THE ROLE OF CONTRASTING MUSICAL CHARACTERISTICS IN THE APPRECIATION OF MUSIC

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ABSTRACT

Previous theories about aesthetic appreciation suggest that the introduction of a contrasting stimulus can result in an increased emotional response and, consequently, an increased appreciation compared to a previously habituated stimulus. In this study we examined this theory by comparing the emotional responses as well as the liking of listeners for related contrasting and habituated stimuli. In particular, we focused on the emotional contrast between happy- and sad- sounding music, which was realized by using different combinations of the parameters mode (minor and major) and tempo (slow and fast). Music excerpts of 30 seconds that conveyed either happiness or sadness were presented to 46 undergraduate students. Fourteen excerpts conveying one emotion were chosen as habituated stimuli; two excerpts conveying the other emotion served as the contrasting stimuli. Each excerpt was judged in terms of the magnitude of emotional response as well as degree of liking. Listeners showed a stronger emotional response and greater liking to contrasting stimuli than to habituated stimuli. These findings provide support for the theory of heightening the appreciation of music by heightening emotional arousal.

1. BACKGROUND

Music can be perceived differently depending on the context. Under certain conditions, a musical piece can be perceived as a ‘contrasting stimulus’. By definition, a contrast entails a comparison between two pieces. In order to establish a contrast, the two pieces must differ in value along some shared attribute or feature such as instrumentation, style, mood, texture, etc. Some contrasts may be dichotomous, such as major/minor modality, or solo/chorus arrangements. Other contrasts may be continuous, such as tempi (fast/slow), articulation (legato/staccato), or dynamic level (loud/soft). Contrasts can be found at many different time-scales. Small-scale contrasts might arise from alternations of successive consonant/dissonant chords in a harmonic progression; large-scale contrasts might arise from alternations of verse and chorus passages within a single piece, or from differences between successive works in a concert program.

Most art forms involve some elements of contrast. In tragic drama, for example, most playwrights include a scene in which humor is introduced. Similarly, happy endings in film are typically preceded by some kind of narrative tension.

Evidently, certain contrasts are enjoyed and others are not. In some situations, the absence of contrast may be enjoyable, as in the case of trance music. In other situations, contrasts may be highly annoying, such as when a late-night film on television is interrupted by a high-energy advertisement. What, precisely, is the relationship between contrast and liking?

Writers on psychoaesthetics have posited a number of possible principles that may influence liking. On the one hand, considerable research has suggested a positive affect arising from familiarity. Examples include the mere exposure effect (e.g., Zajonc, 1980), the prediction effect (Huron, 2006), and sensitization (e.g., Vanderplas & Blake, 1949). On the other hand, empirical evidence also suggests that familiarity may lead to negative affect through phenomena such as habituation and desensitization. This perspective suggests that novelty may be important. Several scholars have proposed intermediate models that balance familiarity and novelty, notably the work of Daniel Berlyne (1971). However, there are many ways in which such familiarity/novelty balances might be constructed. In music, for example, various techniques produce passages that simultaneously include both elements that are familiar and elements that are novel. By contrast, passages may be arranged as sequential juxtapositions of alternately familiar and novel material.

There are different forms of novelty. As discussed above, music may employ the use of many different contrasts such as loudness, articulation, emotion, and style. It should not be assumed that different forms of contrast have the same effect. Gatewood (1927) provided empirical evidence consistent with the view that the greater the number of emotions involved in a musical experience, the more listeners appreciate it.

