

THE EFFECT OF TEMPO VARIANCES ON LISTENER'S PREFERENCE

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## THE EFFECT OF TEMPO VARIANCES ON LISTENER'S PREFERENCE

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For years, several radio stations have speeded up their music slightly above the speed at which it was recorded. Usually a speed of plus two percent was used. It was believed that listeners preferred the increased tempo to the normal tempo in comparison. This study investigates whether or not listeners prefer music when it is speeded up by two percent. This study also determines whether or not gender plays an effect on listener's preference of one rate over another. Genre, or song-type, is also analyzed to determine its effect on preference of rate.

Ten songs of various genres were edited to a hook of approximately 25 seconds in length. Each hook was recorded onto a recordable CD at four different rates: minus 2%, normal speed, plus 2%, and plus 3%. The order at which these songs were presented to the subjects was randomized from song to song. Vocal type was also controlled as five of the songs had male vocals and five of the songs had

female vocals.

No literature previously existed on this topic so several experts in radio programming were contacted. None of those who responded knew of any research. To the best of the author's knowledge, this is the first perceptual study that investigates listener's preference of various rates of music.

Subjects were 101 college students with a mean age of 20.02 years. These subjects were asked to choose from one of the four samples that were presented for the ten different songs. The design of the survey resulted in nominal data, or counts in categories. Either a chi square goodness of fit test, or a contingency table analysis was performed on the data to answer three different research questions. An alpha level of .01 was used for all tests.

The study found that across various genres, listeners do not prefer music when its speed is increased by two percent in comparison with the normal speed of the song. The significance of this is that many programmers are speeding up music in belief that a competitor that does not will sound too slow in comparison. This belief was not supported on a universal scale.

However, when the genres were analyzed, they were found to have a significant effect on preference. The plus 2% sample was preferred over normal speed for two of the genres. This indicates that the decision on whether or not to increase the speed of music on a particular station depends on the genre of music that station is playing.

Another important finding concerns gender. Gender was found to have no

significant impact on listener's preference for one rate over another. This is important because many stations will target one gender or the other but usually not both.

The study concludes that there is likely no universal answer as to whether or not to speed up music. Song-type plays a more important part in determining whether or not to pitch the music than does anything else. It was also concluded that gender is not an issue in this area. However, the study cautions that future research is needed before definite conclusions can be made.

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## CHAPTER 1: INTRODUCTION AND PERTINENT BACKGROUND

For many years, several radio stations have played their music at a speed slightly faster than it was recorded. This practice has flourished unbeknownst to the typical radio listener. Usually the increased rate has been only slight—around two percent. Critics may quickly assume that the only reason for speeding up the music is to increase time available for commercials.

However, this is probably not the case for two main reasons. The first is that most music-formatted stations are not interfacing with a network. That is, they do not have to leave local programming at the top of the hour, or some other time, to join network programming. With sophisticated equipment, even news feeds can be pre-recorded and played at the station's convenience. Radio stations do not have to worry about ending programs at an exact second in the way that television stations do. Therefore, more commercial spots could be added to the breaks without worrying about a song playing across the top of the hour.

Secondly, speeding music up by only two percent saves very little time—at least per hour. For example, let us assume that a station has scheduled eight minutes of commercials in a given hour. The time for the announcer to transition into breaks and talk between songs might take two more minutes. This leaves only 50 minutes of music in a given hour. Speeding this up by two percent—a common speed used by programmers—will make room for only 1 additional minute. In other words, increasing the speed two percent results in 50 minutes of music playing in 49

minutes. This additional minute of space could be used for commercials. In reality, stations usually have many more commercial minutes, talk much more, and have fewer minutes of music scheduled per hour. Therefore, it appears pointless to speed music up solely to allow for more commercial space per hour—especially since, as stated earlier, there is no concern about interfacing with a network. If making room for more commercials is the only reason that stations are doing this, then there appears to be no good reason to keep doing it. Perhaps there is some competitive advantage to speeding up music. Maybe listeners actually prefer the increased tempo.

This study investigates whether or not listeners prefer songs when they are played faster than the speed at which they are recorded. The data are also scrutinized to determine whether or not song-types, or genres, affects listeners' preference of rate and to determine whether or not gender affects listeners' preference of rate.

#### Review of Literature.

No literature exists on this topic. The author has conducted an extensive review of databases in hopes of finding previous research on this topic. However, after completing an exhaustive search, it can be concluded that the field of communications has not dealt with the subject of the effects of tempo variances on listener preference. No academic research has been done to determine whether or not listeners prefer the increased tempo, or pitched version of a song, to the normal version, or speed at which a song was recorded. (From here on, “normal version,” “0%,” and “speed at which a song was recorded” all refer to the speed at which the



song was released on CD.) However, the lack of academic research does not rule out the possibility of private sector research. (Usually, any existing research of this type is proprietary and not available for analysis.)

