

IDENTIFICATION OF THIN SLICES OF MUSIC BY UNIVERSITY STUDENTS IN PRINCE EDWARD ISLAND

Jessica McKellar and Annabel J. Cohen

Department of Psychology, University of Prince Edward Island

550 University Ave., Charlottetown, PE C1A 4P3 jmkellar@upei.ca acohen@upei.ca

1 Introduction

People are commonly exposed to music in everyday life, often by choice, and other times passively. Studies agree that typical university students listen to music more than one hour a day (Krause, North, & Hewitt, 2015; Cohen, Bailey & Nilsson, 2002). The present paper focuses on the memory of musical information that is acquired through such everyday experience with popular music.

Bailey and Cohen (2002) reported that older adolescents (university students) had good short-term memory for music in currently popular styles but a poorer short-term memory for styles from earlier eras. Older adults showed a similar pattern for music that was popular during their adolescence (Clyburn & Cohen, 1996). Cohen (2000) proposed the notion of a critical period of adolescence for acquiring information about musical style. Given the social significance of music at this age, the view coincides with the more recent proposal of Blakemore and Mills (2014) that adolescence is a sensitive period for sociocultural processing.

Krumhansl (2010) examined the ability of 23 university students to identify the artist, title, and release date of popular music spanning the last 6 decades. For excerpts of 15 sec, performance was very good. When the excerpts were “thin slices” of 400 ms (the time it takes to say two syllables), listeners could still identify the name and artist at the rate of 25%. Performance however suffered greatly for excerpts presented at 300 ms. The participants were students from Cornell University having approximately 10 years of music lessons even though none of the students were music majors. To test the generality of this finding, the present study sought to determine if students at a small primarily undergraduate Canadian university who did not have extensive music training would also show a similar ability to identify the artist and title of popular music when presented with excerpts of very short duration.

2 Method

2.1 Participants

Nineteen students were initially tested, however, the age of 2 exceeded the late adolescent cohort by a large margin (age > 50 years) and their data were excluded (mean age of the final group was 23.71 years, $SD = 4.28$; with 2.34 ($SD = 3.5$) years of music training, 9.47 hours of listening/week.

2.2 Materials

Thirty songs popular between the years 1965 and 2014 were selected, with 17 songs overlapping with those of Krumhansl (2010). Two of the clips of 400 ms were

extracted from each song, one of which came from the chorus. Clips were deliberately chosen for their distinctiveness. As well, one excerpt of 15 seconds was selected, so as to determine general familiarity with the song. A 60-item playlist was developed which entailed two sets of 30 clips. Each set contained one of the two 400 ms clips for each song. Ordering of the songs within the 30-item set was random. A 30-item playlist was created from the 30 15-sec clips.

2.2 Procedure

The data were collected by eight members of a senior undergraduate class in Music Cognition. Students working on the project each administered the test to two or three university students who were friends or acquaintances. Testing was conducted individually or in a small group on a laptop or desktop computer. Responses identifying artist, title, and year of popularity were recorded by the participant on an answer sheet. Participants first completed the questions for the 60 400-ms excerpts and then completed their responses for the 30 15-sec excerpts. An on-line biographical questionnaire was also administered to each participant in order to determine demographic information and information about past music training, preferred musical styles, number of hours listening per week, and self assessment of their musical knowledge. Testing took approximately 25 minutes.

3 Results

3.1 Excerpts of 400 ms duration

For each participant, the response for artist and title of each excerpt was scored as correct or incorrect (1 or 0 respectively). Thus for each song, the score could be 0, .5, of 1.) collapsing over the two examples per song. A 10-year window (5.0 years plus or minus the release date) was allowed for a correct score for the year. Participants generally failed to respond to this question in any case, and the data for year were not analysed further.

Figure 1 shows the mean proportion correct identification of artist and title for each of the 30 songs. All but 2 songs received scores greater than 0 for at least one of artist and title responses (the exceptions were *Stairway to Heaven*, by Led Zeppelin and *Sweet Child O' Mine* by Guns N' Roses) with the highest score of .94 mean correct achieved for 2 songs (*All about that bass* by Meghan Trainor, and *Single Ladies* by Beyonce). For the 400 ms excerpts, the mean title identification was .33 ($SD = .10$) and artist identification was .29 (.12), both of which were

