The Influence of Personal Values on Music Taste: Towards Value-Based Music Recommendations

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ABSTRACT

The field of recommender systems has a lot to gain from the field of psychology. Indeed, many psychology researchers have investigated relations between models that describe humans and consumption preferences. One example of this is personality, which has been shown to be a valid construct to describe people. As a consequence, personality-based recommenders have already proven to be a lead toward improving recommendations, by adapting them to their users' traits.

Beyond personality, there are more ways to describe a person's identity. One of these ways is to consider personal values: what is important for the users in life at the most abstract level. Being complementary to personality traits, values may give another lead towards better user understanding. In this paper, we investigate this, taking music as a use case. We use a marketing interview technique to elicit 22 users' personal values connected to their musical preferences. We show that personal values indeed play a role in people's music preferences, and are the first to propose a map linking personal values to music preferences. We see this map as a first step in devising a value-based user model for music recommender systems.

CCS CONCEPTS

• **Social and professional topics → User characteristics**.

KEYWORDS

Personal values; Musical Taste; Music Recommendations; Psychology of Music; User Modelling; Novel Applications; Explainable Recommender Systems

1 INTRODUCTION

In recommender systems, it is important for a system to surface the right items for the right users. In this, it is useful to exploit knowledge of relations between user taste and preferences on the one side and various human factors on the other side, which typically are studied in psychology [15]. Indeed, the field has seen successful incorporation of psychological models into recommender systems, most notably in personality-based recommender systems [11]. However, more factors beyond personality may influence and drive user's preferences.

In this work, we consider another category of factors that have been validated in psychological literature: the *personal values* of a user. Personal values can be defined by what we strive for, and what is important for us in life, at the most abstract conceptual level. Where personality can be considered a description of *who people are at the present moment*, personal values form a complement to this, describing *who people want to be in the future*[25].

As personal values consider an abstract conceptual level, people with different taste preferences may ultimately share the same values. Since personal values also are more oriented towards a desired future state, it can be expected that people are intrinsically motivated towards them. As a consequence, we believe that awareness of personal values may be of interest for recommender system scenarios, especially in scenarios that strive to broaden a user's horizon beyond their regular taste comfort zone. Going beyond this comfort zone will challenge the user, and may contradict what a user would intuitively prefer. Yet, if a more challenging recommendation could be related to the user's personal values, it still may be explainable and acceptable to the user, even though at first sight, it may not be what a user would have expected.

To the best of our knowledge, no concrete value-based recommender systems exist yet. Before realizing any such system, it should first be investigated whether the consideration of personal values in relation to user consumption preference would indeed make sense. In this paper, we take a first step towards this, investigating relationships between music preference and personal values. Employing the laddering technique, which is a well-known and well-proven interview technique in the field of marketing, we elicit personal values guiding music preferences of listeners. From the qualitative interview data, a hierarchical value map of music preference is built, giving useful first insights into connections to further investigate in future quantitative recommender-oriented studies.

2 RELATED WORK

2.1 Music taste in psychological literature

In the field of music psychology, personal factors connected to musical taste have extensively been studied [15]. Age for example plays a critical role in the development of music taste [10, 18]. As a consequence, we tend to have preference for the music that was popular at this phase of our lives [2]. Another factor is the influence of peers and parents [14], either because of exposure to the music

they prefer, or because users, especially teenagers, tend to use their musical tastes as "social badges", expressing belonging to their social group [15, 17]. Education level can also be a predictive factor of music taste: people with higher education are inclined more than the others to like "highbrow" music genres, such as classical music [19] and to be "cultural omnivores" (consume a wide range of diverse cultural items) [12, 34, 35].

2.2 Personality in music preference and recommender systems

Recent development on personality-based recommender systems [1, 11, 33, 36] show that adding personality information increases the accuracy of recommendations and the performance of the system. Furthermore, personality-based recommendations can be useful in solving the cold-start problem [15, 32, 36]. In view of this, many researchers investigated the link between music taste and personality. [28] presents a meta-analysis of 28 articles on this subject. The main conclusion was that personality is not a reliable factor by itself to deduct musical preferences in general. However, some weak, but consistent and significant correlations have been shown between certain personality traits and dimensions of music preference [3–5, 7, 8, 13, 21, 28]. Beside determining what to recommend, personality can also support the system into determining how to recommend by adapting its interface to the user [6] or the degree of diversity of the recommendations [31, 36].

2.3 Personal values

Personal values have been proposed as another psychological model to describe people. Several models have been proposed and validated; most notably, the models of Rokeach [26] and Schwartz [29, 30]. The Rokeach classification considers 36 personal values, that fall into 2 categories (Terminal and Instrumental values). The Schwartz classification considers 10 personal values, that fall into 5 categories: Conservation (caring about one's safety in every aspects of one's life), Openness to Change (caring about independence and discovery), Self-Transcendence (caring for the world), Self-Enhancement (caring for oneself), and Hedonism.