For the present study, we focused on one particular contrast: the emotion music conveys. Musical mode is closely related to evoked or represented affect (Heinlein, 1928; Hevner, 1935; Rigg, 1940). The concrete affect is also related to the associated tempo. For example, a combination of slow tempo and minor mode is more effective in conveying sadness than either slow passages or minor-mode passage alone. Similarly, fast tempo and major mode is more effective in conveying happiness than either fast passages or major-mode passages alone (Hunter, Schellenberg, & Schimmack, 2008). Schubert (1996) has proposed a theory describing how the structured time-course of musical stimuli can lead to changing affect. Specifically, over time habituation to one type of emotional stimulus will tend to lessen the listener's arousal; after long exposure to a single emotion, the appearance of another emotion (which by definition will form a contrast) will lead to increased liking because it will heighten arousal.
2. AIMS
In this study, we test Schubert's theory concerning the influence of contrast on affective judgment and musical preference. By way of clarification, Schubert's theory logically entails three interrelated claims. First, the subjective magnitude of some contrast is proportional to both the distance separating stimuli along the parameter continuum as well as the temporal distance between the onsets of the contrasting stimuli. Thus, for example, a tempo change from 60 bpm to 90 bpm is more contrasting than a tempo change from 70 bpm to 80 bpm; similarly, the transition from slow tempo to fast tempo exhibits a greater contrast when the preceding slow passage is 3 minutes in length compared with 1 minute in length. A second logical implication is that greater contrast evokes a stronger emotional response. Finally, the larger the emotional response, the greater the reported liking.

Notice that the role of duration in the perception of contrast precludes a naive interpretation of contrast theories that might otherwise expect the most preferred musical passages would be ones that engaged in constant contrasts.

3. METHOD
3.1 Hypotheses
In order to test the theory, we propose the following two hypotheses related to contrasting musical properties:

- Listeners will report stronger felt emotion when a contrast follows a longer preceding passage than a shorter preceding passage.
- Listeners will report greater liking when a contrast follows a longer preceding passage than a shorter preceding passage.

To thoroughly test this theory, we have to consider all possible outcomes that could provide counter-evidence to the theory:

- Contrasting music will lead neither to an increase of liking nor to a stronger emotional reaction.
- Contrasting music will lead to an increase in liking, but not to a stronger emotional reaction (e.g., the contrasting music increases liking, but this is not mediated by the intensity of the listener’s emotional response).
- Contrasting music will lead to stronger emotional reaction but not to an increase in liking.
- Liking and/or emotional reactions will increase with the increased duration of the habituated emotion.

In brief, the experiment involved listeners judging felt emotion and preference for contrasting A-B passages with either longer or shorter preceding ‘A’ contexts. To anticipate our results, we will see that the data are consistent with this interpretation of Schubert's contrast theory of musical preference.

3.2 Operationalization
The hypotheses might be operationalized in many ways. Perhaps the most important question is the choice of contrast. For the purposes of this initial study, we wanted to ensure that participants heard the passages as truly contrasting. Of the many possible parameters, we elected to contrast a combination of two parameters that are strongly linked to perceptions of sadness and happiness, namely tempo and mode. In general, fast tempo and major mode are associated with happiness, whereas slow tempo and minor mode are associated with sadness. If the hypotheses are correct, it should matter little which parameters are actually manipulated. However, in the first instance, we wanted to ensure that listeners heard the contrast as truly contrasting.

3.3 Participants
46 undergraduate students enrolled in an introductory Psychology course participated for course credit. Only 29 of those had any music training, with an average of 4 years (SD = 3.0, range = 10).

3.4 Stimulus material
Stimuli consisted of 28 music excerpts, each approximately 30 seconds in duration. All excerpts were taken from commercially available compact disks. All stimuli were normalized in volume units (VU) in order to reduce variability in perceived loudness. Stimuli were selected exclusively from 18th and 19th century piano music, and did not contain any voice or other instruments. Half of the excerpts were in minor mode with a slow tempo, the other half were in major mode with a fast tempo.

2.4 Procedure
A = fast/major, B = slow/minor.
Condition 1: ABABABAAAAAAAB  (n = 23)
Condition 2: BABBBBBBBBBBBA  (n = 23)

Each listener heard 16 30-sec musical excerpts. Each excerpt expressed one of two musical emotions (A = fast/major, B = slow/minor). The As and Bs represent musical emotions (sad/happy) rather than repetitions of the same excerpt. The trial began with a contrasting juxtaposition of either A-B or B-A. There then followed 13 excerpts that all conveyed the same emotion. Finally, the last excerpt introduced another contrast. The order of presentation of excerpts was randomized for each subject. Following each excerpt, listeners were asked to rate their liking and the intensity of their emotional response using 5-point Likert scales. A Big Five personality test was administered subsequently.
Participants received the following instructions, which were displayed on a computer screen: ‘You will hear 16 short musical fragments. Please listen to each musical fragment carefully. After each fragment you will be asked, on rating scales from 1 - 5, to indicate how much you LIKED the piece (from not at all to extremely), and how STRONG your emotional response to the music was (from felt nothing to highly emotional). Please press OK if you don’t have any questions and are ready to start the experiment.’

