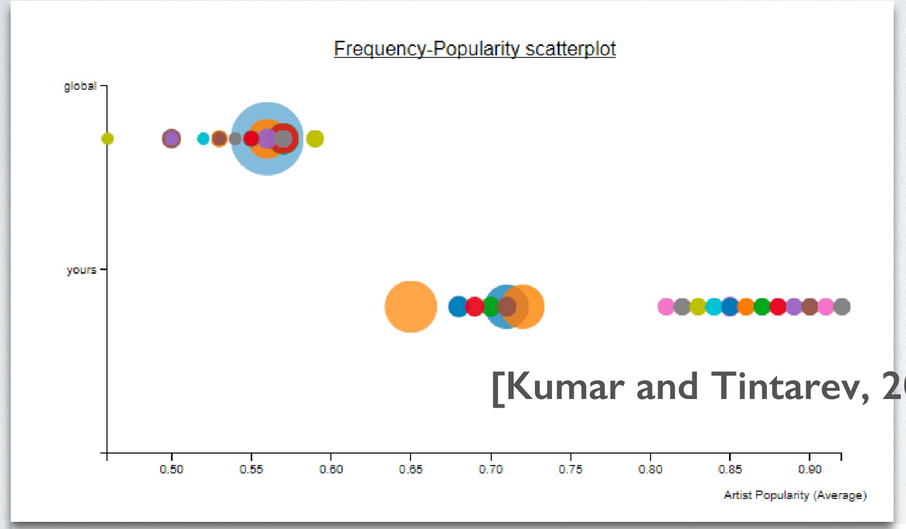
The Role of Preference Consistency, Defaults and Musical Expertise in Users' Exploration Behavior in a Genre Exploration Recommender