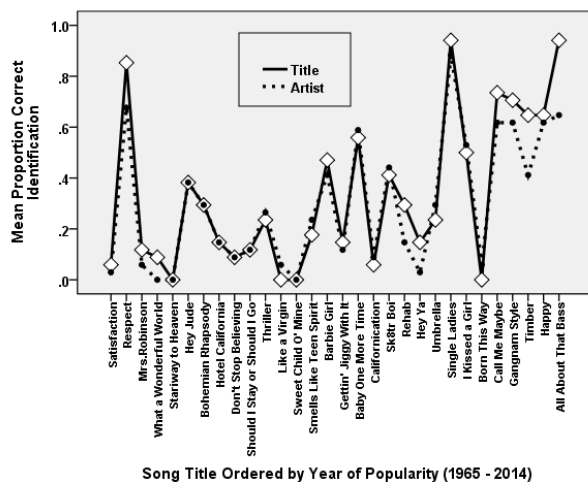


Figure 1 Mean proportion correct identification of title and artist for the 30 songs presented as 400 ms excerpts

Significantly different from 0, $t(16) = 13.14$ and 9.93 respectively, $p^2s < .001$. For each participant, scores for the artist and title were entered into an analysis of variance with three within-subjects factors of type of judgment (artist or title), song (30 songs), and repetition (whether first or second presentation of the excerpt). Titles were significantly more easily identified than were artists, $F(1,16) = 9.32$, $p < .01$, $\eta^2=.37$. Not surprisingly the song variable was also significant, $F(29, 464) = 17.47$, $p < .001$, $\eta^2 < .52$. A trend analysis was also carried out on this variable, as the songs were entered into the analysis in accordance with their year of popularity (or release date). A significant linear trend, $F(1, 464) = 47.75$, $p < .001$, $\eta^2 < .75$, was indicative of higher scores for more recent songs, but a quadratic trend, $F(1, 474) = 53.34$, $p < .001$, $\eta^2 < .77$, indicated that songs of a middle period departed from strict linearity. The song variable interacted with repetition, $F(29, 464) = 4.60$, $p < .001$, $\eta^2 < .22$ suggesting that for certain songs, one of the excerpts was more recognizable than the other. The interaction of the Song variable and Title/Artist variable was also significant, $F(29, 464) = 2.86$, $p < .001$, $\eta^2 < .15$, indicating that for certain songs, the artist and the title differed in the ease of identification.

3.2 Excerpts of 15 sec duration

For the 15 s excerpts, the mean artist identification was .64 (.18) and mean title was .81 (.12). The same ANOVA design was used for analysis without the repetition variable, as there was only one excerpt per song. Titles were significantly more easily identified than were artists, $F(1,16)=34.67$, $p < .001$, $\eta^2=.68$. The song variable was also significant, $F(29, 464) = 9.205$, $p < .001$, $\eta^2 < .37$, as was the interaction of song and artist/title, $F(29,464)=5.22$, $p < 001$, $\eta^2=.25$. There was a significant linear trend, $F(1, 16) = 31.46$, $p < .001$, $\eta^2 < .66$, but no quadratic trend.

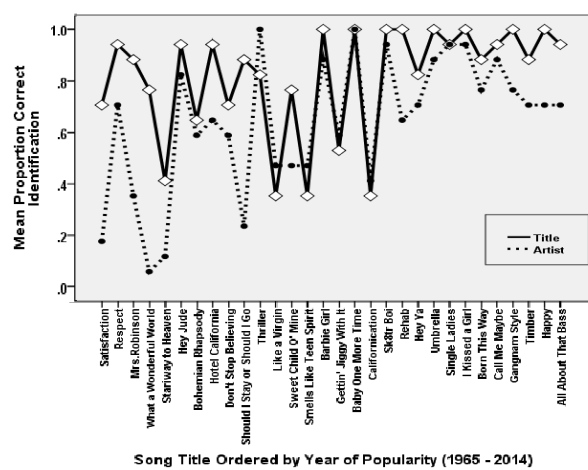


Figure 2 Mean proportion correct identification for each of the 30 songs presented as 15 sec excerpts.

4. 0 Discussion

The study replicated the finding that undergraduates can identify thin slices of popular music, extending the original observation of Krumhansl (2010) now for students without considerable music training attending a small Canadian primarily undergraduate university. The study confirms the enormous knowledge of popular music acquired by the average university student, consistent with the view that adolescence is a critical period for acquisition of musical (Cohen, 2000) and sociocultural information (Blakemore & Mills, 2014). From the standpoint of musical acoustics, 400 ms of music deserves further detailed analysis to determine precisely what allows listeners to identify artist and title of popular music from a “thin slice”. Having replicated the basic finding, future studies are feasible with younger and older cohorts to understand the early formation of these representations and their resilience over the lifespan.

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