient but also because it implies precision that doesn't actually exist. By using the respondents' birth year only rather than specifying the month they were born and using only the year a song was released rather than specifying the month, estimates were used throughout the study rather than precise dates. For that reason the data was rounded.

The visual inspection of the graphs is difficult to read and is considered a less accurate method of estimating the peak ages.

Since the peak age for the variables was calculated by using the regression parameters for the mean scores, it seemed worthwhile to recalculate the peak age using raw scores for comparison purposes. For the whole group the raw scores produced liking, familiarity, memories and global age peaks of 15, 15, 13, and 14, respectively. The mean score peaks of 16, 15, 13, and 15 are quite similar to the raw score peaks, which confirms that both methods produce about the same results. Holbrook and Schindler also found that both methods produced similar peaks. The low R-square values for the raw score data prompted the use of the mean score data.

Interpretation of the Dependent Variables

As previously noted, the dependent variables for the

whole group showed peaks in the teenage years from 13-16 years old, as shown in Table 22. Liking was highest at age 16, familiarity was close at 15, memories peaked a little lower at age 13, and the global measure was in-between at age 15. Each of the six groups showed a similar pattern with liking and familiarity fairly close and memories somewhat lower. The males showed a noticeable drop for memories, and the young group showed a greater spread between liking, familiarity, and memories with memories peaking at the age of 10.

A look at the R-square values in Tables 10-15 offers some insight into this pattern. In the whole group the R-square values were high (ranging from 0.6282 to 0.8480) for the mean score values of the dependent variables. These high R-square scores show that the variables account for a high degree of variation and lend confidence to the corresponding age peaks. The baby boomer group showed R-square values ranging from 0.5721 to 0.7195 which also lend support to the age ranges of 14 to 16. The male group, however, had lower R-square scores. Variables MGLOB and MFAMIL had high R-squares (0.6730 and 0.7100 respectively) but MLIKE dropped to 0.4867 and MMEM was only 0.3924. Thus, the somewhat lower age of 13 for liking and particularly the age of 8 for memories should be interpreted with caution.

The female group showed age peaks from 13 to 15 with R-squares ranging from 0.6021 to 0.8061, but the female boomer group showed age peaks from 15 to 18. R-squares for MLIKE,

MFAMIL, and MGLOB ranged from 0.5518 to 0.6441, but MMEM had an R-square of 0.4363.

The young group showed age peaks of 14 and 15 for MFAMIL and MGLOB with R-squares of 0.7393 and 0.6440, respectively. However, the age peak of 20 for MLIKE had an R-square of 0.4255 and the age peak of 10 for MMEM had an R-square of only 0.2673--suggesting the need for some caution in drawing conclusions about the peak age for liking and extreme caution for memories.

Generally the age peaks are supported by high R-squares. Overall, the most consistent high R-squares were for the MFAMIL variable.

Correlation Analysis

The mean score values for liking, familiarity, memories, and global are highly correlated with each other. Tables 24-29 show the Pearson Correlation Coefficients and the corresponding probabilities for the variables. Mean score correlations for the whole group ranged across variables from 0.82561 to 0.97356. The baby boomer group and the female group had equally high correlations throughout. For the male group the correlations between MMEM and MLIKE and between MMEM and MFAMIL ranged from 0.60810 and 0.62728--thus, the memory variable was not as highly correlated with liking and familiarity as was seen with the other groups. Female boomers

TABLE 24

CORRELATION ANALYSIS-WHOLE GROUP

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 68

	MLIKE	MFAMIL	MMEM
MFAMIL	0.85894 0.0001		
MMEM	0.85948 0.0001	0.82561 0.0001	
MGLOB	0.94272 0.0001	0.97356 0.0001	0.90950 0.0001

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	LIKE	FAMILIAR	MEMORY
FAMILIAR	0.51237 0.0		
MEMORY	0.61221 0.0 7650	0.39405 0.0001 7649	
GLOBAL	0.88066 0.0 7649	0.79296 0.0 7649	0.77700 0.0 7649

TABLE 25

CORRELATION ANALYSIS-BABY BOOMERS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 47

	MLIKE	MFAMIL	MMEM
MFAMIL	0.85053 0.0001		
MMEM	0.82633 0.0001	0.79039 0.0001	
MGLOB	0.95073 0.0001	0.95915 0.0001	0.89736 0.0001

