

The effect of prior information on musical preference rating

How our musical preference is shaped by prior information in an online environment.

Music, Mind and Technology

University of Jyväskylä

Master's thesis

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May 2009

JYVÄSKYLÄN YLIOPISTO

Tiedekunta – Faculty Faculty of Humanities	Laitos – Department Music
Tekijä – Author David Andrew Johnson	
Työn nimi – Title The effect of prior information on musical preference rating. How our musical preference is shaped by prior information in an online environment.	
Oppiaine – Subject Music, Mind and Technology	Työn laji – Level Master's thesis
Aika – Month and year May 2009	Sivumäärä – Number of pages 39 + 5 appendices
Tiivistelmä – Abstract This research explores the effect of prior information in the form of positive and negative reviews on participants' ratings of musical preference in an online environment. A website was created in order to present reviews and gather responses from participants and a questionnaire was used to determine musical preference ratings and other background factors such as age and gender. Ninety-six people participated in the research, each being randomly assigned to one of five conditions. The study suggests that there is a significant difference in preference ratings between positive and negative prior information groups ($F(2) = 4.50; p = 0.014$). The experiment concludes that prior information can significantly alter our preference ratings in an online environment.	
Asiasanat – Keywords Social psychology of music, prior information, musical preference, online behaviour.	
Säilytyspaikka – Depository	
Muita tietoja – Additional information	

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1. Introduction

The purpose of this study is to investigate how our musical preference can be shaped by the views of others, in the form of prior information, in an online environment. It has long been observed that our choices and behaviour are influenced by others, and many have argued that music listening is often a social experience.

This thesis aims to explore how our musical preferences develop in the social environment in which we live and what affects other people exert over our actions, behaviour and preferences? If others do exert influence over our musical preferences would this pressure still be evident in online musical communities?

Konečni (1982), suggests that music listening does not take place in a social vacuum and that past research into the area of musical preference and aesthetics seems to neglect the social context in which the music takes place. It could be suggested that musical preference develops socially and as such should be studied in a social context.

This view is supported by Hargreaves (1999) who argues that the relationship between people and their social or cultural environment is at the heart of contemporary theories of development. It may be impossible to study the development of an individual without considering society's influence on them. This notion is not a new one as sociologists have considered musical forms and languages as being socially constructed for many years, for example Adorno (1941) suggested that musical forms are direct products of social divisions and structures. This could be understood that our musical preferences are a direct result of our social interactions;

this idea suggests that we develop our tastes based on exposure to a particular style of music through social situations. This theory implies that it is unlikely an individual would develop a taste for 'heavy metal', for example, if that style of music were not listened to by anyone within their social environment.

It has been argued that our music preference is influenced by our need to build bonds with our peers (Zillmann and Gan, 1997; Russell, 1997). Therefore, it stands to reason that if our peers like a particular song and by liking that song ourselves we are identifying with the "in-group" (Tajfel, 1970).

This thesis investigates the role of prior information on preference for a previously unknown song in an online environment. Individuals participated via a specially constructed website. The goal was to demonstrate that other people's preference 'for' or 'against' a song has a significant influence on participants' rating of that song.

The study of effect of prior information on musical preference in an online environment encompasses fields of study including social psychology of music, music cognition, social bias and online behaviour. Section 2 (Past research) presents an in depth review of the literature concerning the study of influence on preference, both in general terms and specific to musical preference. The review is split into sections which deal with how past research into this area has examined the influence social interaction has on our preferences; these sections loosely follow chronological order.

Section 3 (Present research) introduces the aims of this research, attempts to justify the research in a clear way, and introduces the hypothesis of this thesis.

Section 4 (Research methods) outlines the methodology used for this research as clearly as possible. Section 4 is split into subsections which address different areas of the methodology, including participants, the song used, the questionnaire, the website and analysis of data.

Section 5 (Results) contains the results obtained from the data collected. This section breaks down the results and reports them in a clear and concise manner.

Section 6 (Conclusion) clarifies what the results mean, specifically stating how the results from the previous section were interpreted. This leads onto Section 7.

In Section 7 (Discussion), the current research is placed alongside the past research and compared. In this section we see how this study supports much of the past work in the area. Section 7 is also divided into subsections which include the limitations of the study and possible ideas for future research.

The final section before the reference list and appendices is Section 8 (Closing thoughts), in which the researcher reflects on the research and the area of social influence on musical preference as a whole.

2. Past research

2.1. Socioeconomic background

The notion of music being intrinsic to our social group is at the heart of Baumann's 1960 study. Baumann asked 1,600 teenaged participants to listen to 30 second excerpts of 50 different musical examples and rate them on a three point scale of, "Like least", "Like" and "Like most". The participants were also asked to complete a questionnaire concerning their socioeconomic background and patterns of musical listening. Baumann concluded that overall, teenagers preferred 'popular' music over 'classical' or 'traditional'. However, he also stated that teenagers from higher socioeconomic backgrounds are more likely to show preference for classical music than their lower socioeconomic counterparts. He also states that the places where teenagers listen to music is linked to their socioeconomic status, with more 'high-status' teens listening to music at home and more 'low-status' teens listening to music on a juke-box (in a public place).

The Baumann (*op. cit.*) study lends support to the work of Francés (1967, cited in Hargreaves, 1999, p. 182). Francés stated that works of art are assigned different values and attributes by different social groups, and that people tend to conform to these according to their group membership. This is supported by the notion of in-group bias (Tajfel, 1970; Billig and Tajfel, 1973), meaning that individuals are more likely to 'prefer' music which they see as closely related to the listening norms of their social group. The example Francés (*op. cit.*) gives is that 'high art' was more

associated with higher socioeconomic class, therefore working-class people show no identification with it.

One of the main counter arguments to the studies of Baumann (*op. cit.*) and Francés (*op. cit.*), is that these studies are dated and, as the cost of home stereo systems has fallen over the years, more people from 'low-socioeconomic backgrounds' can afford means to listen to music at home. It could also be argued that in today's modern world people are exposed to a wider variety of music through media, the internet, bars, public places and countless other environments, meaning that socioeconomic status is having less of an effect. This is because people can be exposed to any type of music at any time in today's modern society.

2.2. Peers and social identity

What must be considered is, if socioeconomic status is having less effect than in the past, what else could be shaping musical preferences? Some researchers have suggested that our peers exert a stronger influence on development of musical preferences. Lewis (1992 cited in Russell, 1997, p. 151) argues that music is used as a means to identify with people we like or people we wish to identify with. This means that music becomes a tool with which we develop and reinforce our group membership. This argument is supported by Bakaginnis and Tarrant (2006), who state that many studies have ascertained that musical preference makes an important contribution to the establishment and maintenance of social identity by offering individuals a basis for social comparison and self-evaluation.