Therefore, the next logical course of action was to contact experts in the field. These people would likely know if any research on this topic exists. For our purpose, an expert in programming includes all consultants—regardless of whether client stations are in top ten markets—as well as program directors in the top ten Arbitron rated markets. Unfortunately, it was not possible to contact all of these people. There is no all-inclusive list for programming consultants and program directors in major markets are extremely difficult to reach.

However, there is a web site known as “allaccess.com.” This site is devoted exclusively to the radio industry and features weekly articles from consultants. The e-mail addresses of these consultants are included with their article. A back file of all these articles is also kept on the site along with the e-mail address of the author. Although this was most likely set up for business purposes, it did provide a way for the researcher to contact experts in the field.

The researcher attempted to e-mail all of the consultants who have written an article for the “consultant tips” section of <allaccess.com>. The e-mails were not uniform in their content but did explain the purpose of this study and the reason they were being contacted. Several of these consultants responded to the author’s request for information on this topic. The researcher also managed to receive responses from two program directors in top ten markets—Chicago (#3) and Philadelphia (#5). The

responses from these people provide sufficient background information on the practice of radio stations speeding up the music that they play.

Some experts oppose the practice. Not every expert agreed on the usefulness of speeding music up. However, all of them stated in their e-mail replies to the author that they knew of no research on this topic—either academic or private.

Don Hallett of The Positioning Works in Columbus, OH doubts the usefulness of the practice. “I have done lots and lots of research for radio, but none addressing ‘speeding up songs.’...As a rule most stations today DO NOT speed up songs, but it was a practice that was often practiced a number of years ago.” (Hallett 1999)

Roger Wimmer of Wimmer-Hudson Research and Development offers this opposition to the practice.

I have never seen any research conducted on compressing music...either in the academic sector or the private sector.... Something may be out there...I just haven't seen it. Your study will probably be the first. I find the whole thing interesting. I really don't know if the audience will perceive a difference or not...If I worked in a market where my competitor compressed its music, I would have one heck of a time letting everyone in the market know about it. You could kill a station very quickly if it gets involved in compressing music. (Wimmer 1999)

Wimmer's partner Matt Hudson adds “we have no research on this.” (Hudson 1999)

Ken Johnson, program director of Philadelphia's country station WXTU, adamantly opposes the idea of speeding up music.

I too am unaware of any research on ‘pitching songs up’. Stations that do so are hoping to increase tempo on their ballads to keep the station from sounding too ‘down’. Personally—I've found it really annoying especially on tenor singers like Vince Gill who end up sounding like chipmunks. WXTU was pitching songs up when I arrived—but I returned the CD players to ‘normal’ speed. I think songs should sound the way consumers hear them on

their home stereos. When a song leaves the studio—it should be left alone. (Johnson 1999)

Alan Burns, of Alan Burns and Associates—a consulting firm that works primarily with top 40 formatted stations--offered this information. “I’m also not aware of any research done on this topic. Personally, I think the tactic is of limited usefulness; the theory is that running all songs at +2% or so will make the competition sound slow and stale” (Burns 1999).

David Shakes, another consultant, offers this opinion of speeding up songs.

There are still some stations that speed up songs. Their belief is that this makes the station sound more exciting than a competitor that plays the same music. If a station is alone in its format, then doing this would seem to be not well thought out. I and many other programmers believe this is ‘radio voodoo’ and an old idea that probably never made any sense in the first place. There are plenty of ways to make a station stand out from competition without messing with the music and I’ve always won without doing this practice (Shakes 1999).

Some experts favor the practice. Not everyone opposes the idea of speeding up music when playing it on radio. Mark Todd is a consultant who admits to having engaged in the practice.

I do not know of any research that has been conducted on this particular topic either. Many programmers, including myself, have done it for perceptual purposes when dealing with a head on competitor. When this happens, much, if not all of the music on the [two] stations is the same. Therefore, when one speeds up the music it perceptually makes the other station sound slow and dragging. I personally have done this, however only in situations where I had a head on competitor. I do, and have found it very effective. Speeding the music up 1 to 1 and one-half percent seems to create a ‘vibe’ and a more upbeat feel for your station. (Todd 1999)

Another consultant who favors the practice is Randy Lane of The Randy Lane Company. “I don’t know of any actual research on the speeding up of songs. Most

Top 40 stations over the past 20 years have sped up songs to give the station a brighter sound. They usually speed songs up approximately 1.75%--2%. Most people cannot detect it at that speed" (Lane 1999).

Greg Gillispie, a consultant with McVay Media offers this opinion.

