Matching Music to Brand Personality: A Semantic Differential Tool for Measuring Emotional Space

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ABSTRACT

Advertising and branding practitioners in music industry are often faced with the task of finding and selecting music that matches a given brand profile to enhance the overall brand perception or impact of a commercial. Currently there are only few suggestions in the literature on how to best match music to brands (Brodsky, 2011; MacInnins & Park, 1991) and these largely lack the ability to quantify the brand-music relationships precisely. In order to create a practical tool for use in industry, a short psychometric tool was constructed to accurately quantify the perceived distance between brands and musical pieces in an emotional space. The tool combines research from music cognition (Asmus, 1985), music and advertising (Müllensiefen et. al 2013), as well as input from industry professionals. The semantic differential tool was created using previous data where 185 participants made 700 ratings of perceived affect for 16 music pieces across the 39 items representing a 3-factor structure suggested by Asmus (1985). On the basis of a factor analysis a set of 15 items was identified that represented the 3 emotional factors adequately. In a second step, new data was collected using these 15 items across 60 pieces of music presented via Soundout's SliceThePie.com interface (N=6005). A confirmatory factor analysis confirmed the 3-factor structure of the tool within acceptable bounds (RMR <.08, RMSEA <.101,) with factors being dubbed Dark, Vibrant, and Tranquil (Cronbach's alpha = 88, .85, .87 respectively). Ratings of music by a brand's target audience can now be compared to brand ratings by industry professionals using Euclidian distances, resulting in a distance score between song and brand. This measure has been implemented by SoundOut as part for their SyncSight research toolbox and allows for fast, quantitative comparisons that can inform choices regarding the selection of music to appropriately fit brand personalities or suit advertising campaigns.

I. INTRODUCTION

Advertising and branding practitioners in music industry are often faced with the task of finding and selecting music that matches a given brand profile to enhance the overall brand perception or impact of a commercial. Most often than not, this task is left up to the 'Creatives' on an advertising team. Using their experience and expert opinion a Creative will work with a client and propose suggestions based on the client's needs. Though it is at this point that problems arise since the clients often may not be able to accurately articulate what they need. More often than not clients will make vague requests and may not even have a comprehensive understanding of their own brand personality. It is then the task of the Creative to come up with a list of music options to satisfy the needs of their clients. Situations like these are rife with opportunities for miscommunication that can lead to frustration on both sides.

Currently there are only a few suggestions on how to best select music for brands. Early research on systematizing the process can be found from MacInnins and Park (1991) who introduced the concept of fitting brands to music that were taken up by later researchers. Brodsky (2011) uses quantitative techniques to demonstrate how careful modeling can help more accurately classify brand fit within two car branding options, but does not offer any sort of generalizable methodology or specific tool for other researchers to use. Despite these efforts, the research largely lacks the ability to quantify brand-music relationships, or fit, accurately. In order to create a practical instrument for use in industry, a short psychometric tool was constructed to accurately quantify the perceived distance between brands and musical pieces in a emotional space: a concept that we see analogous to the idea of brand-music fit. This tool combines research on music cognition (Asmus, 1985), music and advertising (Müllenseifen et. al, 2013), as well as input from industry professionals. In this paper we present our methodology in creating a tool to best classify brand to an emotional space.

II. Methods

This tool was developed by first performing an exploratory factor analysis (EFA) on previously collected music and advertising data. The factor structure was then confirmed using confirmatory factory analysis techniques (CFA). The tool provides factor scores to serve as the basis for two separate measures for song as well as brand profile which can be compared using the Euclidian distance measure.

A. Exploratory Factor Analysis

The first stage of research extended previous work on music and advertising done in conjunction with the Adam& EveDDB advertising firm based in London, England. Data from Müllenseifen et. al (2013) was used that collected 700 individual ratings from 185 different participants of perceived affect for 16 music pieces across the 39 items representing the 3 factor structure suggested by Asmus (1985). The data contains ratings made by participants over a web study in which they were asked to "Please rate this track as if it were a person, to what extent would you describe them on each dimension" on a seven point Likert scale. Each participant rated four songs across the 39 items; a detailed report of the methodology can be found in Müllensiefen et al. (2013). This data was then used as the basis for the initial EFA. A listing of the initial 39 items can be found in Table 1.

