

# Arousal, Valence and the Involuntary Musical Image

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## ABSTRACT

### Background

Studies in experimental psychology demonstrate that our memory for emotional stimuli is enhanced (e.g. Bradley & Lang, 2000). Such emotional stimuli are typically defined as more arousing than neutral stimuli, and of a strong valence (positive or negative). If we have a better memory for positive and negative arousing music than for neutral music, it can be hypothesized that it is more likely to make its way into our conscious experience as involuntary musical imagery (INMI). The study of the emotional qualities of imagined music is in its infancy. While Lucas, Schubert, & Halpern (2010) showed that experiment participants are able to indicate the emotion expressed in imagined music, such an ability does not equate to the likelihood of imagining emotional music in everyday life. Other studies suggest an association between positive emotional engagement with music and subsequent INMI (Beaman & Williams, 2009). For example, Bailes (2007) found that music students thought they might be imagining a particular tune because they liked it.

### Aims

This paper reports results from a follow-up of Bailes (2006, 2007), with the aim of exploring the relationship between involuntary musical imagery and emotion.

### Method

Forty-seven respondents, 21 male, aged 18 to 53 years, were contacted by SMS for a total of 42 times over a period of 7 days. At each contact they were required to fill in a form describing their mood, location and activity, as well as details of any current musical experience, imagined or heard.

### Results

A total of 1415 forms (out of a possible 1974) were returned, of which 17% reported episodes of imagining music. A multiple logistic regression analysis was performed with current musical state at the time of contact as the dependent variable (hearing music, imagining music, both hearing and imagining music, neither hearing nor imagining music) and ratings of mood as predictor variables, according to the mood pairs Alert/Drowsy, Happy/Sad, Lonely/Connected, Energetic/Tired, Involved/Detached, Tense/Relaxed, and Interested/Bored. A total of 952 cases were analyzed and the full model significantly predicted musical state (omnibus chi-square = 175.23, df = 102,  $p < 0.005$ ). The model accounted for between 16.8% and 18.7% of the variance. Only ratings of the mood pairs Involved/Detached ( $p < 0.05$ ) and Interested/Bored ( $p < 0.05$ ) reliably predicted global musical state. However, an analysis of the coefficients when participants reported imagining music revealed that ratings for the mood pair Alert/Drowsy were significantly negative predictors when participants rated their mood as 'drowsy' or

'neither alert nor drowsy'. Participants also significantly tended to imagine music when they were feeling 'quite connected' (Lonely/Connected mood pair). Ratings for the mood pair Happy/Sad, which best exemplifies valence, were not significant predictors.

Other analyses are in progress, and an examination of the association between the degree of choice respondents reported over music that they actually heard, and subsequent imagining of that music, will be presented. Qualitative analyses of responses to the open question about possible reasons for imagining music are expected to reveal information about the emotional characteristics of the music, context, and respondent.

### Conclusions

Preliminary evidence of a link between arousal and the propensity to experience INMI shows that mood ratings of 'drowsy' or 'neither alert nor drowsy' were negatively associated with imagining music. In other words, participants who did not feel that they were alert were unlikely to be imagining music. No quantitative evidence was found of the influence of being in a positive or negative mood on musical state.

A framework for future studies of the relationship between valence, arousal and INMI will be presented, distinguishing between the perception and induction of emotion, and emphasizing interactions between the arousal and valence of the encoding, content, and retrieval of music.

### Keywords

Musical imagery, emotion, experience sampling, mood, arousal

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