Russell (1997) argues that our preferences during adolescence serve to separate us from our parents and other older people, thus separating us, musically, from our 'social-class' background. It is often the case that older generations disapprove of the music that younger generations listen to. This implies that although our musical preference may be rooted in our interaction with our peers, it is not necessarily a product of our socioeconomic background as was argued by earlier research (see Section 2.1.).

Zillmann and Gan (1997) have suggested that a young person's focus on a particular musical style serves two main functions: firstly, it allows the individual to see themselves as a member of a cultural elite and provides the emotional gratifications of belonging; secondly, it permits the individual to define themselves as different to other peer groups and feel some 'superiority' over them. However, these claims lack the support of empirical evidence. They are either anecdotal or observational and as such are subjective and impossible to quantify.

There is some support for the argument put forward by Zillmann and Gan in the work of Frith (1981, cited in Zillmann and Gan, 1997, p. 172), who stated that there is clearly a strong influence from musical genre groups, and members of these groups show strong dislike for and even insult other genres.

2.3. In-group, out-group

One theory which may support the work of Zillmann and Gan, and Frith is the theory of 'in-group bias' (Tajfel, 1970; Billig and Tajfel, 1973). The theory argues that

members of the 'in-group' show signs of perceived superiority over the 'out-group'. In Tajfel and this colleague's studies, the in-group also demonstrates 'in-group cohesion' and shows group bias when the group membership is tenuous or merely suggested. This would lend support to this process occurring within musical genres, as people who subscribe to those genres see them as a social group to which they belong. This also supports the work of Rigg (1948) which concerns the effect of propaganda on musical preference.

2.4. Prestige and propaganda

Rigg (1948) carried out research in the early stages of the Second World War, in which he presented participants with pieces of music. Participants were split into three groups: group one received information about the music's 'romantic light'; group two was the control group and received no information about the music; group three were told that the music was a favourite of Adolf Hitler and was associated with the Nazi party. Rigg found that there was a significant difference in how the participants rated the music, with higher preference ratings for groups one and two. This suggests that the prior information linked the music with something the participants did not want to be associated with, thus they showed lower preference towards it than they otherwise may have. However, Rigg's study lacks ecological validity as the participants were all college students and, as such, do not fully represent the general population. It is also important to note that the group who were given positive information, focusing on aspects of the music, rated it about twice as highly as the control group, who received no information about the music.

Another example of how our opinion is shaped by what may be considered propaganda, is the work of Duerksen (1972). Duerksen researched how informing participants that a recorded performance was either a professional performer or a student performer – whether the performance was given by an expert or non-expert – would affect their judgement of the song. The participants were university students and were both music and non-music students. Duerksen concluded both music and non-music students rated the ‘professional’ performance better than the ‘student’ performance. This study suggests that both musicians and non-musicians are subject to the effect of prior information on their rating of a piece of music.

Duerksen (1972) also shows that the information used to shape opinion does not have to be negative as used in the work of Rigg (1948). However, as the word ‘propaganda’ has negative connotations many researchers describe the positive prior information as ‘prestige effect’ (Hargreaves, 1986), as it is said that the prestige of the supposed performer or composer is affecting the rating. The results obtained by Rigg (1948) and Duerksen (1972) are supported by a number of studies conducted in the latter part of the 20th century. This includes the work of Geiger (1950), who showed that renaming a radio show significantly altered the listening figures, and Radocy (1976), who presented false information about the identity of a composer and found that this significantly altered evaluation and preference rating of the piece of music in question.

2.5. Web-research

It is argued by Reno, Cialdini and Kallgren (1993), that we use others, particularly our peers, as sources of information which give us cues as to how to behave in certain situations. This could mean that if our peers show preference towards something then we are more likely to show preference towards it as well. One study which demonstrates this is Salganik, Dodds & Watts (2006).

Salganik, et. al. (*op. cit.*) conducted a study which investigated whether knowledge of previous participants' choices affect subsequent participants' choices as regards preference to a piece of music. This study was carried out online and had 14,341 participants. The participants listened to a piece of music and then were given the opportunity to rate and download the song. In one condition the participants were aware of the number of previous downloads and in another condition they were not.

The results of this study showed that increasing the social influence increased the likelihood of a song 'doing well' or being downloaded, although quality was also partly an indicator of success. This demonstrates how our peers can influence our musical choices, in this case whether to download a song or not. This supports the idea that others can significantly shape our preference, in that we believe *if others in my group like it, it must be good.*

However, Salganik, Dodds and Watts' study (2006) does have its drawbacks: there was nothing stopping participants taking part in the study more than once and as there was no direct contact with participants they could very easily provide false

information. The website may have been unrealistic, as often legal music download sites require people to pay for the music, which could mean that people are often more selective about what they download. The design does mean that a vast number of participants can be used; it would be impractical, for example, to use this number of participants in a laboratory study. Another possible advantage of the design of this experiment is the fact that downloads were free – this means that people could freely download music which appealed to them without having to consider cost.

The process in which our peers influence our musical preferences seems to remove the need to listen to all the available music and make our own choices. This process appears very similar to that of the review and recommendations we find on television programs, in magazines, newspapers, and even on the internet. This comparison is based on the way that the media narrows down the amount of music we need to listen to before we find something which we like.

2.6. Labelling effect

The media and labels assigned to music may play a major role in influencing our musical choices. It is easy to find reviews and other labels others have assigned to music, and these labels may affect our preference for a piece of music.

North and Hargreaves (2005), conducted a study in which they presented one of four songs to participants. Prior to listening to the songs participants were given information that the song was either ‘suicide-inducing’ or ‘life-affirming’. After

listening to the song the participants then completed a questionnaire which asked them to rate the song on a number of points, including how the song made them feel.

North and Hargreaves found that the prior information significantly altered the participants' rating of the song they had listened to. The study suggests that this has implications on labelling of 'problem music' and suggests it is the label not the music which leads to it becoming problem music.

It could be said that the judgement of the participants in this study was altered by the label assigned to the music. This may mean that the likelihood of the participants liking the song was altered.

The North and Hargreaves study was well designed although there were some limitations: firstly, as the researchers used songs by professional recording artists, the songs may have been already known by the participants, thus limiting the effects of prior information; and secondly, the participant sample used in this study consisted entirely of British undergraduate students, therefore we must be aware of this if we intend to make more broad statements about this 'labelling effect' on the general population.

The research presented in this paper aims to take some of these ideas further in that it aims to look at what effect prior information, in this case a positive or negative review, has on participants' preference towards a piece of music in an online musical environment.

This research aims to investigate the extent to which a positive or a negative review of a piece of music affects people's preference towards that music. This follows on from the North and Hargreaves (2005) study where they suggest that prior information has a significant effect on how an individual feels about a piece of music.

