Effect of positive emotions induced by music

Do positive emotions induced by music broaden thought-action repertoires?

Music has the potential to communicate emotions, and this presence can be considered to be part of our everyday experience. Music psychologist believes that it has the capability to invoke specific emotions when listeners tune in to a specific type of music. For example, a faster toned and pitch music will indicate a lighter and happier mood, whereas a slow tone and pitch will indicate a sad emotion. On the scale of mood, Fredrickson's broaden-and-build theory suggests that positive emotions builds up our thought-action repertoire, explains that we should harness positive emotions into our daily lives in effort to enhance our coping skills. The fusion of music with the broaden-and-build theory is an attempt to prove that positive emotions do indeed broaden our momentary thought-action repertoire as proven in Fredrickson's theory, but on a different scale. Such fusion can be proven to be worth of research as music exists in our everyday lives and if we incorporate and foster positive emotions into individual's daily lives, most, if not everyone, would have increased thought-action repertoire, which would then lead to better coping skills in situations.

The broaden-and-build theory suggests the function of a subset of positive emotions such as joy, love and contentment. Fredrickson (2004) proposed that positive emotions produce optimal functioning over time, which includes psychological well-being, as well as physical well-being. These positive emotions, where individuals experience joy, which in turn creates the urge to play, or interactions with a stranger which will in turn create a supportive relationship, will broaden an individual's thought-action repertoire. This broaden mindset is in contrast with negative emotions, where it prompts

immediate and narrow action tendencies such as fight or flight. Fredrickson also proposed that with broadening of an individual's thought-action repertoire, it would in turn create and build into the individual's personal resources, and these personal resources are thought to be long term which can help individuals cope with situations in future. For the support of her theories, Fredrickson reviewed some of other researchers who worked on the effects of positive affect and cognition and pointed out that Kahn and Isen (1993) found that individuals experiencing positive affect report having increased preference for variety and accept a broader array of behavioural options. Subsequently, Ashby, Isen, and Turken (1999) found that positive affect produces effects linked to increases in brain dopamine levels, particularly in the prefrontal cortex and anterior cingulate, which are thought to underlie better cognitive performance. However, Isen's work did not target specific positive emotions or thought-action repertoires per se, but it provides the strongest evidence that positive affect broadens cognition.

As Fredrickson builds up on her theory which eventually became the broaden-and-build theory, Fredrickson and Joiner (2002) propose that positive emotions will elicit an upward spiral in the direction of enhanced emotional well-being. They assessed their prediction by testing whether positive affect and broad-minded coping reciprocally and prospectively predict one another. They made a conclusion that positive affect from a particular time will lead to enhancement of broad-minded coping at a later stipulated timing, and vice versa. It was also mentioned that positive affect at one particular time is able to predict the positive affect at a later time when changes in the broad-minded coping were controlled, and vice versa.

Hence, it can be said that from this particular review, it has been found that positive affect and broad-minded coping are correlated and they mutually build on one another. However, later studies done by researchers such as Nickerson (2007) suggested that Fredrickson and Joiner (2002)’s analysis tested within-occasion, across persons hypotheses, which are incoherent with Fredrickson’s broaden-and-build theory of emotions that is within person, across occasions. Nickerson changed their hypotheses so that the edited hypotheses would align with the broaden-and-build theory, in which Fredrickson subsequently tested the momentary broaden hypothesis, in which the efficacy was proven. Fredrickson (2005) made use of a Twenty Statement Test as a measure of thought-action repertoire when her participants were randomly assigned and exposed to videos which will induce a specific emotion. For example, participant A would be exposed to a video of some penguins, which would supposedly elicit the amusement emotion. The participant would then be required to fill in the Twenty Statement Test in which a higher number of statements filled in would indicate a larger thought-action repertoire, and this finding was consistent with their hypotheses. On another scale, Fredrickson conducted a qualitative analysis using the same data collected, and classified the responses collected from the participants into some categories. They found similar findings, for example, participants who viewed the amusement video are reported to have more frequent urges to play, have positive feelings or thoughts, and fewer urges to sleep or rest. Thus, the data presented by Fredrickson support 2 central aspects of the broaden hypothesis – positive emotion broadens thought-action repertoires, as well as broadening effects

emerge for 2 distinct types of positive emotion, namely amusement and contentment.