[25] investigated the relationship between personal values and personality traits. While correlations were found between them, the conclusion was that the constructs still are "conceptually and empirically distinct", thus making personal values an interesting psychological model to consider besides personality.

2.4 Values in user preference and recommender systems

The link between personal values and consumption preferences has been studied in the marketing field, based on the Means-End Theory [9]. According to this theory, people choose to consume certain products instead of others, guided by their personal values. However, to the best of our knowledge, very little to almost no work has been done to investigate the link between personal values and recommendations. While "Values and Beliefs" are mentioned in [15], the values mentioned in this work refer to religious and political orientation, rather than personal values as a psychological model. While [22] considered both personal values and musical

taste, the relation between these was only reported through the prism of validity of stereotypes, thus putting the main focus on personal values as perceived by others, rather than personal values identified by users themselves.

3 STUDY

To investigate which personal values underlie the music taste of people, and whether some personal values may be more influential on music taste than others, we conducted an exploratory qualitative study. We first describe the laddering technique, the way in which this inspired our interviewing methodology, and details of our interview participants.

3.1 The Laddering Technique

We conduct our qualitative study by employing the *laddering technique* [23], which is based on the Means-End Theory [9]. It is widely used in the marketing field [24], but has already been applied in other studies focusing on consumers [16, 20]. The laddering technique is designed to uncover the personal values that underlie people's preferences and consuming behavior. In its first step, the technique elicits product *attributes* from the interviewees: concrete characteristics of a product, that the interviewee finds important. Then, for each attribute, the interviewer encourages the respondents to reflect critically about the *consequences* of those attributes, indicating what makes a specific attribute important for them. For each of the mentioned consequences, the interviewer will encourage the respondent to reflect on why this consequence is important, which may lead to the identification of underlying *values* that drove the consumer preference at the most abstract level.

As a consequence, from each interview, multiple ladders will emerge, that always will start with an attribute, and subsequently can lead to consequences, followed by values. Based on the frequency of occurrence of connections between elements, the ladders can then be combined into a Hierarchical Value Map, giving an aggregated overview of participants' personal values guiding their preferences for certain product attributes [23, 24, 27].

3.2 Methodology

Our study was conducted using in-depth face-to-face individual interviews. The interviews lasted around an hour, but the duration was often extended to allow the participants to formulate their answers as elaborately as they wanted. We used the laddering technique to conduct the interviews, but for the purpose of this study, the original methodology was slightly adapted to fit it to our research context. Specifically, instead of eliciting the product features that are important for the interviewees, we asked what kind of music they liked (e.g.,"When it comes to your favourite music, what are the first five things that come to your mind ?"). We kept the question vague on purpose and emphasized the freedom in formulating the answer. In doing so, we were also curious about what type of attributes people thought to be the most appropriate to describe their music tastes. We choose to investigate people self-declared preferences instead of their actual consumption because the former should be more influenced by people's personal values and represent better what is important to them.

	Categories	Names of Categories	Total Number of Occurrences	Number of Participants mentioning the category	% of Participants mentioning the category
Attributes	Genre	Genre	207	17	77.27
	Features of Audio	Features of Audio	79	17	77.27
	Originality / Variation	Originality	65	11	50
	Complex / Technical	Complex	46	10	45.45
	Harmony / Melody	Melody	41	7	31.82
	Emotion / Feelings expressed by the music	Emotion (from)	40	10	45.45
	Activities / Context of listening	Context	37	14	63.64
	Culture / Background / Artist	Culture	37	10	45.45
	Instrument	Instrument	35	11	50
	Lyrics / Poetic / Topics	Lyrics	34	8	36.36
	Simple / Easy access / Clear	Simple	28	14	63.64
	Adjectives / Subjective Judgment of Audio Features	Adjectives Features	21	10	45.45
	Story	Story	20	7	31.82
	Structure / Repetition	Structure	17	7	31.82
	Intense / Loud	Loud	17	5	22.73
	Improvisation / Spontaneity	Improvisation	15	3	13.64
	Live / Concerts	Live	8	5	22.73
	Soft	Soft	6	5	22.73
Consequences	Emotion / Mood / Feeling (get)	Emotion (get)	70	21	95.45
	Challenge, Not boring	Stimulation	70	16	72.73
	Discovery / Learn / Travel	Discovery	51	15	68.18
	Meaning / Authenticity	Meaning	48	16	72.73
	Connection (music/ people / sharing / relate)	Connection	48	14	63.64
	Performance / Productivity / Focus	Being functional	47	17	77.27
	Talent / Effort / Skill of the artists	Talent	44	17	77.27
	Self-Improvement	Self-improvement	37	14	63.64
	Relaxation	Relaxation	33	14	63.64
	Pleasure / Fun	Pleasure / Fun	31	12	54.55
	Energy	Energy	30	14	63.64
	Identity / Self-expression	Identity	22	9	40.91
	Negative feelings elicited by the music	Negative feelings	21	13	59.09
	Support participant creativity	Creativity	18	8	36.36
	Memories / Nostalgia / Familiarity	Nostalgia	16	11	50
	Worth Time spend on listening	Worth Time	10	4	18.18
	Uniqueness	Uniqueness	8	4	18.18
	Power	Power	2	1	4.55
Values	Independence, Curiosity and Exciting life	Openness to Change	54	15	68.18
	Security, Health, Conformity to social norms and traditions	Conservation	33	13	59.09
	Caring about all people and nature	Self Transcendence	29	11	50
	Ambition, Success and Wealth	Self Enhancement	24	9	40.91
	Connect with others	Social connection	23	12	54.55
	Art	Art	18	9	40.91
	Use well the limited time we have before we die	Time	9	3	13.64
	Pleasure	Hedonism	8	6	27.27