2.7. Summary

The research in this area all seem to point towards the conclusion that our musical preference is a product of our social environment. There is some disagreement with regards to who or what exerts the greatest influence over our preference. Research such as Baumann (1960) and Francés (1967), argue that our socioeconomic background plays a major part in the development of our musical preference, whereas others like Lewis (1992), Bakaginnis and Tarrant (2006), Russell (1997), Zillmann and Gan (1997), Frith (1981) and Salganik, Dodds and Watts (2007), all suggest that our peers are very important in the development of our musical preference as well as the development of our social identity. Rigg (1948) and Duerksen (1972), present an argument which states that our musical choices develop through our conforming to either propaganda or the prestige of a piece of music. This leads onto the work of North and Hargreaves (2005), who support the notion of propaganda having a major influence over our music preference through the labelling of music.

What these theories have in common is that they all suggest that each forms of influence are very similar as they are all sources of information which we use to make sense of the world. The source of this information maybe irrelevant, but what may be influential is that fact that information is presented at all. In other words,

propaganda/prestige effect, peer influence, labelling effect and even socioeconomic background, are all equally as important as they are all relevant sources of information which we use to develop our identity.

3. Current research

As increasing amounts of people are buying, listening to, reading about and discussing music online, it was felt that this would be an appropriate and worthwhile arena within which to conduct this research. Examples of this are the online musical community sites www.soundclick.com, which had 1.27 million members and www.garageband.com, which had 544,000 members, as of June 2005 (Salavuo, 2006).

The implications of this increasing amount of users not only has some bearing on commercial music and the marketing of music, but on marginal or ‘underground’ music. As Salavuo (2006 p. 258) states, musical online communities make distributing and consuming more marginal musical genres possible.

It is also suggested that the music industry spends millions every year to promote their artists – this is not simply to make us aware of them but to shape our preference for them, and as usage increases this is becoming increasingly important in online environments.

The study presented in this paper aimed, via the use of a specially construct website, to explore the effect of prior information on individuals’ musical preference in an online environment. Participants of online musical communities were invited to the site, in order to listen to and rate a piece of music. The participants were assigned to one of five conditions upon arriving at the site; four review conditions and one control condition in which the participants saw no review prior to hearing the song.

After listening to the song, each participant was asked to rate the song and complete a questionnaire in order to ascertain details about their background for later analysis. The debriefing followed once the data had been collected from all participants as divulging the true nature of the study before all the data had been collected may have affected the results. There was a preliminary debriefing page at the end of the study explaining that the results, and a full explanation, would be posted on the forums of the online communities where participant initially found the experiment website. This information was replicated on the experimental website itself once the data had been collection and analysis had been completed.

3.1. Hypothesis

The alternate hypothesis is that, information given prior to listening to a piece of music will affect participants' rating of that piece of music. It is suggested in the alternate hypothesis that the rating a participant gives for their preference towards a piece of music will be altered by the information they receive about that music prior to listening to a piece of music.

The null hypothesis is that, prior information will have no effect on participants' rating of a piece of music. This null hypothesis argues that information received prior to hearing a song has no effect on the participants' rating of preference towards that song.

4. Research Methods

This experiment was conducted via a specially designed website which people found by either clicking a link in an online musical community or email invite from a mailing list. The participants were informed that the website was an experiment on the first page. However, the nature of the study was not divulged at that stage as this may have affected the results. The experiment used quantitative methods. The participants were taken from those already using online musical communities. Participants were randomly assigned to one of the five conditions.

Each participant was randomly assigned to one of five conditions once they had read the first page and clicked the 'next' button. The five conditions were as follows:

1. The participants were presented with a positive review of the song they were about to listen to written by an expert (this represented the prestige effect).
2. The participants were presented with a positive review of the song they were about to listen to in the form of a star based rating from a made up web review (this represented peer influence).
3. The participants were presented with a negative review of the song they were about to listen to written by an expert (this represented the prestige effect).
4. The participants were presented with a negative review of the song they were about to listen to in the form of a star based rating from a made up web review (this represented peer influence).

5. The participants were not presented with any review; this would serve as the control group.

The reasoning behind the two different types of reviews used was that the expert reviews represented the prestige effect as discussed in Section 3.4., whereas the star style reviews represented our peers' influence on musical preference as discussed in Section 3.2.

The participants all heard the same song; 'Quiet Life' by 'Pseudo Japanese'. The reason this song and band were chosen was that both would be relatively unknown to participants.

Once the song had finished, the participants were directed to the questionnaire pages which asked them to rate the song they had just heard and how they feel their peers may rate the song. The participants were then asked background questions about themselves (i.e. age, gender, level of musical training and style of preferred music).

After participants had completed the questionnaire section there followed a preliminary debriefing page which explained that a full debriefing and results would be posted on the musical communities and on the experiment website once all the data had been collected. The true nature of the study was not disclosed at this time as this information if made public may have affected future participants' results.

The results from each group were compared to each other, with hopes of finding some difference between the groups' ratings of the song. As extra information was collected

it could also be possible to ascertain if any demographic group gave significantly different answers to another, e.g. are younger people more likely to be affected greater by the review than older people?

4.1. Participants

This study used opportunity sampling, taking participants from the general population of internet users. Participants were invited to participate either from messages on online musical communities or by email invites from mailing lists. Because of the methods used in ‘recruiting’ participants we can assume they represent the general population of online music users.

Participants were randomly assigned to one of the five conditions as mentioned above. This means that each participant had equal chance of being assigned to any of the conditions. The html code for the random assignment to one of the five conditions can be seen in Figure 1.

```
<!--
function get_random()
{ var ranNum= Math.floor(Math.random()*5);
  return ranNum;}

function gLink()
{
  var wLink=get_random();

  var link=new Array(5)
  link[0]="http://users.jyu.fi/~daanjohn/c1pre_p1.html";
  link[1]="http://users.jyu.fi/~daanjohn/c2prstar_p1.html";
  link[2]="http://users.jyu.fi/~daanjohn/c3con_p1.html";
  link[3]="http://users.jyu.fi/~daanjohn/c4nre1_p1.html";
  link[4]="http://users.jyu.fi/~daanjohn/c5nrstar_p1.html";

  window.location = (link[wLink]);
}
//-->
```

Figure 1. The html code of the random assignment to one of the five conditions.

4.2. The song

As stated above, the song selected for this study was 'Quiet Life' by 'Pseudo Japanese', a rock band from the UK. The band has toured the UK and was signed to a small independent record label but is currently on hiatus. 'Quiet Life' was taken from the bands E.P. 'Diamonds & Water' which was released in 2004. Due to the limited exposure of the song chosen it can be assumed that it is unknown to the participants, as not to be influenced by prior knowledge of the song.