Table 1. Table of 39 Initial Attributes used in Study

Victorious	Angry	Peaceful	Heroic
Raging	Calm	Stately	Cruel
Relaxed	Majestic	Hateful	Gentle
Determined	Frustrated	Pleasant	Vibrant
Depressive	Contemplative	Vigorous	Dreary
Reflective	Exuberant	Blue	Serene
Comical	Sad	Tranquil	Humorous
Gloomy	Loving	Amusing	Yearning
Tender	Playful	Longing	Beautiful
Cheerful	Lonely	Romantic	

B. Factor Analysis and Removal of Items

A exploratory factor analysis with oblimin rotation was run on the data. After the initial factor analysis, we then sought to reduce the number of items from 39 to 15. Our first step in the removal of items was to remove items that did not seem to effectively describe each factor as a whole. Here we removed the adjectives victorious, heroic, stately, majestic, determined, angry, raging, cruel, hateful, and pleasant. After removing these items, we then looked at each item's factor score across all three factors and removed items that did not seem to load clearly on a single factor, which we operationalized as having a loading of less than .5 on all factors .This excluded cheerful, longing, and contemplative.

Next we eliminated items that scored high on item uniqueness thus excluding vigorous, frustrated, related, loving, and beautiful. Our last exclusion criterion to reduce the amount of items was to remove items that appeared to be synonyms with other included items, which then removed the word reflective since two native English speakers deemed it synonymous with contemplative. The final subset of items retained along with their factor loadings can be seen in Table 2. The three factors were interpreted as Vibrant, Dark, and Tranquil in collaboration with industry professionals that were going to implement the tool.

Table 2. Factors, Items, and Their Loadings from EFA Model

FACTOR	LOADING	ITEM
Vibrant	Vibrant	.623
	Exuberant	.635
	Humorous	.956
	Amusing	.954
	Playful	.711
Dark	Depressive	.891
	Blue	.727
	Sad	.941
	Lonely	.768
Tranquil	Peaceful	.903
	Calm	.837
	Gentle	.835
	Serene	.783
	Tranquil	.867
	Tender	.662

C. Confirmatory Factor Analysis

After the EFA, the 15 items were then presented to participants in a web-study via Soundout's SliceThePie.com interface and N=6006 ratings over 60 songs (each participant rated one song) were collected. Participants were asked the same prompt in the original study "Please rate this track as if it were a person, to what extent would you describe them on each dimension?" but instead responded on a ten-point scale. Participants also made ratings on a liking and a similarity prompt that is to be used in future tool creation. The similarity and liking data was not used in the confirmatory factor analysis.

D. Confirmatory Factor Analysis Model Fitting

The initial confirmatory factor analysis accounted for all 15 items on their respective factors. While some of the fit indices in Model 1 are acceptable in terms of confirming the initial hypothesis (Standardized Root Mean Square Residual SRMR <.08), the Root Mean Square Error of Approximation (RMSEA) did not reach an acceptable threshold of <.1. This could be due to the fact that modifications were made post hoc to the initial EFA in order to accommodate industry concerns. In order to investigate this, we removed five items (comical, victorious, relaxed, loving, romantic) from the CFA that were only present in the initial EFA. Removal of these items did decrease the RMSEA from .102 to .085, which has been deemed an acceptable level for the CFA fit. Additionally, the problem of fit was also explored by reducing the amount of items in the Tranquil factor due to a non-significant relationship between Vibrancy and Tranquil in the first model. A third analysis with a reduced number of items from each factor was created. By dropping some of the items that did not load as highly on the initial EFA, the RMSEA has now dropped again to .071. Additionally, this final model with 6 fewer items from the first model eliminated the non-significant covariance between the Vibrancy and Tranquil factors. The three resulting factors yielded Cronbach's alpha scores of .88 for the Vibrancy factor, .85 for the Dark factor, and .87 for the Tranquil factor.