Yu Liang
Martijn Willemsen

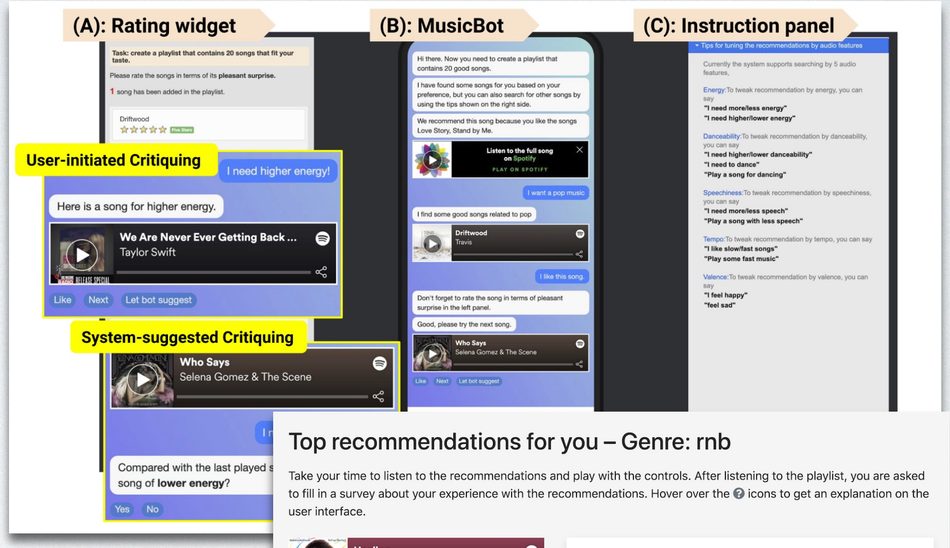
Jheronimus Academy of Data Science

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

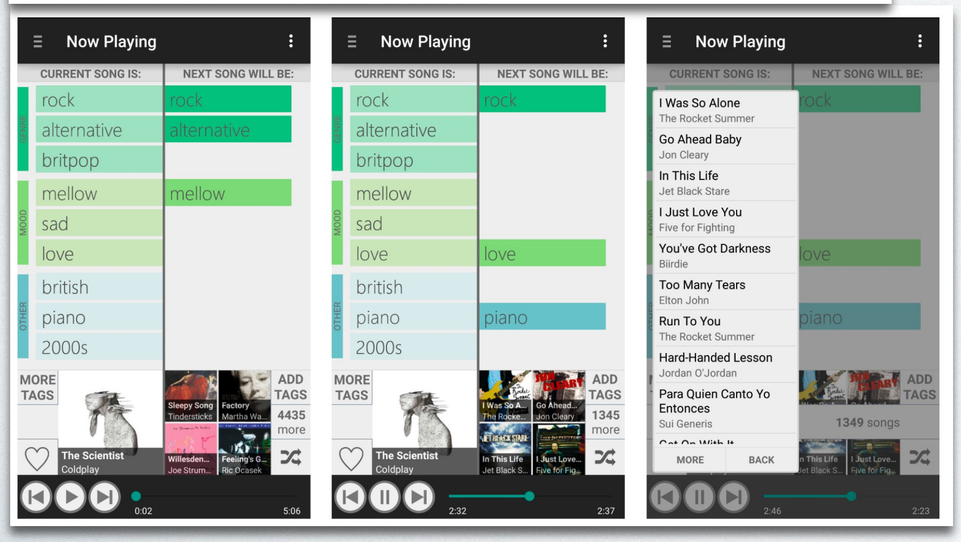
Exploring New Musical Tastes



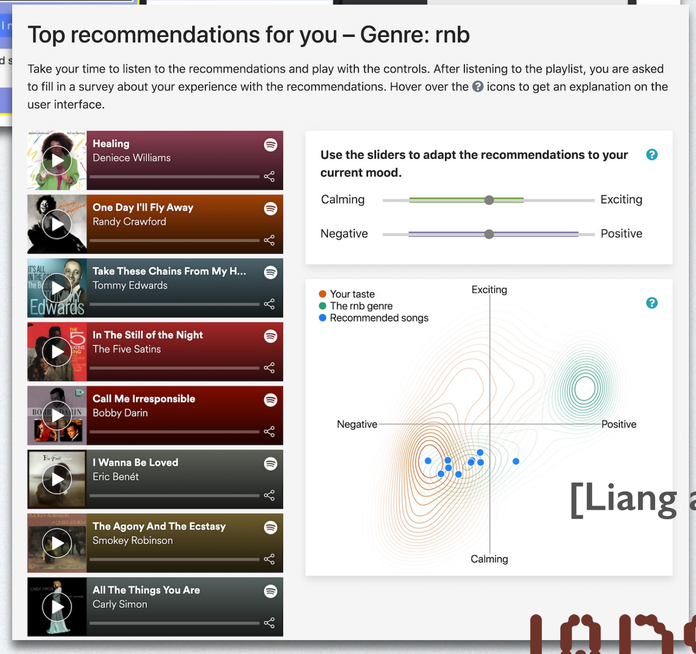
[Kumar and Tintarev, 2018]



[Cai et al., 2021]



[Kamalzadeh et al., 2016]



[Liang and Willemsen, 2021]

...

- How far do users explore from their current preferences?

- Does the exploration behaviors differ among individuals?
  - Whether there is the relation between users' exploration behaviors and their musical expertise?

- As a system designed for exploration, what can it do to motivate users' exploration?

…

THIS WORK

PART 1: Analysis on preference consistency

- The relation between musical preference consistency and musical expertise
- How do users' exploration behaviors relate to their musical expertise?