I don't think there has ever been any research done on this topic. Radio stations have speeded up their songs for years. The primary reason was so their station's music would sound 'brighter' than the competition's. They never acknowledged the fact that the music was faster. The only time I have heard of anyone commenting on this was when stations tweaked it just a bit too much and the vocals sounded like Alvin & The Chipmunks. (Gillispie 1999)

Chris Shebel, who is program director of WKIE (92 kiss-fm) a top 40 station in Chicago offers this view on the practice of speeding up music.

I don't know of any research that was done on whether listeners have a preference on the tempo of songs. Some stations pitch them up around 2% to make them sound a little fresher than competitors. The additional 2% tends to make the high frequencies jump out more. It's just one of those little tricks to make a station sound different. (Shebel 1999)

Another consultant who supports the practice is Bill Richards, of Bill Richards & Associates.

There is no research that I know of to support the execution of [speeding up songs]. Programmers started doing this as far back as the 60s. Someone obviously thought it gave his/her station more energy. If you had two stations in the same market with the same format and one was playing hyped songs and the other wasn't, the one that wasn't sounded less energetic. It's hard to say why. Subliminal? Real or imagined by programmers? It's just a common practice that still exists today. In fact, CD players are set the same way as turntables. I personally feel that some songs sound fine hyped, while others sound horrible. I think it depends on the song. With careful monitoring, I endorse this. (Richards 1999)

Keith Hill, known in the industry as The UNCONSULTANT, who specializes

in country-formatted stations, is an advocate of the practice.

The fact is that speeding songs up does three things. 1) You can actually play more songs in a day...or more spots. 2) It raises the audio up in pitch...the slightly higher pitches work better with most audio processing. ... 3) There is a real physiological response to sped up songs. They sound better, faster, and that tempo compared to the regular tempo “feels” better and makes listeners happier. ... The reason to speed up songs is that when your competitor does not—listeners cannot figure out why—but they don’t like them as well. Well that is because after you have heard them sped up, the regular (slower speed in comparison) sounds draggy—and sick. WSM FM in Nashville at one time did not speed up music [whereas] WSIX did by 2%. I know from personal experience and friends experience that listening to WSM FM caused mild nausea. (Hill 1999)

Another country music consultant, Joel Raab, advocates the practice.

I’m not sure the average listener can tell the difference, or cares. Stations will speed up songs mainly to make their competitor sound slower. It’s all done to make a subliminal difference. ... I have advocated the practice in certain situations, to either gain a slight advantage, or out of self-defense to avoid sounding slower than my competition. The number I used was 2% faster. Any higher, and the music starts sounding weird. (Raab 1999)

Another consultant who favors the practice in certain situations is Guy

Zapoleon, president and founder of Zapoleon Media Strategies.

With so many sources to hear songs, I do think it’s a disadvantage for a radio station to play a pitched version that sounds a lot different than the established version. I think more sophisticated listeners might resent the fact that the song is ‘pitched’. In some cases where the station is a high tempo non-stop dance station, pitched versions that increase the tempo slightly to match the overall high-tempo vibe, make sense just as that station might play a special ‘dance’ remix version to match that format. In a few rare cases, a straight-ahead song just plain sounds better and needs pitching to add ‘life’ to the song. As you can see the interpretation of when to ‘pitch’ is based on intuition, experience, and understanding the desires of the ‘mass’ vs. ‘cutting-edge’ listener. (Zapoleon 1999).

As one can see, the experts in the radio industry are divided on whether or not speeding up music is a good idea. However, all of those who replied to the author’s

request for information acknowledge that they know of no research on this topic.

This is perhaps the first study to address this topic. Based on the responses from the experts, three main independent variables that might affect listeners' preference have surfaced.

The independent variables in this study are rate, song-type, and gender. The dependent variable is preference of rate. Given the widespread practice of speeding up music by two percent and the fact that several consultants acknowledge benefits of doing this, the author expects that listeners prefer songs when they are played two percent faster than normal speed. In addition, the song-type could play a significant role in listeners' preference for rate. That is, whether listeners prefer a song speeded up could depend on the genre of the song. Also, since no other research has been conducted on this topic, it appears useful to determine whether or not gender has a significant effect on listeners' preference for rate. This is very important since most stations target males or females specifically. There are three research questions (RQ) to be answered.

RQ1: Do listeners prefer songs when they are played two percent faster than normal speed?

RQ2: Does song-type, or genre, affect listeners' preference for rate?

RQ3: Does gender affect listeners' preference for rate?

Both the corresponding null hypotheses and research hypotheses are listed below.

The null hypotheses are designated  $H_0$  and the research hypotheses are designated  $H_1$ .

$H_0$ : Listeners do not prefer songs when the speed of playback is increased by two percent

$H_1$ : Listeners prefer songs when the speed of playback is increased by two

percent.

H<sub>0</sub>: Song-type, or genre, does not affect listeners' preference for rate.

