

To Flip or Not to Flip: Conformity Effect Across Cultures

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ABSTRACT

In group decision-making, we can frequently observe that an individual adapts their behavior or belief to fit in with the group's majority opinion. This phenomenon has been widely observed to exist especially against an objectively correct answer—in face-to-face and online interaction alike. To a lesser extent, studies have investigated the conformity effect in settings based on personal opinions and feelings; thus, in settings where an objectively right or wrong answer does not exist. In such settings, the direction of conformity tends to play a role in whether an individual will conform. While cultural differences in conformity behavior have been observed repeatedly in settings with an objectively correct answer, the role of culture has not been explored yet for settings with subjective topics. Hence, the focus of this study is on how conformity develops across cultures for such cases. We developed an online experiment in which participants needed to reach a positive group consensus on adding a song to a music playlist. After seeing the group members' ratings, the participants had the opportunity to revise their own. Our findings suggest that the willingness to flip to a positive outcome was far less than to a negative outcome. Overall, conformity behavior was far less pronounced for participants from the United Kingdom compared to participants from India.

CCS CONCEPTS

• **Human-centered computing** → **User studies; Empirical studies in HCI**; • **Applied computing** → **Psychology**; • **Information systems** → *Personalization*.

KEYWORDS

Conformity behavior; social influence; music playlist creation; group music playlists; flipping direction; cultural differences.

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1 INTRODUCTION

Social interactions increasingly happen online: We meet friends online (e.g., [37]), we learn together online (e.g., [14]), we go shopping online (e.g., [35]) we engage in social matters online (e.g., [39]). Frequently, such social interaction includes some form of negotiation and group decision-making [58]. For instance, we might jointly decide on a travel destination with a group [10]. In such group situations, we can frequently observe forms of social influence. In this work at hand, we focus on the phenomenon called “social conformity”.

Social conformity is a concept from social psychology and refers to a change of behavior or belief to fit in with a group [55, 56] without necessarily holding that opinion [51]. A key finding of conformity research is that individuals tend to give up their personal judgments and opinions when challenged by an opposing majority [3, 7, 50]. This phenomenon can be observed in face-to-face and online interaction alike; with less pronounced results for online settings, though [9, 27, 30, 32, 33, 55].

The Human-Computer Interaction (HCI) community has investigated various aspects of social conformity, for example, the influence of social nudges on e-commerce platforms [60], the effect of social presence on social conformity in online communities [57], differences in conformity to human agents and computational agents [15], the conformity to social robots as a group member [42], or effects of gender perception on conformity in online interaction [55].

While social conformity is a cross-cultural phenomenon [34], cultural differences in conformity behavior have been observed repeatedly (e.g., [8, 9, 21, 24, 36, 38]). For instance, both for face-to-face settings [8] and online settings [20, 59], study results suggest that individuals from collectivist cultures manifest higher levels of conformity than those from individualist cultures.

However, within the realm of conformity research, there is a young research trajectory in which the role of culture has not been explored yet; it rather focuses on the role of the direction of conformity in general instead. For instance, Wijenayake et al. [54] studied the role of social conformity in the spread of misinformation and so-called “fake news” via social media. Results suggest that the conformity effect is particularly accentuated when challenged by a majority who is critical of the article's credibility. Similarly, a study by Bauer and Ferwerda [6] indicates that the prevalence of the majority effect may depend on a person's sentiment in favor or against an item. A minority of one was sufficient to trigger conformity into one direction (here: conforming towards voting *against* an item), whereas a majority was needed to induce conformity into the other direction (here: conforming towards voting *in favor of* an item). In other words, conformity behavior manifests differently in situations where (i) an individual's original judgment is against

an item (i.e., a negative judgment) and then changes (i.e., flips) the judgment in favor of the item (i.e., a positive judgment) or (ii) an individual's original judgment in favor of an item (i.e., a positive judgment) and then changes the judgment against the item (i.e., a negative judgment). We refer to this positive-to-negative versus negative-to-positive change as "flipping direction."

In this work at hand, we address this research gap and study the relevance of the "flipping direction" in conformity behavior across cultures. More precisely, comparing participants from India and the United Kingdom (UK), we explore the cultural differences in conformity behavior when considering the "flipping direction" in favor or against an item in an online group decision-making task. We found that cultural values may play a role in the conformity effect. Our results indicate that a more collectivist culture shows a higher degree of conformity behavior in general over a more individualist culture. At the same time, the directional conformity behavior plays a role as well for both cultures. For both cultures conformity behaviors were more pronounced when participants conformed from a positive to a negative response compared to conforming from a negative to a positive response.