4.3. The website

The website used for this study was designed using Serif Webplus X2. The survey section of the website was designed using and hosted by SPSS Dimensions MrInterview. The main part of the website was hosted on the University of Jyväskylä's server. The web address participants were directed to was <http://users.jyu.fi/~daanjohn>.

Upon arriving at the website the participants were greeted and briefed on the index page (Figure 2.).

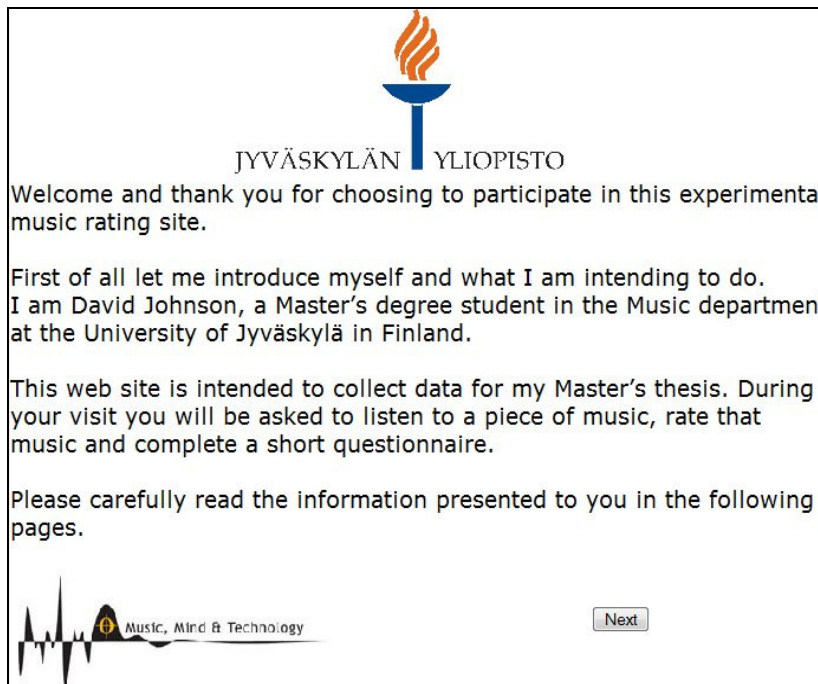


Figure 2. Screen shot of the welcome page on the experiment website.

The “Next” button on the main page (Figure 2.) activated the html code seen in Figure 1., which randomly assigned participants to one of the five conditions. In four of the five conditions participants saw one of the reviews (see Figure 3.).



Figure 3. Screen shots of the first pages of the four review conditions. Positive reviews above and negative reviews below.

The following page, in all five conditions, was the page where participants heard the song (Figure 4.).

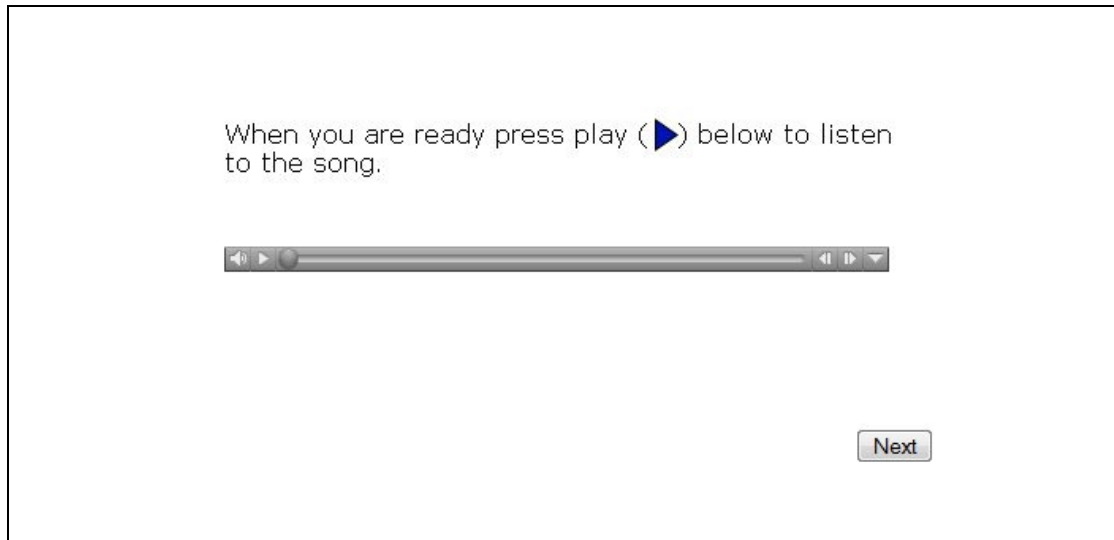


Figure 4. Screen shot of QuickTime sound player from the experiment website

After the participants had listened to the song (Figure 4.) the “Next” button took them to the survey part of the study.

4.4. The survey

As mentioned above the survey section of the study was designed using and was hosted by SPSS Dimensions MrInterview.

The questions and possible answers included in the survey are as follows:

- 1 How would you describe the song you have just heard? (Liked very much/Liked/Liked somewhat/Neither liked or disliked/Disliked somewhat/Disliked/Disliked very much)

- 2 How do you feel most people would rate the song you just heard? (Very high/High/Somewhat high/Neither high or low/Somewhat low/Low/Very Low)
- 3 What type(s) of music do you usually listen to? (Rock/ Pop/ Jazz/ Classical/ Hip-hop/ R'n'B/ Electronic/ Heavy/ Folk/ Country/ World Music/ Other)
- 4 What is your age? (Under 18/19 to 24 years/25 to 34 years/35 to 44 years/45 to 54 years/55 to 64 years/65 years and over/Don't want to answer)
- 5 Gender? (Male/Female)
- 6 How many years have you played a musical instrument? (Don't play/0 to 1 year/1 to 2 years/2 to 3 years/3 to 4 years/4 to 5 years/More than 5 years)

The participants were then thanked for their time and informed that once the data had been collected the results will be posted on the website, <http://users.jyu.fi/~daanjohn>, and also on the musical communities.

4.5 Analysis of data

The data collected was analysed statistically using SPSS 15.0 for Windows. For the rating data and the peer rating data analysis of variance (ANOVA) was used with the post hoc tests Tukey HSD, LSD and Bonferroni.

The independent variable in this study is the review type the participants receive prior to listening to the song. The dependent variables are the ratings of preference and peer ratings in the questionnaire.

The effect of some general background variables, such as age, gender and preferred musical genre, were also accounted for in the questionnaire and analysis.