Music can be thought to be a powerful tool in inducing specific mood states (Marin and Bhattacharya, 2010), and these moods refer to the states which feature a lower intensity than emotions, and this state tend to last much longer than emotions; these emotions denote the affective response that generally encompass some subcomponents – action tendency, as well as regulation. Although it is believed that there could be some correspondence between music induced emotion and mood, the two distinctions can be said as: music induced emotions are short lived, whereas music induced mood generally last longer. Various psychophysiological and psychological experiments such as emotion perception to emotion experiences have been proven by Thomas Baumgartner, Michaela Esslen, Lutz Ja¨ncke (2006), where it was elucidated by their psychometric results that emotions can be evoked by pictures and classical music. There are a large number of empirical studies that reveal systematic relationships between musical structures and emotional responses (Gabrielsson & Lindstro¨m, 2010). Lundqvist, Carlsson, Hilmersson and Juslin (2009) concluded in their study that self-composed music is effective in inducing specific emotions. For example, they explained that for a happy emotion to be induced, the happy music needs to feature fast tempo, high sound level, and major mode, while the sad music featuring slow tempo, low sound level, and minor mode. This was also proven in their research, as well as previous works, which gives the conclusion that music is able to produce specific emotions without contamination. Hence, it is of interest to study the interaction between how

music is capable of inducing the emotions as required, and how the induced emotion can help in enhancing an individual’s coping skills, as well as building up their personal resources.

The nature of the study is discovering whether positive emotions induced by music will broaden thought-action repertoire in a sample of Singaporean participants. The rationale of the hypothesis is to find out if the differences of cultures may pose a significant contributor to the difference in thought-action repertoire. Secondly, inspection can be done to see if cross-cultural differences may produce different results as compared to what Fredrickson originally done in her study, and lastly, findings may have possible implications of music to enhance psychological and physical well-being. Thus, the first hypothesis is that positive emotions will broaden momentary thought-action repertoire. Secondly, the emotion experienced in amusement will broaden momentary thought-action repertoire to a greater extent when compared to contentment. The third hypothesis is that negative emotions will narrow thought-action repertoire, and the last hypothesis is that object-focused negative emotions (e. g. anger) will narrow momentary thought-action repertoire to a greater extent when compared to object-less negative emotions (e. g. anxiety). This study is considered to be an advance over previous works; in the original broaden-and-build theory, Fredrickson made use of videos to induce emotions, and for modifications, the new experiment will use audio materials, which consists of self-composed audio clips; the rationale here is to identify if the usage of video and music clips will yield the same kind of findings. Additionally, two additional steps will be administered; before starting the experiment (measuring skin conductance level), and at

the end of the experiment (performing relaxation techniques on participants). The first step ensures that each participant is at neutral emotional state (baseline) before we induce a particular emotion with the music clip. The second step ensures the momentary emotional well-being of participants as they do not leave the experiment with induced emotions, but with neutral emotions (baseline).

Method

Participants

100 university students enrolled in an introductory psychology course received course credit for their participation. Only students who spoke English as their first language were eligible to participate. Some ethical issues to be considered are the initial screening before participation. It is required that the participants are mentally healthy, and it is essential to exclude those with history of mental and physical illnesses because of the emotional manipulation involved in the experiment; the confidentiality of the information provided by the participants will be ensured. Another ethical issue is that of informed consent: Participants will be informed of experimental procedure, the materials that will be used, and the rights to withdraw before the start of experiment; they also have the option of counselling services and exit interview at point of withdrawal. Questions from participants will be answered at all times of experiment. Finally, participants can be sure that their answers remain anonymous as the forms and tests that they filled in during the experiment do not require them to fill

in their names, as well as undergoing a debrief of the original intent of the research.