Besides contributing to social psychology, our work has major implications for HCI and related fields. Understanding conformity behavior in online settings may allow designing platforms in a way to control conformity influences and facilitate positive social interactions [57]. With our work, we particularly address the design of platforms and algorithms for decision-support systems such as in group recommender systems. Beyond, our research informs future research on social nudges in online settings where conformity to such nudges has been shown to be effective (e.g., [60]). Our work sheds more light on the importance of the "flipping direction" and provides new insights into cultural differences. The design of platforms, systems, and algorithmic approaches should take our findings into account to ensure beneficial outcomes. Yet, we note that our findings may come with potential negative implications, which we discuss in Section 5.

The remainder of this paper is structured as follows: After outlining the conceptual basis and discussing related work in Section 2, we detail the methods of our online experiment (Section 3). We present and discuss the results in Section 4, and we conclude this work with a discussion of the implications of our findings and an outlook to future research (Section 5).

2 CONCEPTUAL BASIS AND RELATED WORK

In this section, we first lay out the conceptual basis on social conformity (Section 2.1), and then we discuss related work on cultural differences in conformity behavior (Section 2.2).

2.1 Studies on Social Conformity

The most influential study of social conformity goes back to Asch [3–5]. In Asch's experiments, participants had to judge the lengths of lines. When confronted with other people's judgments, about a third of participants revised their individual judgments to agree with a clearly incorrect, yet unanimous majority.

Asch's study design (i.e., a line judgment task) was used by an extensive number of studies (for a meta-analysis see [7]) and is recognized as a classic experiment in social psychology [28]. Conformity with a majority opinion could also be observed outside

Asch's paradigm. For instance, Jenness [22] used a study design where the objectively correct answer was not obvious: The participants had to estimate the number of beans in a glass bottle. Studies on conformity in the online context indicate that depersonalization and anonymity may encourage higher levels of conformity [40, 41] because of a more extreme perception of these group norms [29].

Early work studying the effects of gender on social conformity (in face-to-face settings) revealed that women manifested higher tendencies to conform than men [12, 13]. Research exploring the effects of gender on social conformity in online settings is inconclusive, though; while some studies confirm that women are more likely to conform to the majority's opinion than men (e.g., [1]), more recent studies do not observe any statistically significant gender differences with regard to conformity behavior in online settings (e.g., [44, 53, 56]).

A highly relevant and timely research topic is the role of social conformity in the spread of misinformation via social media. Also in the assessment of "fake news", the correct answer is often not as obvious as in Asch's line judgment task. Wijenayake et al. [54] found that people tend to conform to the majority's opinion when judging an article's trustworthiness. This effect was particularly accentuated when challenged by a majority who was critical of the article's credibility.

Further, conformity has also been studied in settings based on individuals' personal opinions and feelings; thus, in settings without an objectively correct answer. For instance, people were observed to adopt the majority's opinion on social or political issues on social media [32, 33], when rating and reviewing restaurants [20], or choosing between a pair of products [60]. Kundu and Cummins [26] observed a strong conformity effect in moral decision-making. Thereby, the conformity effect led to more pronounced results—permissible actions were deemed less permissible when the majority found them objectionable, and impermissible actions were judged more permissible if the majority judged them so.

Moreover, Wijenayake et al. [55] have shown that bigger gaps between the majority and minority size induce increased levels of conformity. Additionally, Bauer and Ferwerda [6] found that the prevalence of the majority effect depends on the sentiment of the "flipping direction." Conforming towards a negative outcome only requires a minority vote, while a positive outcome would require a majority.

2.2 Cultural Differences in Conformity Behavior

Milgram [34] was the first to demonstrate that social conformity was a cross-cultural phenomenon. Since then, a wealth of studies (e.g., [8, 9, 21, 24, 36, 38]) reported cultural differences in conformity behavior. Early studies (e.g., [24]) based their hypotheses and explanations on country stereotypes. Later, though, most studies in this research thread grounded their hypotheses on Hofstede's construct of *individualism–collectivism* [16, 17, 49]. In individualist cultures, it is considered acceptable to place one's personal goals ahead of collective ones; in collectivist cultures, in contrast, it is considered socially desirable to put collective goals first [49]. This was also reflected in conformity studies. Both for face-to-face settings [8] and online settings [20, 59], research has shown that people from

collectivist cultures exhibit higher levels of conformity than people from individualist cultures. For instance, when rating and reviewing restaurants, consumers from collectivist cultures are less likely to deviate from the average prior rating in their own reviews [20].