H<sub>1</sub>: Song-type, or genre, affects listeners' preference for rate.

H<sub>0</sub>: Gender affects listeners' preference for rate.

H<sub>1</sub>: Gender does not affect listeners' preference for rate.

So the author expects to find that listeners prefer music when its speed is increased +2% over the speed at which it was recorded. The author also expects to find that genre, or song-type, affects listeners' preference for rate and that there are no gender differences in preference for rate.

## CHAPTER 2: METHOD

### Subjects.

The participants in this study were 101 college students in three different classes at Morehead State University in Morehead, Kentucky. Two of the classes were Introduction to Theatre courses and one of the classes was an Introduction to Broadcast Techniques course.

An available sample was chosen for two reasons. The first was that announcing the project and inviting students to participate would likely have failed. This is because mostly music majors and advanced level electronic media students would have been interested in such a study. It can be assumed that these students would have been able to detect differences in rate better than the population. This type of recruitment would have confounded the results. The second reason was that it is doubtful that a sufficient number of students would have shown up for the study. The sample size would have been too small to answer the research questions at hand.

The Department Chair was contacted to determine the freshmen level classes with the largest amount of students enrolled for the semester. Freshmen courses were preferred because they offer a wider variety of students with different majors than do advanced courses. It would have been unwise to include only communications majors in the study.

After the appropriate classes were determined and approval was given from the Institutional Review Board, the author contacted each individual instructor. All of the instructors agreed to allow the class time to be used for this study. The subjects were first asked to fill out an informed consent form (Appendix A). Once this form was received the questionnaire was passed out (Appendix B). None of the students refused to participate although it was made clear they were free to not volunteer. No extra credit was given to the students for participation. The treatment of subjects was in accordance with ethical standards.

Of the 101 subjects, 65 were female and 36 were male. One male was excluded from the analysis because of a response of "hell no" to the question, "Could you detect the differences in the four samples for each song?" He also scribbled "E) none of the above" on one of the songs instead of marking one of the four answer choices. This left 100 subjects—65 female and 35 male—remaining for analysis. As for setting, 38 of the subjects were in the first class, 30 in the second class, and 33 in the final class.

The mean age of the 100 subjects was 20.02 years. The age range was 18-31 years old.



### Apparatus.

The equipment used in this experiment was primarily standard audio equipment. A CD player was used to record the samples (normal speed on the CD), or hooks, of each song onto a 1/4-inch analogue open reel tape at a speed of 15 inches per second. The reel machine—an Otari 5050 Mark IV--has the ability to display the exact rate of variance in plus or minus percents. Once the hook was recorded onto the tape, it was played at four different rates and recorded onto a digital mini-disc. The mini-disc was then used as master and duplicated onto a recordable CD, or CD-R. A mixing console allowed for the recording of instructions and audio during this stage. A component stereo system was used to play the CD-R to the Introduction to Broadcast Techniques Class. A permanent sound system was used to play the CD-R to the Introduction to Theatre Classes. No evidence exists that suggests specific models of any equipment have an effect on the outcome of the study. Any brand or model of the equipment described should serve to replicate this study as long as the speed of playback can be varied and the rate of variance can be expressed in plus or minus percents.

### Procedure.

To answer the research questions, ten songs were edited to a hook approximately 25 seconds in length. The songs were selected arbitrarily by the researcher. However, care was taken to include different genres in the study. This was to control for its affect on preference. Four of the songs were classified mainstream / pop, two of them were classified as rock, two of them were classified as

dance / rhythmic, and two of them were country. Also, five of the songs contained male vocals and five of the songs contained female vocals. This was to control for vocal-type. In essence, both song-type and vocal-type could potentially affect listeners' preference for rate. Therefore, it was necessary to control for their effect to allow for a meaningful analysis of the data.

Once the songs were selected, the order in which they were to be presented to subjects was randomized. After this was decided, the four hooks were copied onto a standard 1/4-inch analogue tape. The hooks were then copied onto a mini-disc at four different rates: minus two percent, normal speed, plus two percent, and plus three percent. The order these various rates were presented to the subjects was randomized from one song to the next. Refer to Appendix C for a look at the specific order of the four different rates of each song as well as the song-type for each song.

The next step was to add verbal instructions to the mini-disc so it could be copied onto a CD-R. This was necessary for two reasons. The first was that three different groups of subjects were going to be run. Having the instructions recorded onto a CD maintains consistency from one group to the next. Essentially, this was to control experimenter bias. The second reason was that it was the most parsimonious way to present four different rates of a song hook to subjects: This is true regardless of whether all subjects were to be run in a single setting or three different settings as was the case with this study.