Design

The nature of this research is considered to be a quasi-experiment, where the independent variable (IV) is emotions, which are induced by the respective music clips (Amusement, contentment, anger, anxiety, neutral), and the dependent variable (DV) is the thought-action repertoire, in which will be measured via two methods: quantitative and qualitative.

Materials

Participants will be selected at random to be exposed to audio clips which are intended to induce emotions. The audio clips that are exposed to the participants are: Amusement, contentment, anger, anxiety, as well as neutral.

Skin conductance level (SCL). To ensure that the participants will not contaminate the data being collected, the SCL will be used to ensure that the participants will start off the experiment in a neutral state. This is done by attaching a node onto the participants' hands, followed by measuring the skin resistance, which will be varied with the state of the sweat glands on the skin of their hands.

Emotion Report Form. Ekman, Friesen, and Ancoli (1980) made use of the emotion report form to identify and test if the emotions induced by the experimenter are successfully manipulated by music clips. This is done by participants giving a rating of emotions felt on a Likert scale. Participants

who rated the greatest amount felt of the emotions above on a 9-point Likert scale (0 = none, 8 = a great deal).

Twenty Statements Test. Kuhn and McPartland (1954) constructed the Twenty Statements Test to measure the thought-action repertoire of individuals after they are exposed to audio clips. They are required to fill in 20 blank lines which began with " I would like to..." to their greatest extent possible after listening to the audio clip. A higher score is thought to indicate a larger thought-action repertoire.

Procedure

Before the participants begin the official experiment, they would be required to be put under the SCL test, which is to ensure that they start off the experiment on a neutral state. Participants would then be randomly exposed to one particular audio clip which elicits a single emotion, i. e. a faster tone and pitch audio clip would indicate the participants listening to a happy music. The next step would require the participants to describe the strongest emotion that they felt in a few words, and subsequently asked to complete the Twenty Statements Test. Before the participants finish the experiment, they would be required to complete the Emotion Report Form so that there is consistency in their emotions felt and the emotions written down onto the Twenty Statements Test. Lastly, participants would be given a mandatory relaxation session so that they can fall back to their baseline (neutral state).

Results

Statistical analysis can be done on various scales, which includes quantitative level, as well as qualitative level. For the quantitative level, analysis can be done for the self-reported emotions from the Emotion Report Form, where a 1-way ANOVA and Tukey pairwise comparisons to test if music clips altered emotional experiences as intended. Positive emotion music groups/Negative emotion music groups will be compared with neutral emotion music group to produce a less ambiguous result. Secondly, a 1-way ANOVA and Tukey pairwise comparisons can be conducted for the number of responses from Twenty Statements Test, and for the group differences in repertoire size, a 5 x 2 ANOVA, where the 5 groups are the audio clips exposed, and the two groups are the culture, which in this case is the Singaporean Culture compared with Foreign culture. On the qualitative level, analysis can be done via coding, where participants who responded in a certain manner will be classified into a category, and for each participant, proportion scores for each activity was determined by dividing the tally for that activity by the total number of statements the participant generated.

Discussion

The expected results are that all hypotheses proposed are significant, that is to say that positive emotion will broaden momentary thought-action repertoire, and the amusement emotion will broaden momentary thought action repertoire to a greater degree when compared to contentment. Some of the limitations include the possibility of the individual’s desire to be socially desirable may cause contamination of the data as participants may not write their intended behaviours or thoughts as per the emotions they experience in the music clips. For instance, an individual may not write that

he or she will hit someone even though he or she wants to. Future researchers can look into exploring the usage of recording the participants' response instead of doing the Twenty Statements Test, as there is a possibility of identifying the emotions of the participants through the way they speak.