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	LIKE	FAMILIAR	MEMORY
FAMILIAR	0.48873 0.0001 1975		
MEMORY	0.63836 0.0001 1976	0.36227 0.0001 1975	
GLOBAL	0.88885 0.0 1975	0.76375 0.0 1975	0.78846 0.0 1975

TABLE 26

CORRELATION ANALYSIS-MALES

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 64

	MLIKE	MFAMIL	MMEM
MFAMIL	0.80049 0.0001		
MMEM	0.62728 0.0001	0.60810 0.0001	
MGLOB	0.91088 0.0001	0.95890 0.0001	0.75504 0.0001

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	LIKE	FAMILIAR	MEMORY
FAMILIAR	0.56150 0.0001 2337		
MEMORY	0.60085 0.0001 2338	0.41094 0.0001 2337	
GLOBAL	0.88885 0.0 2337	0.82465 0.0 2337	0.75560 0.0 2337

TABLE 27

CORRELATION ANALYSIS--FEMALES

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 67

	MLIKE	MFAMIL	MMEM
MFAMIL	0.85115 0.0001		
MMEM	0.88271 0.0001	0.83971 0.0001	
MGLOB	0.94360 0.0001	0.96965 0.0001	0.92582 0.0001

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	LIKE	FAMILIAR	MEMORY
FAMILIAR	0.48434 0.0 5316		
MEMORY	0.61264 0.0 5295	0.38059 0.0001 5295	
GLOBAL	0.87527 0.0 5295	0.77563 0.0 5295	0.78349 0.0 5295

TABLE 28

CORRELATION ANALYSIS-FEMALE BOOMERS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 47

	MLIKE	MFAMIL	MMEM
MFAMIL	0.78689 0.0001		
MMEM	0.76980 0.0001	0.68843 0.0001	
MGLOB	0.93744 0.0001	0.93063 0.0001	0.85906 0.0001

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1672

	LIKE	FAMILIAR	MEMORY
FAMILIAR	0.46072 0.0001		
MEMORY	0.63147 0.0001	0.32557 0.0001	
GLOBAL	0.89220 0.0	0.72991 0.0001	0.78938 0.0

TABLE 29

CORRELATION ANALYSIS-YOUNG

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 51

	MLIKE	MFAMIL	MMEM
MFAMIL	0.73187 0.0001		
MMEM	0.54012 0.0001	0.73203 0.0001	
MGLOB	0.85634 0.0001	0.96657 0.0001	0.79855 0.0001

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	LIKE	FAMILIAR	MEMORY
FAMILIAR	0.50416 0.0001 4709		
MEMORY	0.57618 0.0 4688	0.37457 0.0001 4688	
GLOBAL	0.87608 0.0 4688	0.78756 0.0 4688	0.75991 0.0 4688

show a correlation of 0.68843 between MMEM and MFAMIL, and the young group show a correlation of 0.54012 between MMEM and MLIKE. These correlations are the lowest across the groups and are reflected in the lower age peaks for memory. Liking, familiarity, and global were consistently highly correlated.

When looking at the raw score data the correlations drop considerably. For the whole group the correlations between global and the other variables are high (from 0.77700 to 0.88066), but liking and familiarity have a correlation of 0.51237, and memory and familiarity have a correlation of 0.39405. The other groups all show a similar pattern with correlations in the same numerical ranges. The difference between correlations using mean scores and raw scores reflects the fact that some of the variation in response has been eliminated with the use of means.

Results of Open-Ended Question

The open-ended question regarding the emotion felt when liked music is used commercially received the following responses: 10% of the respondents had no opinion; 15% had a totally negative opinion; 48% had a totally positive opinion; and 28% had a mixed reaction--some positive and some negative reaction. These percentages are presented in Figure 36 and appeared fairly consistent across groups. Typically the negative comments identified anger as the emotional response

to commercialized favorites. Some felt it interfered with special memories, and others were angry that the artist "sold out." Some were irritated that remakes of songs are used without the original artists. A sample of their comments were:

> I don't like songs that I like used for commercials because the song is distorted to fit the ad. From then on I think about the ad instead of how I like the song.
>
> Sometimes I'm upset because the memories attached to the song don't fit the product. But, usually I listen more to the music than to the products' message.
>
> If I don't like the product and like the music then it probably reinforces my dislike!
>
> Sell out by big artist. Puts jingle makers out of business.
>
> It depends on what's being advertised. If it's something I disapprove of, it makes me angry that the music gets associated with it.
>
> I hate it! I can't stand commercials and they bother me even more when they co-opt a song that I like for purposes I personally feel are cynical and superfluous.
>
> I am usually disgusted because advertisers usually use these awful singers or rotten acoustics on a song I like.
>
> I don't like to hear a tune I know with words which have been changed to fit a product.
>
> I usually feel angry that special song is being blemished for a commercial.
>
> I usually begin to dislike the song. I feel that its not very classy to use a good classic song and manipulate it and play it over and over in a commercial.

The positive comments centered around feeling good and being happy. Several said they sing along; others feel upbeat,

energized, or elated; and some enjoy happy memories associated with the music. Some said that they remember the commercial better, and remember the product better. Their comments were:

> It brings back memories if I like the song. I tend to like watching the commercial if it is a song I like. Ex: Chevrolet using Bob Seger's "Like a Rock:--I love that commercial, not because of what I am seeing, but because of the song.

> I seem to remember the commercial better and it adds life to it. I love to watch commercials when I hear a song come on that I like, especially when the song relates to what is being advertised.

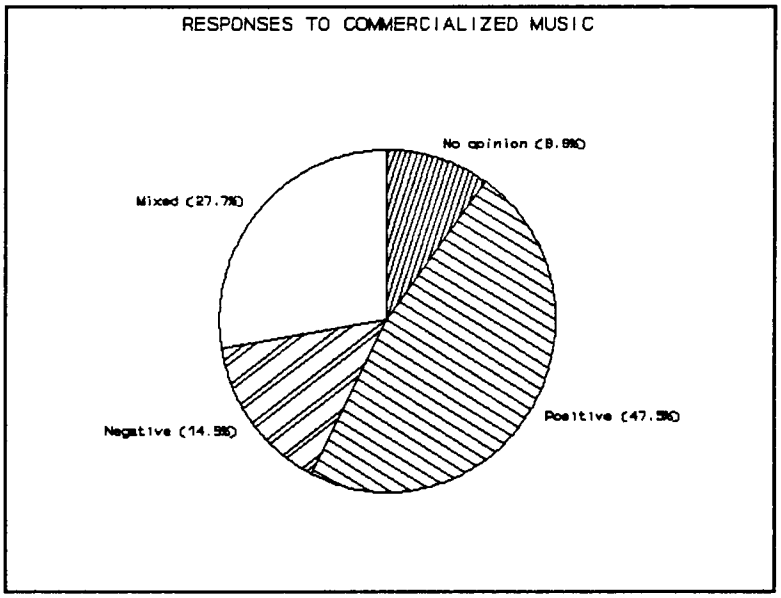

Figure 31

> (I feel) recognized; like some else identifies with me and my emotions.

> It makes me happy. I tend to listen more to the song than what they are trying to sell, but when I see that product I relate it to the song and I have a positive reaction to the product.

> If it's a beautiful song used tastefully and appropriately, I enjoy hearing it anyway...If it pays a creative artist's bills, more power to them!

> It just feels good--sense of elation, even transportation, bringing forth a feeling of happy times past.

> I feel nostalgic, happy. I like some of the old songs used to sell products.

I feel a connection, a bonding.

If I know the song in the commercial I can relate to it better. It makes me feel happy and gives more attention to that commercial. The emotion is overwhelming.

...Usually commercials use music that makes you feel good. Many times I cry during a commercial but its always emotions of joy or happiness that I feel.

More than one fourth of the respondents had mixed reactions. They often qualified a positive comment saying that they liked it if it is the original artist's version or if it fits the product. Several said that although the music makes them like the commercial, they don't buy the product. They commented:

This depends on the combination of product and song. There needs to be an appropriate fit. If the fit's good, I love it. If the fit's bad, I hate it!

It is okay with me if the product is not obnoxious--alcohol, tobacco, etc. I do not like it when they change the words to put in the name of the product.