PART 2: Does nudging help? - A user study

- Setting defaults
- Reordering recommendation list

PART 1: Analysis on Preference Consistency

The Data

- Two online lab studies and two online events **[Liang and Willemsen, 2019, 2021]**

- Spotify profile of 319 participants: top listened artists and tags in short-term, medium-term and long-term

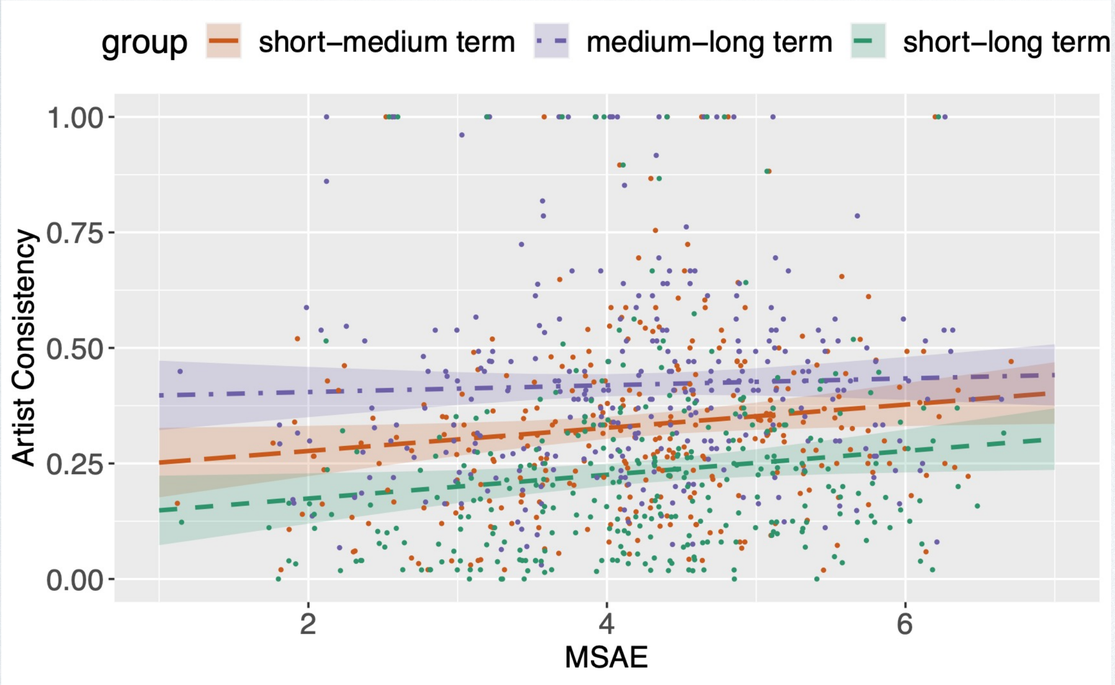
- Preference consistency is measured over users' top listened artists (Jaccard similarity) and tags (Cosine similarity):
  - Short-term VS long-term
  - Short-term VS medium-term
  - Medium-term VS long-term

- Musical expertise: Musical Sophistication Index on Active Engagement (MSAE) and Emotion Engagement (MSE) **[Mullensiefen et al., 2014]**

https://developer.spotify.com/documentation/web-api/reference/#category-personalization