The CD began with the following instructions:

You are about to begin the survey, but first there are a few things you need to

know. To start with, you aren't expected to like all of these songs as many different styles are being represented here. Your job is to listen to each of the four samples carefully. Decide which one you like best or the one that sounds best to you. Then place an "X" in the space corresponding to that sample number for that song. This is quite simple and will take just over twenty minutes to complete. Now let's begin.

At the start of each new song, the artist and then title was announced. For example immediately following the instructions it was announced "Here's Britney Spear's 'Baby One More Time' sample number 1." Then the first sample would play. After each sample was finished there was an approximate two-second pause. Then "sample number two" was announced immediately followed by the song sample number two. This process continued until sample four was finished playing. Then after an approximately two-second pause it was announced "you will now be given a few seconds to make your decision." A pause of five-seconds followed between each new song. Then came the announcement, "Okay, moving along now, this is Aaliyah, 'Are You That Somebody' sample number 1." The process was completed exactly in this manner until after the final song. Following the pause of five-seconds after the last song the final question was asked: "Now for the final question, could you detect the differences in the four samples for each song? Write yes or no in the space, could you detect the differences in the four samples for each song? Thanks very much for participating in this survey."

Before any subjects were tested, the thesis committee reviewed a portion of the CD and found it acceptable. (One committee member could not participate in this because he was out of town at this time.)

Soon after this process was completed, final approval from the IRB was granted. Now the study could proceed on human subjects. The professors for the three classes were contacted and specific dates were set to conduct the study. No professor denied the researcher's request and no coercion was used in gaining their approval.

The original idea was to allow the CD to be a stand-alone method for instructing subjects after informed consent forms were received and the questionnaire was handed out to all participants. However, this idea was abandoned because the researcher feared that participants might become confused or have questions. It would not have been practical to stop the CD once it was started. The researcher decided that some instruction was necessary before the CD began. So the instructions at the beginning of the CD served mainly as a review to subjects.

During the actual running of subjects, the instructor for each of the three classes introduced the researcher. The researcher then explained briefly to the class that they were being asked to participate in a research project. The informed consent form was passed out. It was not necessary to disguise the fact that determining listeners' preference for rate was the goal of the study. However, information about the specific rates of each song sample was not revealed to the subjects.

Once the informed consent forms were received, the actual questionnaire was handed out. It asked for age and gender information and then instructed subjects to wait for the instructions on the CD. After handing out all questionnaires, the researcher made sure that every one who desired to participate had a questionnaire.

At this point, the researcher explained what was expected from the participants. The instructions at the start of the CD (listed above) were basically given to the subjects live. The subjects were given an opportunity to ask questions before the CD was started. Then they were told the instructions would be repeated again on the CD and this was done because it was important that everyone understood exactly what he or she was expected to do.

The CD took 22 minutes and 41 seconds (22:41) to play from start to finish. Once it was finished the questionnaires were collected from the participants. Although the time for passing out materials and collecting them varied from setting to setting, the survey never took more than 30 minutes to complete.

### CHAPTER 3: RESULTS

#### Primary analysis.

The design of the survey resulted in nominal data, or counts in categories. All of the research questions were answered by counting the participant's responses to each song—or other information being asked—and then submitting the data to either a chi square goodness of fit test or contingency table analysis which is commonly referred to as crosstab analysis.

The first question to be answered was whether or not listeners prefer songs when they are played two percent faster than normal speed. Here the independent variable was rate and the dependent variable was preference. A chi square goodness of fit test was employed to answer this particular question. Table 1 presents the data used to perform this test.

Table 1

Rate Variances Effect On Listener Preference

Rate	Preference			
	-2%	0%	+2%	+3%
Observed frequencies	175	337	315	173

The calculated value was greater than the chi square value for three degrees of freedom at an alpha level of .01 [ $93.40 > 11.345$ ]. Therefore, the variance of the distribution of preference was statistically significant and rate does affect listener preference. As Table 1 indicates the score for normal speed of 337 is greater than the score for +2% of 315. This means that the research hypothesis stating that listeners prefer music when it is played two percent faster than normal speed, or the speed at which it is recorded, was not supported.

The next question to be answered was whether or not song-type, or genre, has an effect on listener's preference of rate. Here the independent variable was song-type and it was broken into four levels—mainstream/pop, rock, dance/rhythmic, and country. The dependent variable was preference. A contingency table, or crosstab analysis, was used to answer this particular question. Table 2 represents the data used to perform this analysis. A quick glance at the table indicates that the frequencies are not distributed evenly. Therefore, it appears that the genre of the music affects listeners' preference for rate.

Table 2

The Effect of Song-type on Preference

Rate		Preference (observed frequencies)				
		-2%	0%	+2%	+3%	
Song-type	Mainstream/ pop	50	140	144	66	400
	Rock	31	68	59	42	200
	Dance/rhythmic	46	71	45	38	200
	Country	48	58	67	27	200
Total for Rates		175	337	315	173	N=1000

The calculated value was greater than the chi square value for nine degrees of freedom ( $df=9$ ) at an alpha level of .01 [ $23.65 > 21.666$ ]. This means the variance of the distribution was statistically significant and song type does affect listeners' preference for rate.