It makes me feel good, but depending on the way it is used. It if is a classic song used in a bad way it really turns my stomach.

If it is done well it brings back good memories. If it is someone other than the original singer I think "Oh, Please" and am rather turned off by it.

Since I usually have memories attached to every song when I hear a song in an add, I think of the memories associated with that song--not the product being advertised...

Usually I will listen to the whole commercial. If I don't like (the) music I may leave (the) room. Some music really "bugs" me--I don't listen at all.

When I hear a song I like used in a commercial, it puts me back to the situation in which I first heard it, or when it meant the most to me.. This can be negative as well as positive.

> (I) feel compelled to sing the song but (I) probably often don't even pay attention to what the product is.
>
> Sometimes I think it's cute, if it's done well and to a cute jingle. Other times it's run down into the ground by constant repetition. Ex: California grapes.

Although nearly half of the respondents (48%) were quite happy with commercials that use liked music, an almost equally large group of people (43%) had either a negative reaction or a mixed reaction to it.

CHAPTER V

DISCUSSION

Hypotheses

This study hypothesized that the four dependent variables (liking, familiarity, memories, and the global measure) would peak during the teen-age years--unlike the findings of Holbrook and Schindler which produced a peak age for liking of 23.47. Liking peaked at 16 for the whole group, and it peaked within the teen-age years for each group except the young group which showed a peak liking score of 20. Familiarity and global also peaked during the teen-age years for each group, whereas memories peaked during the teen-age years for all but the male and young groups, which peaked at an earlier age. The few age peaks that deviated from the teen-age years had the smaller R-square values associated with them. Table 23 summarized the peaks across groups for each variable.

Both studies report a curvilinear relationship with liking climbing to a peak and then tapering off with age. Also both studies reported p values of .0001 for a regression model with both song-specific age and song-specific age squared as independent variables. The main difference lies in the peak age--a difference between mid-teens and mid-twenties.

Differences in Results of the two Studies

Several explanations can be considered. One is that the number of music selections made a difference. By using only one selection for two years (the present study used two selections per year or four selections for two years) Holbrook and Schindler ran the risk of selecting a piece of music that was disliked by an individual even though that person liked the music from that era. The influence of a single music selection in the present study was made less critical by using more selections. Additional music selections may have facilitated a truer evaluation of the music for a given year. If this is the case, the results of this study are more accurate than that of Holbrook and Schindler.

Second, Holbrook and Schindler did not provide the older respondents with the same opportunity to rate music from their teen-age years and early '20s as they did for the younger respondents. Their study included respondents 86 years old, but they only provided music as early as 1932. A person 86 years old rating music from 1932 would receive a song specific age of 31 and would be unable to provide data for the younger song-specific ages. This could have introduced an uncontrollable bias that may have contributed to a less accurate age peak.

Third, the different age range of the respondents in the two studies may have had an additional impact. Holbrook and

Schindler did not compare groups for differences in peak ages, which suggests that they assumed all people (young and old) form preferences for music in the same way, at the same time in life, and that they re-experience past music in the same way. This discounts the idea that younger people might respond differently than older people. Changes in the music industry, differences in the exposure to music, changes in life styles, and the effect of nostalgia may all influence the liking of music. This is supported by the present study, which divided the sample into three age groups. When the baby boomers (35-45 year olds) were compared to those 20-34 years old, differences were apparent. The fact that a difference occurred in these two groups signals the possibility that differences may occur in other age groups as well. The third group (46-50 year olds) had too small a number of respondents for analysis, and further research is needed to compare 45-54 year olds, 55-64 year olds, and people over 65 to the younger people. Also combining the respondents from age 20-34 into one group (there were no respondents below age 20) may also have hidden differences between 18-25 year olds and 25-34 year olds.

Another factor in the different age peak between the two groups is that baby boomers, unlike the youngest respondents, have experienced the music of their teenage years more than once. The oldies format for radio stations, the frequent use of oldies music in movies, and the use of oldies in ads has given baby boomers a chance to relive the past. As Schlesinger

has theorized, there may be a peak time period for people to return to their past, and baby boomers may have experienced a critical passage of time that facilitates nostalgia, while younger respondents may not. Baby boomers may be drawn to the music of their teens moreso than younger respondents because of their enjoyment of rediscovering that music. Also they may be greatly exposed to that music in ads, movies, and on radio. This familiarity may facilitate liking.