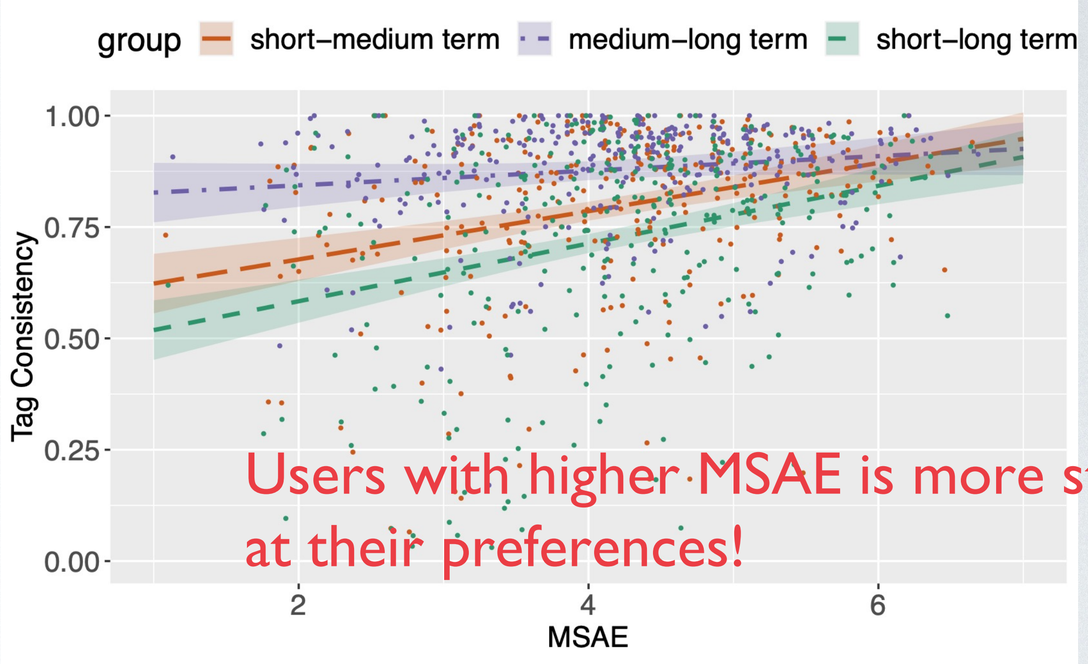
Musical Expertise and Preference Consistency

Artist-level consistency



Musical Expertise

Tag-level consistency

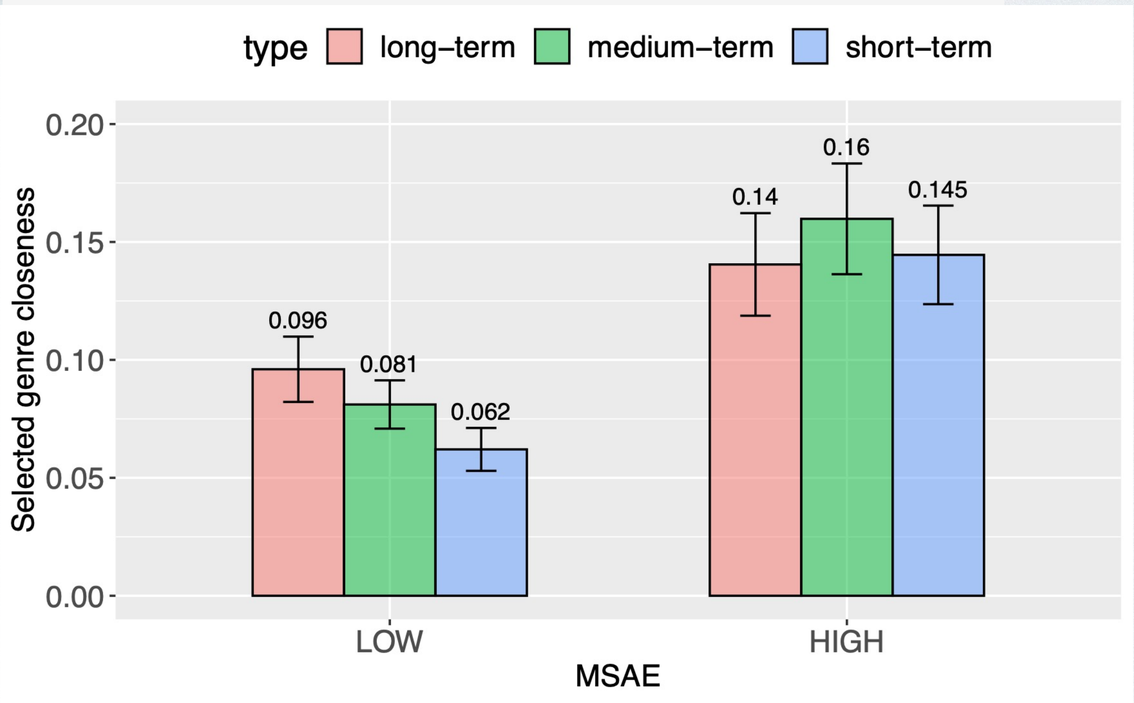


Users with higher MSAE is more stable at their preferences!