5. Results

5.1. Participants

The number of participants in this study was 96 in total, of which, 19 were in the positive expert review group, 18 were in the positive star rating group, 20 in the control group, 17 in the negative expert review group and 22 in the negative star rating group.

Out of the participants, 53 were male and 43 were female. The ages of the participants were as follows in Table 1. There was no significant effect of age or gender on the results. The mean age of the participants fell within the 25 to 34 years group.

Table 1. Age of participants.

What is your age?

	Frequency	Valid Percent	
Valid	Under 18 years	1	1.0
	18 to 24 years	37	38.5
	25 to 34 years	35	36.5
	35 to 44 years	10	10.4
	45 to 54 years	10	10.4
	55 to 64 years	1	1.0
	65 years and over	1	1.0
	Refuse	1	1.0
	Total	96	100.0
Missing	System	2	
Total	98		

5.2. Preference ratings

A one way analysis of variance (ANOVA) was carried out on the data, with regards the review being either positive, negative or neutral (control), regardless of how the review was presented (expert review or star based review). There was a significant difference between the groups ($F(2)= 4.50$; $p= 0.014$). This suggests that the direction

of the review (positive or negative) is having a significant effect on participants' ratings. The post hoc tests, Tukey HSD, LSD and Bonferroni, were carried out on the same data. This showed that there was a significant difference between the direction of review (positive or negative) as the value for p ranged from 0.011 (Bonferroni) to 0.004 (LSD). However, there were no significant differences between the review groups and the control group (See Appendix 1). The mean value for the rating of musical preference given (5 being negative and 0 being positive) in the positive, negative and control groups can be seen in Figure 5.

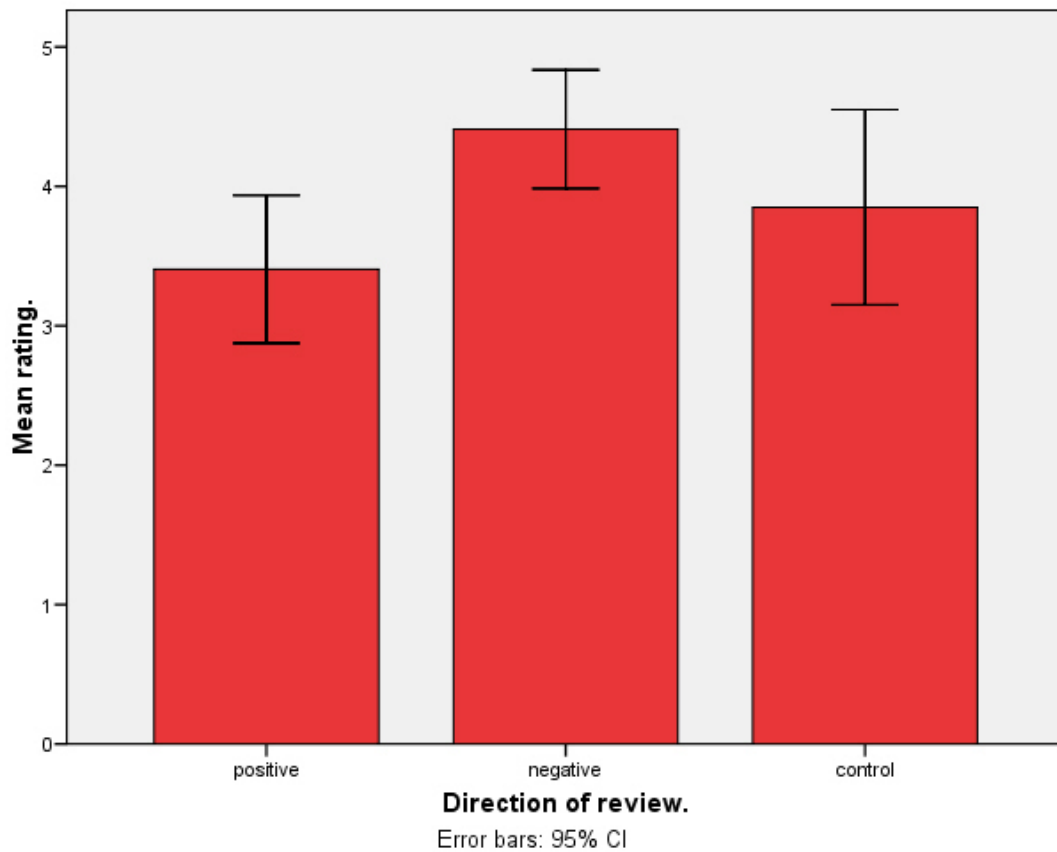


Figure 5. Graph showing direction of review plotted against mean rating of preference

The results showed that there was no significant difference in the preference ratings given by participants in the different review type groups (either expert written review

or star type review). In other words, the preference ratings given for both positive expert review and positive star review were not significantly different, likewise, the negative expert review and negative star review groups' preference ratings were not significantly different (see Appendix 2). The mean rating of preference (6 being negative and 0 being positive) for each condition can be seen in Figure 6.