The next area of analysis was whether or not gender has an effect on listeners' preference for rate. Radio stations will usually target one gender or the other. So analyzing its impact on preference was important. Here, the independent variable is gender and the dependent variable is preference. A chi square goodness of fit test was used to answer this particular question. Table 3 represents the data used in

performing this test.

Table 3

The Effect of Gender on Preference

Rate	Preference (observed frequencies)				
	-2%	0%	+2%	+3%	
Male	67	116	108	59	350
Gender					
Female	108	221	207	114	650
Total for Rates	175	337	315	173	N=1000

The calculated value was less than the chi square value for three degrees of freedom ( $df=3$ ) at an alpha level of .01 [ $1.01 < 11.345$ ]. Therefore, the scores are distributed evenly and gender does not have a significant effect on listeners' preference for tempo.

Secondary analysis.

Since the data already exists, it seemed useful to go beyond the original research questions to gain additional insight into this phenomenon. Given the fact that song-type was found to affect listeners' preference for rate, it seemed logical to take this one step farther.

An analysis was conducted to determine whether or not individual songs have an effect on listeners' perception of rate. Here each song is an independent variable and perception of rate is the dependent variable. A contingency table, or crosstab analysis, was used to determine whether or not the individual songs have an effect on preference. Table 4 lists the data used in this analysis.



Table 4

The Effect of Individual Songs on Preference\*

Rate	Preference				
	-2%	0%	+2%	+3%	
Britney Spears	1	37	47	15	100
Aaliyah	33	41	18	8	100
Backstreet Boys	8	39	33	20	100
Alice In Chains	15	29	29	27	100
Eagle Eye Cherry	18	40	37	5	100
Song Tonic	16	39	30	15	100
Dixie Chicks	23	41	23	13	100
TLC	23	24	27	26	100
3 <sup>rd</sup> Party	13	30	27	30	100
Randy Travis	25	17	44	14	100
Total for Rates	175	337	315	173	N=1000

\*Artist is listed instead of title. See Appendix B for complete information regarding title and artist.

The calculated value is greater than the chi square value for  $df=27$  at an alpha level of .01 [ $120.12 > 46.963$ ]. This means that on a micro level of individual songs,

the distribution varied at a level of statistical significance. Therefore, individual songs appear to affect listener preferences of tempo, or rate.

Also, as a couple of experts suggested that participants might not perceive the difference in rate, it is interesting to note that 89% of the respondents stated that they could detect the differences in the four samples of each song.

## CHAPTER 4: DISCUSSION

### Summary of findings.

The main research hypothesis was not supported. When song-types were combined and the results are analyzed across genres of music, the participants preferred the speed at which the song was recorded over the other speeds. The data suggest clearly that plus 3% is too fast and minus 2% is too slow. However, +2% was preferred only slightly less than normal speed (315 to 337 respectively). An increased rate of 2% over normal speed does not appear to be too fast. Nonetheless, in this study, the increased rate was preferred less often than the speed at which the songs were recorded.

The second research hypothesis was supported as the data indicate that song-type has an effect on listeners' preference for rate. A more interesting finding is that different song types, or genres, follow distinct patterns. The mainstream / pop genre resulted in a preference for the plus two percent sample with the normal speed a close second [frequencies were 144 and 140 respectively]. However, once again the data suggest that plus 3% is too fast and minus 2% is too slow.

The normal speed was preferred for the rock genre. The data indicate that plus

2% is not too fast for rock songs although it is not preferred over the recorded speed. Following the previous analyses, plus 3% is too fast and minus 2% is too slow.

The normal speed was also preferred for the dance / rhythmic genre. The minus 2% sample was preferred over both the plus 2% sample and the plus 3% sample but its use is not supported. That is, even though minus 2% was picked more than either of the faster rates, it was not picked with a great enough frequency to support a recommendation that stations can slow their dance / rhythmic songs down. In this genre the data suggest that plus 2% and plus 3% are too fast and that minus 2% is too slow.

The plus 2% sample was preferred for country songs. The data suggest that the recorded speed is not too slow, although it was not preferred. Plus 3% seems to be too fast for country music and minus 2% seems to be too slow.

The most interesting trend to note regarding the effect of song-type on preference of rate is the fact that the normal speed was never indicated as too fast or too slow—even on song-types where plus 2% was preferred. Minus 2% and plus 3% were never preferred for any of the song types. The data did indicate that plus 2% was too fast for the dance / rhythmic genre. This finding suggests that when one is in doubt of the preference for rate for a particular genre that normal speed should be the default until sufficient information is gathered.