Musical Expertise

The relation between MSAE (Musical Sophistication on Active Engagement) and the predicted consistency with the multilevel regression model

Genre Selection Behaviors



Users are split into two groups on median split of MSAE (Muisical Sophistication on Active Engagement)

- The closer a genre is to a user's current preferences, the more likely the genre was picked to explore ($p < 0.001$)
- Users with high MSAE tend to select genres closer to their current preferences than those with low MSAE

PART 2 Does nudging help to promote exploration?

Musical expertise

Scenario - Music Genre Exploration

1 **Nudging to distant genres**

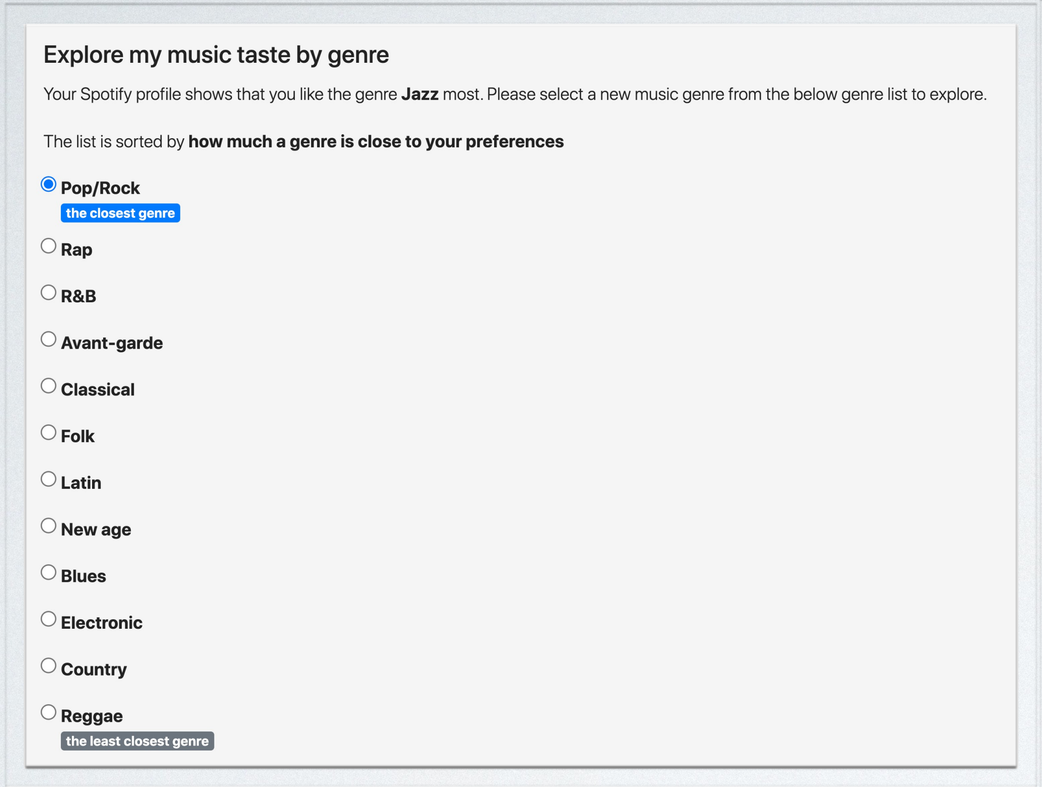
- Preselecting a default genre
- Re-ordering the genre list