When studying cultures, the relation between the individual and the group plays an immanent role [45]. Thus, besides individualism–collectivism [16, 17, 45, 47–49], there are two further constructs that are of particular interest for research on conformity behavior; these are based on Schwartz’s cultural dimensions [45]. *Autonomy* refers to the desirability of individuals to independently pursue their own ideas (*intellectual autonomy*) or positive experiences (*affective autonomy*) [45]. *Egalitarianism* refers to favoring selfish interests over a voluntary commitment to promoting the welfare of others [45]. We conjecture that individuals from cultures scoring high on autonomy and egalitarianism are conjectured to display lower levels of conformity compared to cultures scoring low on these dimensions.

Against this background, we explore the cultural differences in conformity behavior when considering the “flipping direction” in favor or against an item.

3 METHODS

The goal of this study was to investigate the conformity effect between different cultures. To ensure a sample with contrasting cultures, we decided on the United Kingdom (UK) and India. With a score of 89, the UK exhibits one of the highest individualist scores by Hofstede ([18], version 2015-12-08), whereas in comparison India scores low on this dimension (48). Also on the Schwartz’ dimensions of affective autonomy, intellectual autonomy, and egalitarianism, the UK scores higher than India (UK: 4.26, 4.62, and 4.92, respectively; India: 3.48, 4.02, and 4.45, respectively) [46].

3.1 Study design

To investigate and compare the conformity effect between the UK and India, we developed an online experiment in which participants needed to collaboratively create a music playlist. The requirement for a song to be added to the group playlist was that a consensus needed to be reached (i.e., all members needed to agree).

The study started with an introduction to the purpose of the study together with basic demographic questions. After that, we asked the participants to grant us access to their Spotify top-10 most listened songs by using the “top” endpoint through the Spotify API.¹ After retrieving their top-10 most listened songs, we asked the participant to select one song from the list to use that as a reference song to find group members with a similar music taste and to find song suggestions for the playlist creation (see Fig. 1a).

We created groups of five members as a majority size of three has shown to be sufficient for full conformity impact [3]. To remain full control of the group behaviors, the only real person was the participant, whereas the other four members were bots. By using the “get recommendations” endpoint of the API we were able to get recommendations with different chances to be initially favored or disliked by a participant by setting the “target_popularity” parameter to 25 or 75.

Upon presenting a song to the participant for adding to the playlist, they were asked whether they would like to have the respective song to be added to the playlist. The response options were *yes*, *maybe yes*, *maybe no*, and *no* (see Fig. 1b). After picking a response, they were put on hold for a random 5–10 seconds awaiting the responses of the other group members. Each of the bots was programmed individually so that there was a 30% chance for each of them to vote in line with the participant and 70% to vote against the participant’s response. Responses that the bots could give are the same as the ones of the participants: *yes*, *maybe yes*, *maybe no*, and *no*. At this stage, the responses of all group members were anonymized (see Fig. 1c). By anonymizing the group responses in this step, we ensured that only factors in the concept of “majority size” were of influence, and that confounding variables such as gender of group members (e.g., [55]) are avoided. After presenting the anonymized responses, we asked the participant whether they wanted to change their initial response while now knowing the responses of the other group members (see Fig. 1c). Additionally, we told the participants that after the final response was given, the responses together with the identities of the group members would be revealed. For the final step, bots were programmed with a 50/50 chance of only changing in the sub-scale of their initial response (i.e., *yes/maybe yes* or *no/maybe no* so that the final response of the bots would not be completely different. By revealing all the identities of the bots in a random order in the final step, we then minimized the depersonalization and anonymity effects observed in earlier online conformity research (e.g., [40, 41]).

After the final decision was made, and the responses of all group members were revealed, a song would only be added to the playlist if the group reached a positive consensus (i.e., a unanimous decision) on the song (see Fig. 1d). The experiment would continue to the next candidate song after this step until a playlist of 10 songs was created. The study also came to an end when participants were not able to create a complete playlist after 30 songs were passed.