The third research hypothesis was also supported as gender was found to have no effect on listeners' preference for rate. Although the sample was skewed 65 to 35 in favor of females, the results of the chi square goodness of fit test indicated a

normal distribution at an alpha level of .01. This means that the aforementioned conclusion of gender's effect on preference is a valid one.

A contingency table, or crosstab analysis, of each individual song's effect on listeners' preference for rate indicated that there is a relationship. That is, the analysis found that individual songs have an effect on listeners' preference for rate. An alpha level of .01 was used for this analysis. However, since only ten songs were used and many different song types were represented in the study, the results of this finding might be due to song type differences.

Some consultants doubted that people could detect the difference in the four samples for each song. Eighty-nine of the 100 subjects included in the analysis stated that they could detect the differences. However, this was in direct comparison to other speeds of the exact same hook. Listeners may have trouble noticing a song is 2% faster when it follows another song on a radio station where a comparison of different speeds is not present.

### Implications.

These findings do have utility to the radio industry—especially considering that this is the first study addressing this topic. Most radio stations tend to target either males or females instead of both genders. Now it is known that gender is not a factor in deciding whether or not to pitch the music. There are no differences based on gender.

Also, it is not known whether or not any radio stations slow their music down. However, in the case of one rhythmic song, the listeners preferred the minus 2%

version to both +2% and +3% (but not over normal speed). This indicates some flaw with the argument that a song's normal speed will sound slow compared to its +2% counterpart. With Aaliyah's "Are You That Somebody" the normal version was preferred—and the slower version was preferred to the faster versions. This was in direct comparison to the faster versions.

Translated to a real situation, this would be the equivalent of four stations in a market playing the same song at once. Listeners tune from one station to another and more listeners decide to listen to the station playing the song at normal speed. More listen to the slower version than to either of the two stations playing faster versions. However, there was only one of the ten songs that this happened with. The rest of the time minus 2% was too slow.

As a rule, the findings suggest that stations should not slow down their music. Also, as another rule, stations should not speed up their music more than 2%. This is because plus 3% was indicated as too fast for all of the songs. No research exists that reveals a safe level between plus 2 and plus 3 percent. Therefore, plus 2% should be a maximum. Most likely, any benefits of speeding up the music would vanish and the practice would become a liability at speeds faster than two percent.

Considering listeners' preference, the decision seems to rely on the genre of music being played on a particular station. Within this study, four broad genres were represented. Based on the data it seems feasible to make the following recommendations. Top 40 formatted stations as well as other stations playing "mainstream / pop" music should speed up their music by 2%. Also, country stations

should speed up their music by 2%. As for rock stations, the music should be played at the speed it leaves the studio. The same is true for dance / rhythmic stations.

With the advent of hard drive based on-air systems, it is easy to play songs at different rates. The data do suggest that individual songs play a role in listeners' preference for rate. However, it would not be possible to determine the preferred rate for each song in a station's library—especially on current-driven formats. The cost would be prohibitive. A uniform speed should be used for different genres.

For example, if a top 40 station plays a dance or rock song, it is possible to play those songs at a normal speed every time they are played while speeding up the mainstream / pop songs. The data suggest a slight competitive advantage could be gained with such a scheme. The main factor in deciding whether or not to speed up music appears to be song-type.

In summary, when in doubt stations should leave the music alone. The findings suggest that mainstream / pop music as well as country music should be speeded up plus 2%. The other genres covered should be left alone.

#### Limitations of the findings.

To start with two things are clear. One is that on a broad scale, when different genres are included in the analysis, the listeners prefer the normal speed. The second is that gender has no effect on listeners' preference for rate.

The main limitation of this study's findings is the fact that only ten songs were used. The major research hypothesis assumed that listeners preferred music when it was played two percent faster. Different genres were included into the ten songs to

control its effect on preference. However, it was discovered that there is no broad rule in regards to speeding up music that applies universally. That is, in some cases it is advantageous to speed up the music by plus two percent and in some cases that would be detrimental.

The decision, as stated earlier, rests on genre or song type. Unfortunately, the number of songs in each song-type was very small in this study: It ranged from two songs to four songs in each genre. This means the results must be viewed as insight for future investigations.

#### Suggestions for future research.

Since this is the first study addressing listeners' preference for various rates of music, it might serve to replicate this study to see if similar findings could be attained. If so, the idea of whether or not to speed up music and by how much being universal should be abandoned. Instead research on specific genres should be conducted as a logical next step.

For example, the same study could be replicated using all country songs. All rhythmic songs could be used, or all rock. The results of a study of that type could be generalized to specific genres of music better than the present study can be. Then, once the answer is determined for each genre, textures—or sound codes—within genres could be examined. For example, once the answer on whether or not to pitch rock songs is answered, researchers could then look at classical rock, alternative, etc. to determine the appropriate strategies for those styles. This appears to be the most logical direction for future researchers to take based on the findings of this study.