E. Calculation of Euclidian Distance to From Semantic Differential

Using the item ratings from Table 3, it is then possible to create a semantic differential relationship between any two items measured with the tool. If a client's goal is to match music to brand in order to calculate brand fit, a brand manager would then to need to rate his or her perception of their brand using the same prompt used for the music. We highly recommend that multiple brand managers make these ratings independently of one another and check for inter rater reliability.

After this process is complete, each rating can then be multiplied by the factor scores shown in Table 3 which then creates a metric that the songs can be objectively compared to. This same process is done for each song that was rated. This standardized metric can then be used to calculate the distance measure on each of the three factors shown in in Table 3 or a combined metric can be computed taking all three factors in the table into account simultaneously. An example of this can be seen in Figure 1. In Figure 1 each line represents the distance in two dimensional Euclidian space that either a song or brand exists in relation to one another. If a client is looking to match song and brand they will look for lines that appear to match up with one another. This process an be done quantitatively by also looking at the distance measures. If a line extends in a different dimension from the target, that choice should be avoided since it does not match accordingly.

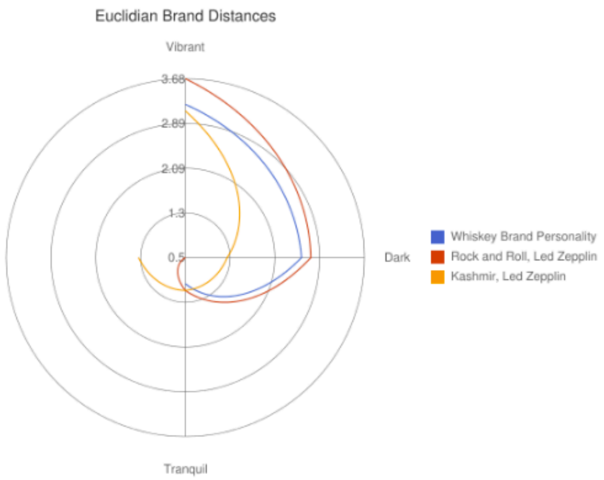

Figure 1 Example of Mapping Euclidian Distance

III. DISCUSSION

Unlike tools created in the past to examine the relationship between music and brand, this new tool can now provide an objective reference point to frame discussions regarding the relationship between music and brand. The tool has been dubbed the SightSync and is used in a suite of music market research tools that is now implemented by the two companies involved in the creation of the tool: Soundout (https://www.soundout.com/) and Hush (http://www.hushmusic.tv/). The tool is easy to use and does not require any sort of commercial statistical software to run. By simply entering the factor values into most spreadsheet management software, ratings then can be compared between brand personality and music.

Beyond providing a starting point for conversations between brand managers and creatives, the tool can also serve as a perceptual similarity tool to find similarity between tracks of music that share the same affective categorization but may not share the same features such as copyright detailing.

This would be helpful for an advertising company looking to use a certain track for their campaign or ad, but may be limited in terms of funding for rights and royalties. If the advertising company knew they wanted an effect similar to a song that may be out of their price range, they could simply rate that song according to the SightSync tool, then use those scores to find similar songs from a larger database that scored closely to the target song. This would then allow the marketing company to hit their target affect without having to pay expensive licensing fees.

The development and creation of this tool also created interest in future directions and refinements of our current model. The largest critique from industry demands was that the language used from the original collection of items was dated and did not reflect current industry terminology. Industry professionals noted that a similar tool that measured value judgments of music as opposed to perceived emotion would be helpful.

The a second version of the tool is planned in the future that will follow similar methodology, but instead draw from more industry oversight in the creation of the original list of termed that would relate to different facets of value judgments of music, which would then be analyzed further suing more sophisticated techniques of language processing such as Latent Semantic Analysis or Natural Language Processing to get a more accurate understanding of factors used to group the music.

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