The age peak of 20 for the younger people in the sample must be interpreted with caution. As mentioned before, the R-square value for liking was 0.4255 which is a little lower than the R-squares of the other groups. Familiarity peaked for music released when the respondents were 14; this probably reflects the large amount of time spent listening to music at age 14. That liking peaked six years later implies that they are not forming the strongest preference for the music most familiar to them; they may be more willing to like newer releases of music and be less bound by nostalgia than the older respondents. Also their consumption patterns of music may be different; they may be extending the experiences associated with the coming of age. Younger people have stayed in school longer, started careers later, and delayed getting married and starting a family. All these factors may prolong the influence of music during a coming of age period.

Possibly a better explanation may be that at a later point in life their preference for music may change to the

music popular when they were around age 16. This supports Schlesinger's concept of cycles--that these respondents may not have experienced enough passage of time for nostalgia to influence preference.

The unanswerable question is whether people react to the same music differently over time. We know that the baby boomers currently favor the music popular when they were 16, but we don't know how they responded to the music when they were actually 16. We also don't know whether they experience a stronger liking for that music than now than they did five, ten, or 15 years ago. Similarly, the younger respondents currently like the music released when they were 20, but we don't know how they liked that music when it was contemporary or whether they would rate the music differently in the future.

When comparing the total males and females in the sample, males showed an earlier age peak for liking than females (13 and 15, respectively) as summarized in Table 23, but the lower R-square values for males than females (0.4867 and 0.6021) indicates that liking accounts for more variation in females than males.

Regression Data

The regression data showed highly significant probabilities both for the model and for specific parameters.

parameters. The fact that the p values for the model ranged between zero (at four decimal points) and .0001 is certainly convincing that this outcome was not a random occurrance.

The R-square scores using the mean scores were quite good--the liking score for the whole group was 0.6720 meaning that 67% of the variance is accounted for by age.

The R-square values for the models using the raw scores were lower than for the mean score data. Holbrook and Schindler also reported a contrast between mean and raw scores (R=0.84 for mean liking scores and R=0.46 for the raw liking scores).

Correlation Data

That liking, familiarity, and memories would be highly correlated requires explanation. There is the temptation to conclude that people simply like music because it is familiar to them and holds memories; yet, the relationship is clearly more complex. It is possible for liking and familiarity to exist independently of each other (one can like music the first time it is heard, although this may not happen often), and liking and memories can exist independently of each other (one can dislike music that is associated with memories, and one can like music that holds no memories). However, it is not possible for memories to exist without familiarity. Despite the desire to capture two distinctly different aspects, the

interdependence must be recognized. Memories and familiarity are not variables that can freely exist independently, and their correlation must always be greater than zero.

With these limitations recognized it can be said that there is a strong likelihood that the music a person likes is familiar music and that much of it holds memories; however, there may be other aspects of liking not identified in this study.

Theoretical Implications

The theory that people form strongest preferences for music popular during their coming of age finds greater support in the present study than in Holbrook and Schindler's study, since most people generally consider the coming of age as a teen-age occurrence.

As mentioned previously, Schlesinger's theory may account for a fondness for music of the past--not only in the desire to hear the same selections of music as in the past, but also in the desire to relive music from a particular era.

What this study and the previous study are unable to explain is whether a respondent who has a current preference for music released during his or her teen years has always had that preference or whether that preference has been influenced by nostalgia or other factors.

Open-Ended Question

A point of interest in this research is how to apply this knowledge in a practical setting. Advertisers often use music to create a positive emotion associated with a product. The question arises regarding how effectively music is used.

The results of the open-ended question revealed that nearly half of the respondents (48%) enjoyed hearing liked music in commercials, but 43% had either a negative reaction or a mixed reaction to it. It was very clear that the respondents did not like remakes of the original songs that changed the words to fit the product. Previous research (Tom, 1990) states that parody music retrieves memories of the product more often than the original hit version; however, it would be important to know whether the nine ads used in that study were airing at the time of the research--a fact that was not discussed in the study. The different retrieval effectiveness from parody music and original hit music may depend on the role of short and long term memory. It is possible that over time one might forget the tie-in to the product for original music faster than one would forget the connection for parody music. If parody music is only better than original hits in long term memory, it may not be a valuable improvement considering the negative emotion associated with it. If the retrieval value of the music is not significantly greater with short term memory, it is clearly

better to use the original version to avoid consumer's anger.