Also, studies could be conducted without a randomized order of rate being presented to the subjects. That is, subjects could be presented the rates from slowest to fastest or fastest to slowest for each song. The results of that type of study would be interesting, especially if the findings of the present study were to be supported.

It might also serve future researchers to determine whether or not familiarity with the song has any effect of listeners' preference for rate. A similar questionnaire could be used with a space for participants to check whether or not they are familiar with that particular song.

Also, the songs could be presented at plus 2% for the first three samples and the last sample could be normal speed, or the first three samples could be normal speed and the last sample could be plus 2%. This type of design would determine whether or not songs sound slow and stale after listeners become used to hearing them fast. Conversely, starting with three normal speed samples would determine whether or not plus 2% sounds "like chipmunks" after a listener becomes used to the normal speed.

It would also be easy to incorporate a simple Likert Scale question to determine like. That is, subjects could rate each song on a one- to five-point scale with one being dislike a lot and five being like a lot, or favorite. Then it could be determined whether or not listener's level of like has any effect on listeners' preference for rate.

These questions need to be answered. Knowing for sure when to pitch music and when to play it at normal speed would give a station a slight competitive edge.



Even slight competitive edges can sometimes make a difference in a station's ratings—more so in competitive markets. Anything that can move the ratings numbers is important to identify and understand.

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APPENDIX A

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**Informed Consent Form**

**INFORMED CONSENT**

I am requesting your help with a research project I am conducting on listener preference of tempo variances in music. Let me emphasize that you do not have to participate. If you do not wish to take part in the survey, you do not have to answer any of the questions. Completing this survey is voluntary and you may withdraw from the study at any time.

You must be 18 years of age or older to participate. This study has been reviewed to determine that participant's rights are safeguarded and there appears to be minimal risk or discomfort associated with the completion of the survey. You may choose to discontinue your participation at any time. Also, you need to understand that participating or not participating in the survey has no impact on your grade in this or any other class. Your decision to volunteer to complete the survey cannot hurt or help you with your grade. If extra credit is offered and you do not wish to participate or are under the age of 18, an alternative method of extra credit will be offered.

The answers you provide will be kept strictly confidential and the survey will be stored in a locked filing cabinet or locked office. Please feel free to ask for help if something does not make sense to you or if you have any questions. If you experience any discomfort, you may contact Morehead State University's Department of Communications at (606) 783-2134.

If you decide to volunteer, please be sure to print your name on the form and sign it to indicate your willingness to participate. That will be our indication that you understand the purpose of the survey and that you are willing to help.

Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

## APPENDIX B

## Listener Preference of Tempo Survey

## LISTENER PREFERENCE OF TEMPO SURVEY

Please complete the following information about yourself.

Age \_\_\_\_\_ Gender \_\_\_\_\_

**Britney Spears** "Baby One More Time"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

**Aaliyah** "Are You That Somebody"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

**Backstreet Boys** "I'll Never Break Your Heart"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

**Alice In Chains** "Man In The Box"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

**Eagle Eye Cherry** "Save Tonight"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

**Tonic** "If You Could Only See"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

**Dixie Chicks** "I Can Love You Better"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

**TLC** "Diggin On You"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

**3<sup>rd</sup> Party** "Can You Feel It"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

**Randy Travis** "Hard Rock Bottom of Your Heart"

Sample 1 \_\_\_\_\_ Sample 2 \_\_\_\_\_ Sample 3 \_\_\_\_\_ Sample 4 \_\_\_\_\_

Write your answer to the last question on the CD in the space to the right \_\_\_\_\_

**APPENDIX C****Order of Randomized Presentation of Rate****Order of Randomized Presentation of Rate**

Number	Artist	Title*	Genre	First	Second	Third	Fourth
1	Britney Spears	Baby One More	pop	0	+2%	+3%	-2%
2	Aaliyah	Are You That...	Rhythm	-2%	0	+3%	+2%
3	Backstreet Boys	I'll Never Break...	pop	-2%	+2%	+3%	0
4	Alice In Chains	Man In The Box	rock	-2%	+2%	+3%	0
5	Eagle Eye Cherry	Save Tonight	pop	0	+2%	-2%	+3%
6	Tonic	If You Could...	rock	-2%	+3%	0	+2%
7	Dixie Chicks	I Can Love...	country	0	-2%	+3%	+2%
8	TLC	Diggin' On You	pop	0	+2%	+3%	-2%
9	3 <sup>rd</sup> Party	Can You Feel It	dance	0	-2%	+2%	+3%
10	Randy Travis	Hard Rock...	country	0	+3%	-2%	+2%

\*The complete title for each song is listed on the questionnaire. (See Appendix B)