3.2 Data

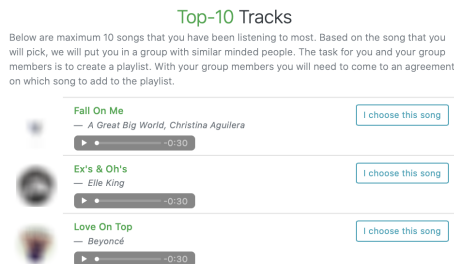
We recruited participants via the agency Kantar² considering a consumer price index of EUR 8.00 for both, the UK as well as India. Our initial dataset consisted of 212 participants of which 113 were from the UK and 99 were from India. The country was determined based on the participants’ self-report on the question “Which country do you most associate with?” We included two attention checks³ to detect invalid responses. After filtering out the invalid entries, we were left with a total of 199 participants: UK (109) and India (90). Age and gender distribution of UK: overall median age 35 with 37 male (median age 44) and 72 female (median age 33). The Indian age and gender distribution: overall median age 25 with 62 male (median age 25) and 28 female (median age 25).

As the number of rounds needed to come to a fully compliant playlist (i.e., a playlist with 10 songs) depended on a participant’s tendency to comply, the number of rounds needed for each participant varied a lot; with a minimum of 10 and a maximum of 30 rounds (note: the experiment came to an end when the playlist

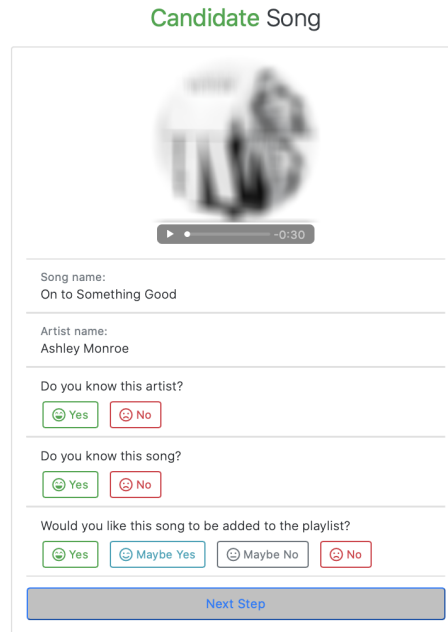
²<https://www.kantar.com>

³The attention questions were in the format, “Answer this question with agree” or “disagree”, respectively. Participants who did not answer these questions correctly were removed from the final dataset.

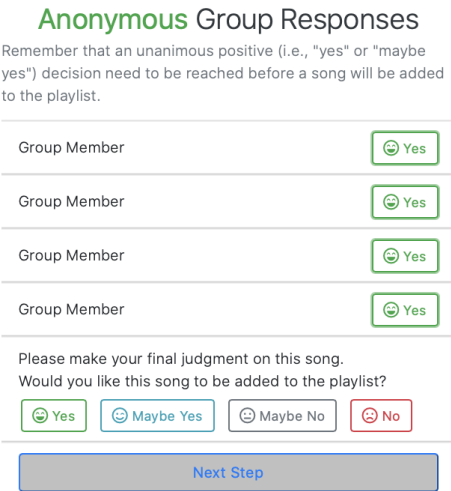
¹<https://developer.spotify.com/>



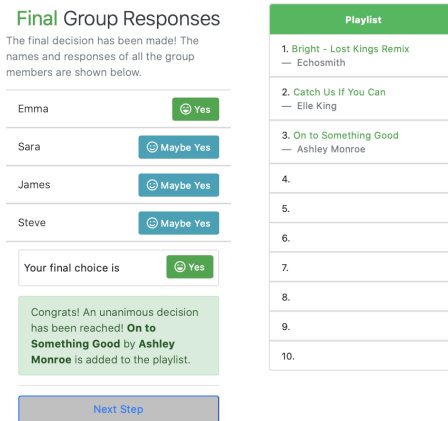
(a) Screenshot with a participant’s most played songs for choosing one seed song.



(b) Screenshot with candidate song to be added to the playlist.



(c) Screenshot showing the group’s votes, allowing the participant to revise their voting.



(d) Screenshot showing a song added to a group’s playlist after reaching consensus.