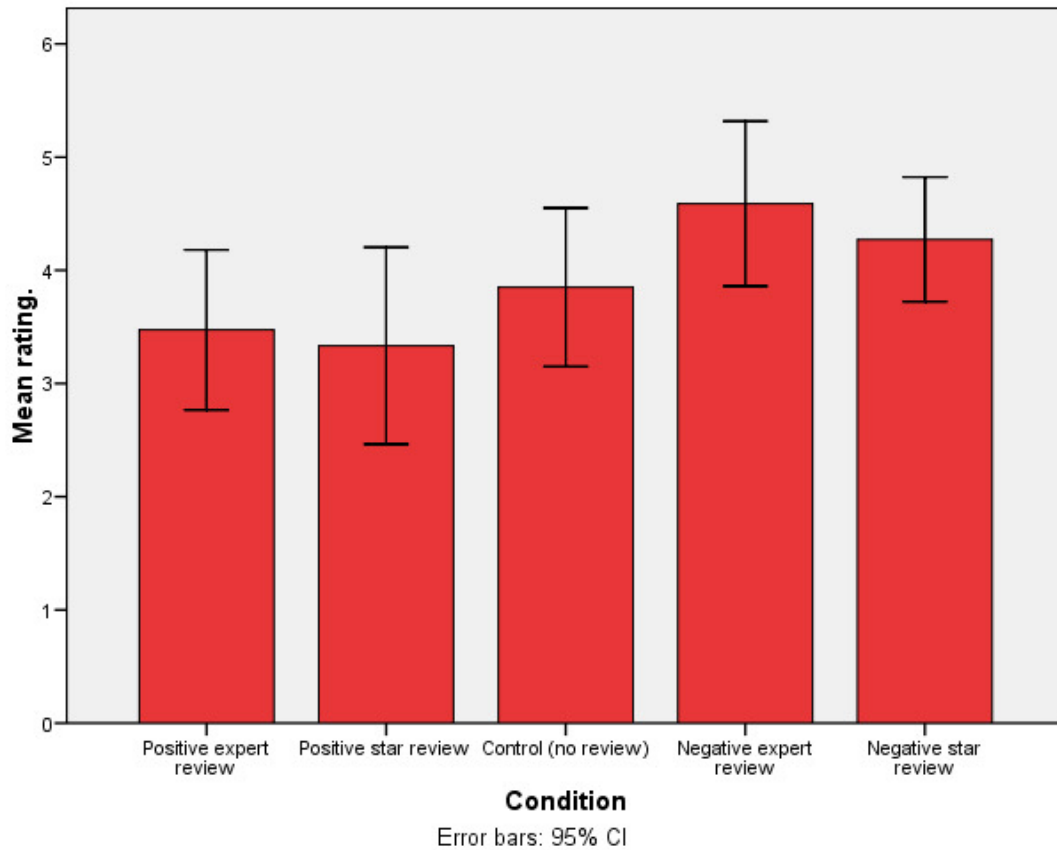


Figure 6. Bar chart showing each condition plotted against mean rating of preference.

5.3. Peer ratings

As part of the questionnaire, participants were asked to rate how they felt their peers would rate the music. As with the preference rating, there was a significant difference between the review being either positive, negative or neutral (control) regardless of how the review was presented (expert review or star based review). The results

showed that there was a significant difference ($F(2) = 5.089$; $p = 0.008$) between groups. Tukey HSD, LSD and Bonferroni post hoc tests were also conducted on this portion of the data. There was a significant difference between the positive and negative review groups (values for p ranging between 0.006 (Tukey HSD and Bonferroni) and 0.002 (LSD)), however there was no significant difference between the review groups and the control group (see Appendix 3). Mean rating of how participants felt their peers would rate the song (5 being negative and 0 being positive) in the positive, negative and control groups can be seen in Figure 7.

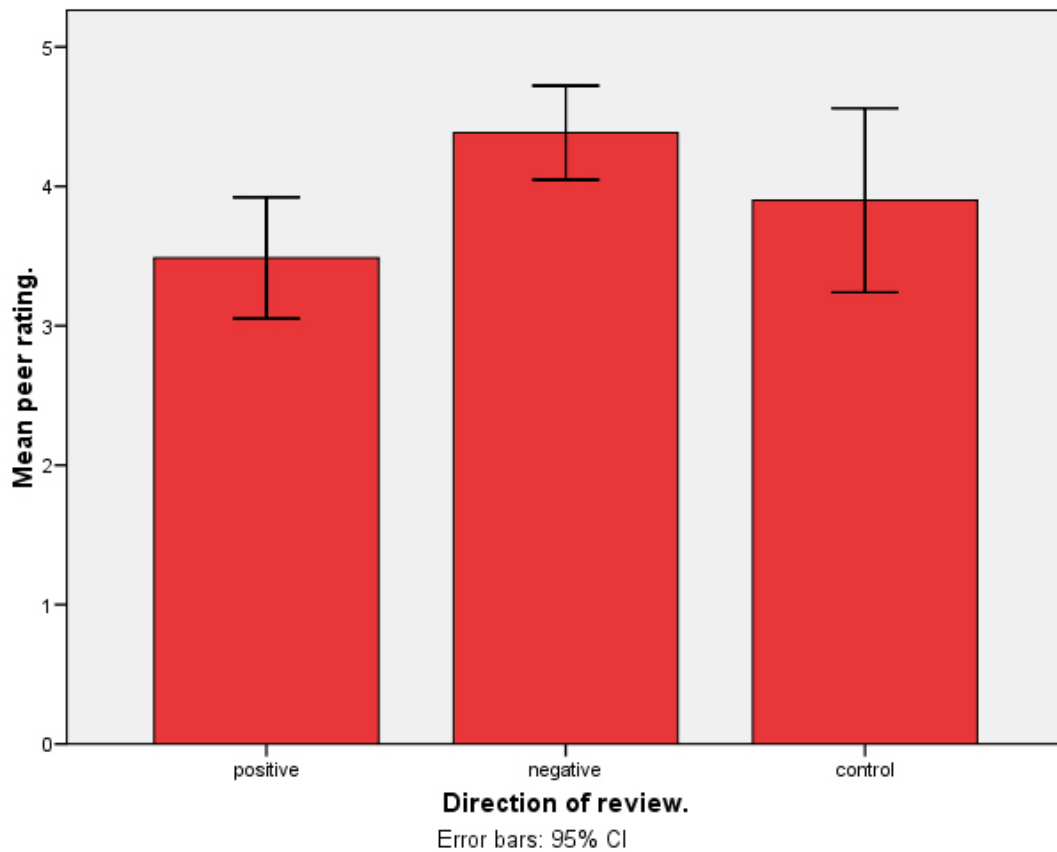


Figure 7. Bar chart showing direction of review plotted against mean peer rating.

5.4. Background factors

T-tests were carried out on the participants' preferred musical genre(s) and this showed that preferred musical genre(s) did not have a significant effect on musical preference rating. This was done to show that musical preference ratings given by the participants was due to the prior information rather than any already existing dislike or like for the musical style used in this research.

It is also important to note that years of musical playing or musicianship did not have any significant effect on the results. This suggests that both musicians and non-musicians are just as likely to be affected by prior information.

6. Conclusion

The null hypothesis was rejected as the results support the hypothesis. There is evidence to suggest that prior information does have a significant effect on musical preference rating ($p = 0.014$). It could be argued that positive prior information would increase the likelihood of a higher rating of preference for a piece of music, equally, a negative prior information would increase the likelihood of a lower rating of preference for a piece of music.

The type of review given (star based review or expert written review) does not appear to have a significant effect on the amount of influence on preference rating, only the direction of the review seems to have an effect.

There was no significant difference in the rating given for preference and perceived peer preference rating. In other words, participants usually gave a similar rating to their own for how they felt others would rate the music, however there were a few participants who felt others would rate the music differently to how they would.

There was no significant effect of age, gender and preferred musical genre on participants' preference rating; musicianship also had no significant effect on preference rating. This means that the significant difference in the positive and negative review groups is more likely to be due to the prior information.

7. Discussion

As stated in Section 5 (Results), there is evidence to suggest that prior information does have a significant effect on participants' musical preference ratings. This supports the hypothesis that information given prior to listening to a piece of music will affect participants' rating of that piece of music.

The results also showed that other possible factors which may have had an effect on the results, such as age, gender, musicianship and preferred musical genre, do not have a significant effect on participants' rating of musical preference.