4. RESULTS

We conducted two 2x2x2 mixed-design ANOVAs, one on liking ratings and one on emotionality ratings. For both ANOVAs, the between-subjects factor was condition (fast/major or slow/minor as the contrasting music). The within-subject factors were emotion type (contrasting or habituation) and time (early or late).

4.1 Liking ratings

The ANOVA on liking (see Figure 1) showed a main effect for time, $F(1, 44) = 9.70$, $p = .003$. Overall, excerpts at the beginning of the session were liked more than excerpts at the end of the trial. This could indicate some fatigue effect, not uncommon in laboratory experiments. There was no main effect for emotion type. In general, excerpts with the habituated emotion were liked as much as excerpts with the contrasting emotion. The main effect of time was qualified by a significant interaction between time and emotion type, $F(1, 44) = 15.93$, $p < .001$. Follow-up tests showed that the liking for pieces with the habituated emotion were significantly lower at the end of the session compared to the beginning, $t(45) = 5.05$, $p < .001$, and that at the later time the contrasting excerpts were liked more than the habituated excerpts, $t(45) = 2.80$, $p = .008$. The condition variable was not significant (no main effect or interactions), indicating that it did not matter which emotion was used as the contrasting or the habituated emotion in the experiment. Overall, liking judgments for the different emotions did not differ at the beginning of the experimental session, but they differed at the end, with the contrasting emotion receiving higher liking ratings than the habituated emotion. These results are in line with the hypothesis that a contrasting stimulus is appreciated more than a habituated stimulus.

![Figure 1: Mean liking ratings. Error bars indicate standard errors.](image)

4.2 Emotion ratings

The ANOVA on emotional response (see Figure 2) revealed similar results. A significant main effect was found for emotion type, $F(1, 44) = 13.08$, $p = .001$, showing that contrasting excerpts were perceived as inducing stronger emotions than habituated excerpts. A significant interaction between time and emotion type qualified this effect, $F(1, 44) = 19.42$, $p < .001$, showing that habituated excerpts induced significantly weaker emotional responses at the end of the session compared to the beginning, $t(45) = 3.66$, $p < .001$, whereas at the end the contrasting excerpts were causing stronger emotional responses than the habituated excerpts, $t(45) = 4.88$, $p < .001$.

![Figure 2: Mean emotion intensity ratings. Error bars indicate standard errors.](image)
Figure 2: Pearson correlations coefficients for significant relations between response variables.

4.3 Relation between liking and emotion ratings

Our main hypothesis specified that judgments about liking and emotion change in tandem. As reported above, ANOVAs on both judgments revealed similar patterns. Additionally, we calculated correlations between all the response variables (Bonferroni-corrected alpha = .05/28). Responses about liking and emotional intensity were related for both contrasting excerpts as well as for the late habituated excerpt. Also, liking judgments for the early and the late contrasting excerpts varied in tandem (see Figure 3).

5. DISCUSSION AND CONCLUSION

In general, the results were consistent with Schubert's contrast theory of preference. More specifically, the results were consistent with two main hypotheses motivated by this theory. Listeners reported stronger felt emotions when a contrast followed a longer preceding passage than a shorter preceding passage. Listeners also reported increased liking when a contrast followed a longer preceding passage than a shorter preceding passage.

Schubert's theory also offers a possible explanation for the problem of the enjoyment of negative affect. Since the time of the ancient Greeks, philosophers have puzzled over the observation that humans often seem to enjoy portrayals or representations of negatively valenced emotions in certain contexts (e.g., Kivy, 2002; Levinson, 1990). The present results suggest that, in a musical context, enjoyment of a negative emotion increases after the listener habituates to a positive emotion.

Further empirical studies are warranted.

6. REFERENCES