There appears to be a strong emotional attachment to music, and an inappropriate fit of the music to the product creates resentment. The link between the influence of the ad and the consumer's motivation to buy the product is not clearly known; however, advertisers would not want to risk undesirable consequences of negative emotions associated with the product.

Qualitative research could further reveal the emotions associated with music in ads and its impact on the consumer's willingness to buy the product. It is an area that should be researched rather than left to the chance assumption that people consistently like hearing their favorite music in ads. Knowing which music the target audience likes may not guarantee that consumers will carry a positive feeling from the music to the product.

Limitations of the Study

The more complete sample of music and the narrowing of age range of the respondents in this study offers improvements over Holbrook and Schindler's research. Also the current study had a sample size of 101 which was adequate for comparisons to Holbrook and Schindler's sample of 108. Analysis of the whole group was satisfactory with the given sample; however, further comparisons between men and women and between people of

different ages was limited. The disproportionate number of women in the sample made comparisons between men and women inappropriate, particularly within the older age range. Likewise, the larger number of younger people prevented a full analysis of the respondents by age group.

Further studies should plan to analyze subgroups of the sample and choose members that can provide adequate representation by age and sex.

Future Research

The contrast in age peak for liking among the younger respondents and the baby boomers is an intriguing finding worthy of further research. It is unclear whether this finding was due to the different length of time between the current age of the respondents and their teen-age years, or whether it is due to some other characteristic unique to their age. For example, the baby boomers are able to experience nostalgia when listening to the music of their teens because 15-25 years have transpired. The respondents in their early twenties would have experienced the music of their teens very recently--perhaps not long enough to feel nostalgic toward the music. It would be of great interest to find out whether the younger group will come to prefer music released at age 16 (like the baby boomers) when they get older.

This can be achieved one of two ways. Having a larger

sample with ten people at each age from 20-40 years old would probably allow the researcher to adequately investigate at what age nostalgia becomes a factor. Only a longitudinal study would show whether a given sample changes over time.

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APPENDIX

SURVEY FORM

A. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

B. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

C. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

1. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

2. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

3. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

4. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

5. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

6. Dislike ____ ____ ____ ____ ____ ____ ___ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

7. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

8. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

9. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

10. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

11. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

12. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

13. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

14. Dislike ____ ____ ____ ____ ____ ____ ___ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

15. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

16. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

17. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

18. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

19. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

20. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

21. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

22. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

23. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

24. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

25. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

26. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

27. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

28. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

29. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

30. Dislike ____ ____ ____ ____ ____ ____ ___ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

31. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

32. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

33. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

34. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

35. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

36. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

37. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

38. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

39. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

40. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

41. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

42. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

43. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

44. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

45. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

46. Dislike ____ ____ ____ ____ ____ ____ ___ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

47. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

48. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

49. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

50. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

51. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

52. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

53. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

54. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

55. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

56. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

57. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

58. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

59. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

60. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

61. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

62. Dislike ____ ____ ____ ____ ____ ____ ___ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

63. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

64. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

65. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

66. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

67. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

68. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

69. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

70. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

71. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

72. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

73. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

74. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ___ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

75. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

76. Dislike ____ ____ ____ ____ ____ ____ ____ Like

Unfamiliar ____ ____ ____ ____ ____ ____ ____ Familiar

Unhappy memories ____ ____ ____ ____ ____ ____ ____ Happy memories

1. What year were you born? _____

2. Male _____

Female_____

3. Please describe the emotion you feel when you hear a song that you like used in a commercial. Be as candid as possible and feel free to write as much as you like.

VITA

Joyce Marie Wolburg was born in Norfolk, Virginia on October 19, 1948. She graduated from Granby High School in June, 1966, and entered Old Dominion University in Norfolk the following September. In June, 1970 she received a Bachelor of Science degree in Psychology. In August, 1989 she entered the University of Tennessee, Knoxville and in December, 1992 received a Master of Science degree in Communications.

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