Table 1: The different categories emerging from our interview studies and their frequencies. The "Total Number of Occurrences" gives the total number of times this category appeared in the data; the "Number of Participants mentioning this category" only counts one occurrence per interviewee.

Employing insights from three independent coders, we classified the attributes and consequences mentioned in the ladders into broader categories suitable for our analysis and ended up with 18 attributes and 18 consequences.

We also identified personal values at the top of some ladders. Then we used Schwartz' broad classification [29] to which we added Art and Social Connection as additional values specific to the music consumption context, for a total of 8 personal values as a basis to categorize the values found in the interviews. A full overview of all categories used for analysis, together with their occurrence frequencies, is given in Table 1.

To build the Hierarchical Value Map, we aggregated all results into two symmetric matrices, computing the total number of direct and indirect connections between all category pairs. We then used the matrix of direct connections to build a map according to the guidelines by [23, 27] focusing on the most elicited connections. We then used the indirect matrix to refine the map in case some indirect connections with numerous occurrences did not appear in the direct matrix. The resulting map is displayed as Figure 1 and show the most important categories and connections.

3.3 Sample

After piloting and refining our interview protocol on 5 colleagues, we recruited 22 participants through personal connections (for 2 of them) and advertisement posters displayed throughout the campus and in the city center. The mean age was 30.82 years old, with a standard deviation of 11.29. In terms of educational level, one participant had a French vocational professional degree. 50.09% of the participants were Bachelor or Master students at an university. The rest (36.36%) of the participants were at least university graduates. In the population, we had 33% female participants. As for the country in which the participants grew up, 54.6% grew up in European countries and 45.5% in Asian countries, thus showing high cultural balance. 81% of the participants declared having at least some experience in the practice of music. Participants seemed pleased with their participation; among 19 of them questioned, around 67% declared that they learned new things about their musical tastes and the underlying reasons for those during their interview.

4 RESULTS

Our interviews yielded 481 ladders: 62 (13%) terminated at the attribute level, 241 (50%) at the consequence level, and 178 (37%) at the personal value level. Thus, while people could not always relate their music preferences up to the personal value level, multiple concrete connections between preferences and values could be found. The Hierarchical Value Map, summarizing the main connections that we found across the interviews, is given in Figure 1. It is to be noted that besides those similarities, the interviews also showed diversity among the respondents. Full information on connections between pairs is given as Supplementary Material to this paper.

In existing music psychology literature, [21] argued that the preferred music descriptor of people is genre. Indeed, the "Genre" attribute occurred frequently in our interviews (used more than 200 times by more than 77% of the participants), and also has high connectivity in the Hierarchical Value Map.

When coding our elements into overarching categories, we initially doubted whether the "Lyrics" and "Story" attributes should be combined into a single linguistic category. However, when considering them as separate items, it can be noted they have clearly different connections in the value map. Indeed, when reconsidering the information expressed by the interviewees, "Lyrics" would consider the poetic aspect of a song's text, while "Story" rather would consider whether a listener would feel being taken along with the narrative of the music.