This study supports the study conducted by North and Hargreaves (2005), who suggested that prior information does affect how participants feel about a song. North and Hargreaves argued that information received prior to listening to a song can greatly alter our perception of that song. They suggest this has major implications in the labelling of problem music. This idea could be translated to all music labelling, reviews and media coverage. However, it is felt that the research presented in this paper is perhaps more realistic as popular music is rarely talked about as suicide inducing as it was in North and Hargreaves' study. The prior information used in North and Hargreaves (*op cit.*) is quite extreme and it can be assumed that more often than not modern popular music is reviewed in the traditional sense (in the form of a magazine review for example), as in this paper.

It could be said that the current research also supports the work of Rigg (1948), who argued that unfavourable propaganda – in the case of Rigg's study association with

Hitler and the Nazi party – was almost enough to erase the gain which comes from hearing without comment, while the favourable propaganda produced, on the basis of the scale that was used, a gain twice that of the control group. The current research, although not as extreme as Rigg (1948) associating a piece of music with Nazism, is arguing the same point that, prior information, either positive or negative has a significant effect on participants rating of a piece of music.

The current research shows that the type of review given is irrelevant and that only the direction on the review is important – in other words it makes no difference whether the review comes from a musical expert or our peers. This would suggest that DJs and the music press could have a major influence over the sales of a song, thus exerting a significant influence over the future earnings of the artist. However, once an artist is established this effect may lessen due to the artist's popularity. It would be worthwhile investigating whether the effects found in this research still occur with more well-known artists.

As there is no significant difference between the review of an expert and that of a peer rated star review it could be said that the opinions of the music press are no more important or valid than those of our peer group. This means that our peers do have a major impact on our choices and preferences. This supports the work of Salganik, Dodds & Watts (2006). The fact that there is no significant difference between the expert and peer rated star reviews suggests that both peer influence and prestige effect are of equal importance in forming our musical preference.

The research of Salganik and his colleagues investigated whether knowledge of previous participants' choices affected participants' choices with regards to preference for a piece of music. The participants were asked to listen to a piece of music and were then given the opportunity to rate and download the song.

Salganik, et. al. (*op. cit.*) concluded that increasing the social influence increased the likelihood of a song doing well or being downloaded, although quality was also partly an indicator of success. This supports the argument put forth in the current research that our peers do influence our musical choices, in this case whether to download a song or not. This notion is also supported by the work of Tajfel (1970) and Billig and Tajfel (1973) who suggest that often our choices are heavily influenced by our need to conform to the in-group.

The notion of our peers exerting an influence on our musical preference is also supported by Zillmann and Gan (1997), who suggest that a young person's liking for particular musical style serves two main functions as discussed in Section 2.2. Although Zillmann and Gan have no empirical evidence to support their theory, the theory may be one way of explaining why the peer rated star based reviews exerted as much influence over participants' ratings as the expert reviews did. One way in which this could be investigated further would be to include questions in the questionnaire to explore why participants rate the way they do.

Much of the early research into what influences our musical preference see our preferences as being shaped by our socioeconomic background (Baumann, 1960). However, the research presented in this paper neither supports nor opposes this idea,

although it could be argued that if our musical preferences were pre-shaped by our background then there would be little or no effect of subsequent information. This suggests that our musical preferences are not predefined by our background but are open to transformation and change when new information is received.

However, this current research does not claim that our overall preference is due to the receipt of prior information. It could be said that the prior information effect put forward by this research is song-specific, as a review of one song will have no effect on other songs from the same genre, although it may alter our perception of the artist. From an overall preference point of view it is suggested that our preferences develop socially in order for us to identify with our peers (Lewis, 1992; Russell, 1997), but the current research can offer no support to this theory.

Although there was limited control over the listening environment, as discussed in Section 7.1., the method of listening is more likely to replicate real-life musical listening situations. Therefore, it could be argued that the study replicates how real reviews and musical listening occurs.

7.1. Limitations

There were a few issues with the current research which were either overlooked or impossible to control the variables for when the research was designed. In this section of the paper these limitations are addressed and suggestions made in order to improve future research.

Because the participants participated alone via the website, there was no way of controlling listening methods. Participants may have used anything from a pair of inexpensive headphones to an expensive surround sound system. This means that the listening method was not standardised amongst the participants. This may or may not have had an effect on the ratings given. This gives rise to questioning technical inconsistencies. The research has no control over technical aspects such as network speed and sound quality. However this was partially addressed in that the host server used, belonging to the University of Jyväskylä, was very fast. This limited the download speed for the participants.

There is a great deal of money and time invested into commercial music websites. However, due to limited funds and time the website used for this study, although sufficient, may not have reached the usual standard for the commercial music website which participants have become accustomed to. This may or may not have an effect on participants' ratings. However, it may be more valid if future research is carried out using websites which mimic commercial music websites. This would limit the possibility of site design indirectly affecting participants' ratings.

The research only used one song, "Quite life" by Pseudo Japanese. Although relatively unknown to participants there is a slight chance the participants may have been aware of the song or band prior to this experiment. This would limit or mask the effect of prior information. Future research could use previously unreleased material. It may also be a good idea for future research to not to be limited to one song. Other research in this area uses more than one song (e.g. North and Hargreaves (2005) used 4). This may help to gain a more ecologically valid result.

One issue which could be addressed in future research is the problem that participants can take part more than once. This was considered in the current research and participants were asked to only participate once. However, there was nothing to stop people taking part more than once. This issue could be solved by the use of cookies, whereby upon returning to the site after participating once, participants are redirected from the site to a page thanking them for their participation and reminding them that they are only able to participate once.

7.2. Future research

While this study has enabled me to pursue some of the notions regarding the effects of our social environment on our musical preference it is still only a starting point. There is still a great deal of work to be done in this area. Although research regarding musical preference has been quite active for a number of decades it is still in its infancy and this study only scratches the surface on a small area of social psychology of musical preference. This section explores some ideas for future research and these suggestions will be extensions of the current research.

It would be interesting to compare the difference between results obtained in an online environment and those obtained in a real world situation. Future research could compare how people respond to the same reviews in different situations.

As stated in Section 7.1. (Limitations), future research may benefit from using a varied sample of songs, including songs from different genres and styles as well as

difference in quality, of both recording and music. This may increase the validity of the results. One of the possible limitations of the current research could be that we may not be able to generalise across genres based on research using only one genre. Increasing the number of songs would therefore increase the number of genres the study could include.

A further development for this research would be to compare reviews, as used in the current research, with number of previous downloads as used by Salganik, Dodds & Watts (2006). This experiment would explore the possible difference between traditional reviews and our estimation of our peers' preference. Rather than just gaining some arbitrary rating as with the star based peer review the participants would gain information about the number of people who chose to download the song, thus possibly demonstrating that they liked the song.

