

The Interaction Effects of Musical Elements and Listener Factors on Listening Emotions

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Summary

Music has become an integral part in our daily life. Music, with its distinct nature, is considered to be a potent stimulus for expressing and evoking emotion and tends to give us strong emotional experiences. The earliest and still best-known investigation is Hevner's (1936) study. She systematically manipulated various musical elements in real music and found that the most effective variables on listeners' judgments were tempo and mode, followed by pitch level, harmony, and rhythm.

The purpose of this study was to investigate the interaction effects of musical elements and listener factors on listening emotions. The independent variables were musical elements of tonality, tempo and dynamics, as well as listener factors of gender and musical training. The dependent variables were listening emotions, including positive-negative emotion and arousal emotion.

A questionnaire survey was utilized to provide answers to this study. Subjects ($N = 264$) were drawn from eight universities in Taiwan, including 113 music majors and 151 non-music majors. Among them, four groups were music majors, and the other four groups were non-music majors. The average age was 20.15 years old, and the sample consisted of 174 females and 90 males. Subjects completed *Questionnaire of Music Listening Emotion* while listening to music stimuli.

Regarding to music stimuli, composition 1 was an eight-measure, D major and 6/8 meter piece that the first author extended from the four-measure melody used by Kastner & Crowder (1990) and Webster & Weir (2005). Composition 2 was in F major and 4/4 meter,

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and was composed by the first author. These two music compositions were then varied in tonality (major vs. minor), tempo (fast vs. slow), and dynamics (loud vs. soft) to come up with 16 versions. To reduce the effect of their presenting order, a design of reverse counterbalancing was adapted in listening process. Familiarity with music stimuli was regarded as the controlling variable in order to exclude its effect. Participants were instructed to listen to each of these 16 musical versions and rated their positive-negative emotion, arousal emotion, and familiarity with music stimuli on 7- point scales.

Multivariate Analysis of Covariance (MANCOVA) was utilized for data analysis, and the significance level was set at $p < 0.5$. The mixed-design was also adapted in statistical method. Tonality, tempo, and dynamics used independent samples, but gender and musical training involved repeated measures. Familiarity with music stimuli was regarded as a covariance in order to exclude its effect. According to research purpose and method, this study came up with the following two conclusions.

The first conclusion was about the listeners' positive-negative emotion. Musical elements of *tonality*, *tempo* and *dynamics* caused significant influences on listeners' positive-negative emotion. Music in major key aroused more positive emotion than minor key; music in fast tempo produced more positive emotion than slow tempo; and music in loud dynamics produced more positive emotion than soft dynamics. Concerning other main effects and interaction effects, this research found that *gender* \times *tonality* had significant influences on listeners' positive-negative emotion. Females seemed to produce more negative emotion than males while listening to minor key. And, *musical training* \times *tonality*, *musical training* \times *tempo* and *musical training* \times *dynamics* had significant influences on listeners' positive-negative emotion. Low musical training group seemed to produce more positive emotion than high musical training group while listening to music with minor key, fast tempo, or loud dynamics.

The second conclusion had to do with the listeners' arousal emotion. Musical elements of *tempo* and *dynamics* caused significant influences on listeners' arousal emotion. Fast music produced higher arousal emotion than slow music, and loud dynamics produced higher arousal emotion than soft dynamics. But musical element of *tonality* had no significant difference on listeners' arousal emotion. The tonality of major and minor key did not cause significantly different arousal emotion among listeners. Concerning other

main effects and interaction effects, this research found that *gender* \times *tonality*, *gender* \times *tempo*, and *gender* \times *dynamics* had significant influences on listeners' arousal emotion. Females seemed to produce lower arousal emotion than males while listening to minor key. And, *musical training* \times *tonality*, and *musical training* \times *tempo* had significant influences on listeners' arousal emotion. In average, low musical training group produced higher arousal emotion than high musical training group. Finally, implications for music education were also discussed in this study.

Keywords: **dynamics, gender, musical elements, musical training, tempo, listener factors, listening emotions, tonality**