Figure 1: Screenshots of the study design.

reached 10 songs or when a participant reached the end of round 30). Hence, to control for the unequal number of rounds, the data for each participant was accumulated and normalized to represent a score in the closed interval [0, 1]; a score closer to 1 represents a higher degree of overall flipping behavior of a participant. See Fig. 2 for an overview of flipping behaviors per country.

4 RESULTS & DISCUSSION

To investigate the cultural effect, we conducted an independent-samples t-test with country as the grouping variable. Results show that in terms of flipping the initial response from adding a song to not adding a song, the UK participants ($M = .42, SD = .33$) demonstrated a significantly lower degree of flipping behaviors compared to the Indian participants ($M = .57, SD = .32, t(197) = 3.23, p =$

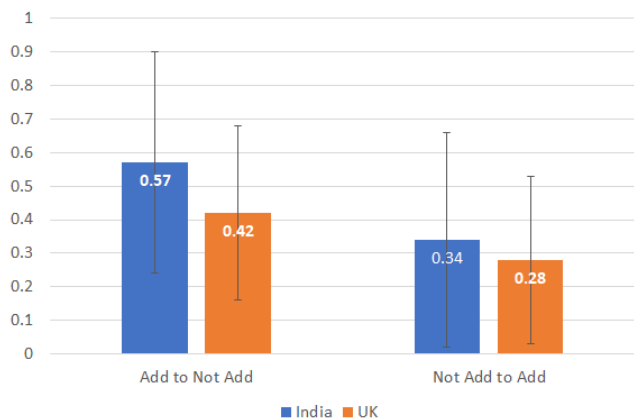


Figure 2: Average flipping behaviors per country based on individual normalized values in the closed interval [0, 1]. Scores closer to 1 indicate a higher degree of overall flipping behavior.

.001. When looking at the results of the opposite flipping behaviors (i.e., not adding a song to adding a song), a trend effect was found between the UK participants ($M = .28, SD = .25$) and the Indian participants ($M = .34, SD = .26$), $t(197) = 1.69, p = .093$. These results indicate a trend towards a lower degree of flipping behaviors of the UK participants compared to the Indian participants.

Given the magnitude difference between the flipping directions, we additionally conducted a paired-samples t-test to investigate whether the magnitude differences are significant within the UK and the Indian sample. For the UK participants, results suggest that the conformity effect is more pronounced when the outcome of the behavior is negative (i.e., not adding a song, $M = .42, SD = .33$) compared to a positive outcome of the flipping behavior (i.e., adding a song, $M = .28, SD = .25$), $t(108) = 5.12, p < .001$. A similar significant effect was found for the Indian participants between negative ($M = .57, SD = .32$) and positive outcome of the flipping behavior ($M = .34, SD = .26$), $t(89) = 6.60, p < .001$. Hence, for both countries, the willingness to conform to the group decreases when the outcome of the flipping would be positive.

As expected, based on the distribution of the cultural dimensional scores between the UK and India for both Hofstede's [17] and Schwartz's [45] model, the UK participants conform less than the Indian participants. The most pronounced effect was found when the flipping behavior would have a negative outcome (i.e., adding a song to not adding a song). When considering the other direction (i.e., not adding a song to adding a song) a trend was found of the UK participants conforming less than the Indian participants.

When looking at the effects within a country, the results suggest that the willingness to flip to a positive outcome was much less than to a negative outcome for both countries. Hence, flipping behaviors appear much easier when flipping from adding a song to not adding a song. This directional flipping is apparent for both countries. This is in line with prior findings of Bauer and Ferwerda [6] who showed that for switching to a negative sentiment a minority vote already suffices.

Our findings indicate that cultural values play a role in the willingness to conform. In general, our Indian participants showed a higher degree of flipping behaviors (irrespective of the flipping direction) than our UK participants. When considering the flipping direction within each country sample (UK and India), we observed that for both countries the direction of the flipping plays a role in the willingness to conform, too: participants were more willing to change their initial response from adding a song to the playlist to not adding a song but were significantly more hesitant to conform other way around (initial response of not adding a song to the playlist to adding a song). Hence, although the willingness to conform can be explained by cultural values, the sentiment of the flipping behaviors plays an important role as well.