Another further development in this research could be to include different sources of influence, for example, peer influence, prestige/propaganda effect, labelling effect, and/or socioeconomic background. This could be done through the use of different styles of review similar to those used in the present research.

8. Closing thoughts

As we continue into the 21st Century we are reminded that although the ways we interact may have changed slightly, through internet connections, satellite television and other digital means, we are still social creatures who use each other as sources of information and with whom we wish to identify.

Despite the fact that the participants had never met or are ever likely to meet with the reviewer(s) in this study they still conformed to their general opinion when rating the music. This implies that our preference is formed not through our socioeconomic background but through a believed connection to another human being.

It is also very interesting to note that the style of the review was not significant, both the peer rated star reviews and ‘prestigious’ expert reviews were almost of equal magnitude in the amount of the effect they had over influencing participants ratings of musical preference.

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10. Appendices

10.1. Appendix 1

ANOVA

How would you describe the song you have just heard?

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	19.251	2	9.626	4.501	.014
Within Groups	198.905	93	2.139		
Total	218.156	95			

Multiple Comparisons

Dependent Variable: How would you describe the song you have just heard?

	(I) +ve or -	(J) +ve or -	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
			Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound
Tukey HSD	positive	negative	-1.005(*)	.336	.010	-1.80	-.21
		control	-.445	.406	.519	-1.41	.52
	negative	positive	1.005(*)	.336	.010	.21	1.80
		control	.560	.402	.349	-.40	1.52
LSD	control	positive	.445	.406	.519	-.52	1.41
		negative	-.560	.402	.349	-1.52	.40
	positive	negative	-1.005(*)	.336	.004	-1.67	-.34
		control	-.445	.406	.276	-1.25	.36
Bonferroni	negative	positive	1.005(*)	.336	.004	.34	1.67
		control	.560	.402	.167	-.24	1.36
	control	positive	.445	.406	.276	-.36	1.25
		negative	-.560	.402	.167	-1.36	.24
Bonferroni	positive	negative	-1.005(*)	.336	.011	-1.82	-.19
		control	-.445	.406	.829	-1.43	.54
	negative	positive	1.005(*)	.336	.011	.19	1.82
		control	.560	.402	.501	-.42	1.54
control	positive	.445	.406	.829	-.54	1.43	
	negative	-.560	.402	.501	-1.54	.42	

* The mean difference is significant at the .05 level.

10.2. Appendix 2

ANOVA

How would you describe the song you have just heard?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	20.388	4	5.097	2.345	.060
Within Groups	197.768	91	2.173		
Total	218.156	95			

Multiple Comparisons

Dependent Variable: How would you describe the song you have just heard?

	(I) Condition	(J) Condition	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
			Lower Bound	Upper Bound	Lower Bound	Upper Bound	
			Lower Bound	Upper Bound	Lower Bound	Upper Bound	
Tukey HSD	Positive expert review	Positive star review	.140	.485	.998	-	1.49
		Control (no review)	-.376	.472	.931	-	1.69
		Negative expert review	-1.115	.492	.166	-	2.48
		Negative star review	-.799	.462	.421	-	2.08
	Positive star review	Positive expert review	-.140	.485	.998	-	1.49
		Control (no review)	-.517	.479	.817	-	1.85
		Negative expert review	-1.255	.499	.096	-	2.64
		Negative star review	-.939	.469	.272	-	2.24
	Control (no review)	Positive expert review	.376	.472	.931	-	1.69
		Positive star review	.517	.479	.817	-	1.85
		Negative expert review	-.738	.486	.554	-	2.09
		Negative star review	-.423	.455	.885	-	1.69
Negative expert review	Positive expert review	1.115	.492	.166	-	2.48	
	Positive star review	1.255	.499	.096	-	2.64	
	Control (no review)	.738	.486	.554	-	2.09	
	Negative star review	.316	.476	.964	-	1.01	
Negative star review	Positive expert	.799	.462	.421	-	2.08	

	review						
	Control (no review)	-.517	.479	1.000	-	1.89	.86
	Negative expert review	-1.255	.499	.136	-	2.69	.18
	Negative star review	-.939	.469	.479	-	2.29	.41
Control (no review)	Positive expert review	.376	.472	1.000	-.98	1.74	
	Positive star review	.517	.479	1.000	-.86	1.89	
	Negative expert review	-.738	.486	1.000	-	2.14	.66
	Negative star review	-.423	.455	1.000	-	1.73	.89
Negative expert review	Positive expert review	1.115	.492	.259	-.30	2.53	
	Positive star review	1.255	.499	.136	-.18	2.69	
	Control (no review)	.738	.486	1.000	-.66	2.14	
	Negative star review	.316	.476	1.000	-	1.05	1.69
Negative star review	Positive expert review	.799	.462	.869	-.53	2.13	
	Positive star review	.939	.469	.479	-.41	2.29	
	Control (no review)	.423	.455	1.000	-.89	1.73	
	Negative expert review	-.316	.476	1.000	-	1.69	1.05

* The mean difference is significant at the .05 level.

10.3. Appendix 3

ANOVA

How do you feel most people would rate the song you just heard?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.351	2	7.675	5.089	.008
Within Groups	140.274	93	1.508		
Total	155.625	95			

Multiple Comparisons

Dependent Variable: How do you feel most people would rate the song you just heard?

	(I) +ve or -	(J) +ve or -	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
			Lower Bound	Upper Bound		Lower Bound	Upper Bound	Lower Bound
Tukey HSD	positive	negative	-.898(*)	.282	.006	-1.57		-.23
		control	-.414	.341	.448	-1.23		.40
	negative	positive	.898(*)	.282	.006	.23		1.57
		control	.485	.338	.327	-.32		1.29
LSD	control	positive	.414	.341	.448	-.40		1.23
		negative	-.485	.338	.327	-1.29		.32
	positive	negative	-.898(*)	.282	.002	-1.46		-.34
		control	-.414	.341	.228	-1.09		.26
Bonferroni	negative	positive	.898(*)	.282	.002	.34		1.46
		control	.485	.338	.155	-.19		1.16
	control	positive	.414	.341	.228	-.26		1.09
		negative	-.485	.338	.155	-1.16		.19
Bonferroni	positive	negative	-.898(*)	.282	.006	-1.59		-.21
		control	-.414	.341	.684	-1.24		.42
	negative	positive	.898(*)	.282	.006	.21		1.59
		control	.485	.338	.464	-.34		1.31
control	positive	.414	.341	.684	-.42		1.24	
	negative	-.485	.338	.464	-1.31		.34	

* The mean difference is significant at the .05 level.