With respect to consequences, the most frequently mentioned category was "Emotion(get)" (70 occurrences, mentioned by 95% of the participants), representing any kind of emotions, mood or feeling induced by the music. Thus, using music as an affective
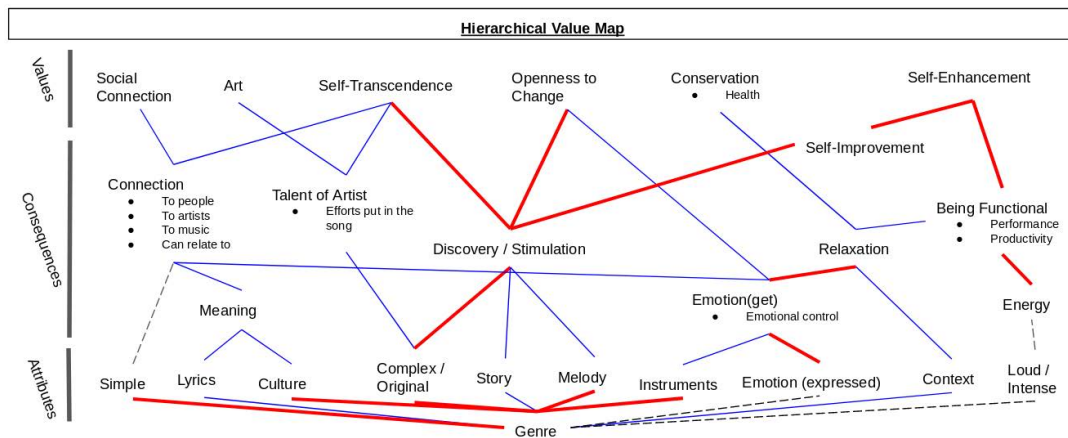
Figure 1: Hierarchical Value Map, based on our global interview data. Red links indicate a strong relation (cited 10+ times), blue links a medium relation (cited between 9 and 5 times) and gray links a weak relation (cited 4 times).

inducer seems to be an important intermediate reason for listening to certain music. However, as we can see on the map, further up, this leads to different personal values, with Openness to Change being the only clear direct link, while other links are indirect, via other consequences. Frequently, "Emotion(get)" connected to "Relaxation", which both relates to the personal value of Conservation, as well as the consequence of "Being Functional". Thus, relaxing is both perceived as healthy (Conservation), and as a way to become more efficient, ultimately connecting to Self-Enhancement.

Another interesting consequence is "Talent" which expresses both the innate talent, but also the amount of effort artists put in their performance or cultivating their skills. Its link to Self-Transcendence and Art reveals that some people care about the process, not just the final product, and want to support and reward artists who are working hard (as opposed to artists perceived to create music that is easy to make and to sell).

Moving up to personal values, we observe that not all personal values are equally well represented. Six personal values occurred frequently enough (in at least 9 of the interviews) to appear in our Hierarchical Value Map; out of these, Openness to Change was most frequently mentioned (54 times by 15 (68%) of the participants). In contrast, Hedonism was mentioned only 8 times by 6 (27%) of the participants, and therefore does not appear in the map.

Moving back down from personal values to consequences and attributes in our map, our results suggest that people who value Openness to Change tend to enjoy more diverse and complex music. Those whose musical taste is strongly connected to Self-Transcendence would tend to care more about the message of the song. Individuals caring about their Self-Enhancement tend to prefer music that help them to achieve their objectives or improve themselves (learn new things or resolve challenges), as well as music that helps them to relax. Relaxing music might also be enjoyed by people who care about Conservation, both regarding their own safety and being a good member of the society. Social Connection could be supported by music that is easily accessible (the "Simple" category) as well as music with a Meaning people can relate too. Finally, people for whom Art is important by itself, would tend to care about the amount of time and effort put into a song.

5 CONCLUSION AND FUTURE WORK

In this work, we presented a first study into connecting music preference to personal values, for potential future use in value-based recommender system scenarios. As we showed, it indeed is possible to establish connections between music preference and personal values. Personal values are not the sole drivers of music preference; 37% of our elicited ladders terminated at this level, while 50% of the ladders terminated at a consequence. At the same time, most of our interviewees did express more than one personal value during their interviews. As we expected, not all personal values were equally influential; from our interviews, 6 personal values emerged as particularly dominant from our interviews. Openness to Change especially turned out to be a frequently mentioned value; this may be related to the academic skew in our sample.

A logical follow-up to our work is to assess the validity of emerging strong relations from our interviews, by conducting larger-scale quantitative studies with more balanced user samples. For this, we plan to establish datasets on actual music consumption and declared preferences, and to relate these to important personal values.

For larger-scale quantitative studies, it will not be possible to employ the laddering technique to connect preferences to values, as this technique requires face-to-face interaction between two humans. Therefore, other means will need to be found to elicit personal values. For this, traditional survey instruments could be used. However, our results suggest that only a subset of personal values will need to be considered, so full survey instruments may not be necessary, which is positive from a usability perspective. As mentioned before, we ultimately strive to integrate our findings into novel value-based recommender systems, and to investigate whether the value angle may lead to more challenging, yet acceptable and useful personalized recommendations.

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