Similar to other cross-cultural studies on a country-level, also our study is affected by the difficulties of measuring culture: for instance, there might be cultural diversity within a country or individuals might have adopted values from another culture—particularly if they have spent a substantial part of their life in another culture [25]. While we considered the country where an individual self-reported to associate with most, this does not eliminate the possibility that an individual is influenced by other cultures. Furthermore, the UK sample had a higher number of self-reported females whereas the sample from India included a higher number of self-reported male participants. We note that prior research (e.g., [1, 12, 13]) has shown that women tend to manifest a higher tendency to conform than men; yet, more recent studies could not confirm these findings (e.g., [44, 53, 56]). As the female-dominated UK sample has shown higher tendencies to conform than the sample from India with a high proportion of male participants, we carefully conjecture that—if sex or gender effects exist—cultural values might be the stronger predictors to conform. Yet, the unequal distribution across the two samples is a limitation and this conjecture needs to be examined in further research.

5 IMPLICATIONS & FUTURE RESEARCH

Our findings have implications for collaboration and communication in culturally homogeneous as well as culturally diverse settings, and for algorithmic decision-support systems alike. The gained knowledge may be used to communicate and develop a shared culture and vision within an organization or group. As there is a higher tendency to conform from a negative judgment to a positive one than the other way round, this knowledge may be adopted for communication settings: using phrasings with positive or negative sentiments. The targeted use of fitting verbal expressions and phrasing with positive or negative sentiments to communicate a vision may help to achieve this. Future research needs to investigate to which extent our findings may translate to such communication settings.

Similarly, in multi-cultural settings, the different conformity tendencies in different cultures may be used to one's advantage to achieve a bigger majority in conformity-included cultures first and then draw in people from other cultures. Knowledge about the different flipping behaviors—within and across cultures—may also be a helpful source to anticipate when more resistance to change is to be expected.

Yet, our findings may come with potential negative implications as they may lead to unethical manipulation of groups. For example, as the conformity effect is also at play in moral decision-making, this may have severe consequences. In Kundu and Cummins's [26] work, impermissible actions were judged more permissible if the majority judged them so. As a consequence, a manipulation effort could use the cross-cultural conformity effects by first targeting collectivist cultures to reach a larger majority to conform to morally weak decisions and then use this larger majority to draw in people from individualist cultures. Still, the cross-cultural conformity effects may also be used to reach the opposite effect to reach higher moral standards. Yet, this is likely not a specific concern of HCI but a general one that is also relevant to other forms of communication and interaction. As concerns the spread and adoption of misinformation and “fake news”, online interaction—such as on social media—plays an important role. While, for instance, Wijenayake et al. [54] found that conformity with a majority is a contributor to the spread of misinformation, it is yet to be investigated whether and how the different cultural tendencies toward conformity might be accelerators for spreading such misinformation. Besides studying the role of cultures in the spread of “fake news,” a better understanding of diffusion mechanisms due to cross-cultural conformity effects may provide valuable knowledge for developing measures to curb the spread of misinformation and its harmful societal effects.

It is also worthwhile to consider different conformity tendencies across cultures and across sentiments in algorithmic decision-support systems. For instance, to date, only a few studies on group recommenders (e.g., [11, 31]) consider that group members may conform with a majority or an opinion leader. Our findings suggest that conformity may have to be addressed at a more fine-grained level, considering culture and sentiments. In this realm, the understanding of cross-cultural differences in conformity behavior may be used in two ways: First, as some individuals have higher tendencies to conform and as these tendencies are accentuated when conforming towards a negative outcome (thus, letting forego an option), this can inform the group recommendation algorithms in a way so that most group members will accept the final outcome. Second, the understanding of conformity behaviors across cultures and the differences of conformity concerning positive and negative outcomes can be used in a way to strengthen the voice of individuals with high conformity tendencies and support their original preferences, opinions, or beliefs. Sometimes, only a few individuals—or even only one person—dominate a group decision-making process [52] (which may be driven by their personality traits [2, 43] or status differences [19, 23]) and the conformity tendencies of others may even weaken their own voice. If these social phenomena are considered in the user models and the algorithmic approaches supporting group-decision making, the final outcome may support the opinions and preferences of a wider variety of people (compared to the dominating ones). Against this background, future work on algorithmic decision-making for group settings will need to consider conformity at a (more) fine-grained level, considering culture and sentiments.

Motivated by our findings, we will continue with an in-depth investigation of factors potentially influencing conformity. Building on our findings, an important next step is to extend our work to

embrace a wider scale of cultures. Further, having found that the switching to a positive or negative sentiment leads to different conformity behavior in group playlist creation, we deem it worthwhile to investigate this phenomenon in other group tasks.

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