2 **Nudging to explore away from current preferences**

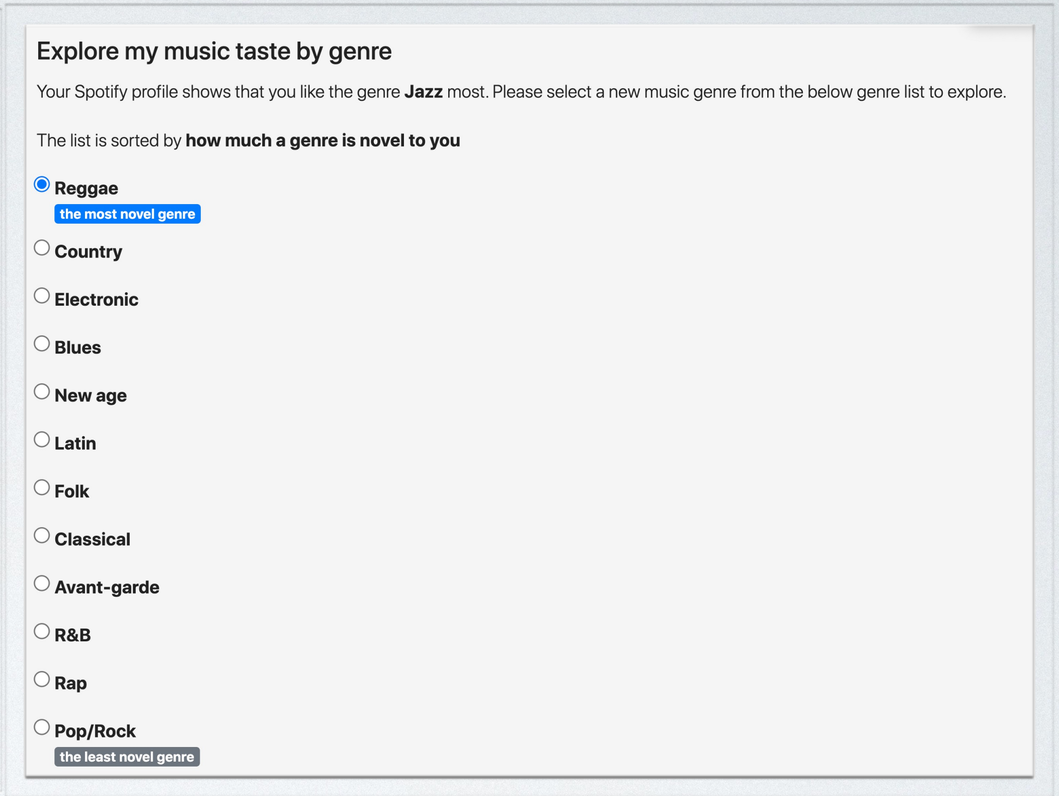
- Setting different default slider position for exploration

JADS Jheronimus Academy of Data Science TU/e

Nudging on Genre Selection



Close genres first

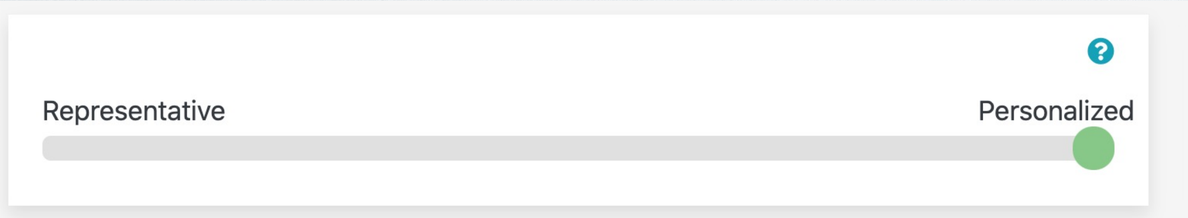


Distant genres first

Genre closeness is calculated as the relevance score between a genre and a user's preferences in a tag network using Personalized Page Rank

Nudging on the Default Slider Position for Recommendation

Task: to create a good playlist that is helpful for you to explore the genre … using the slider

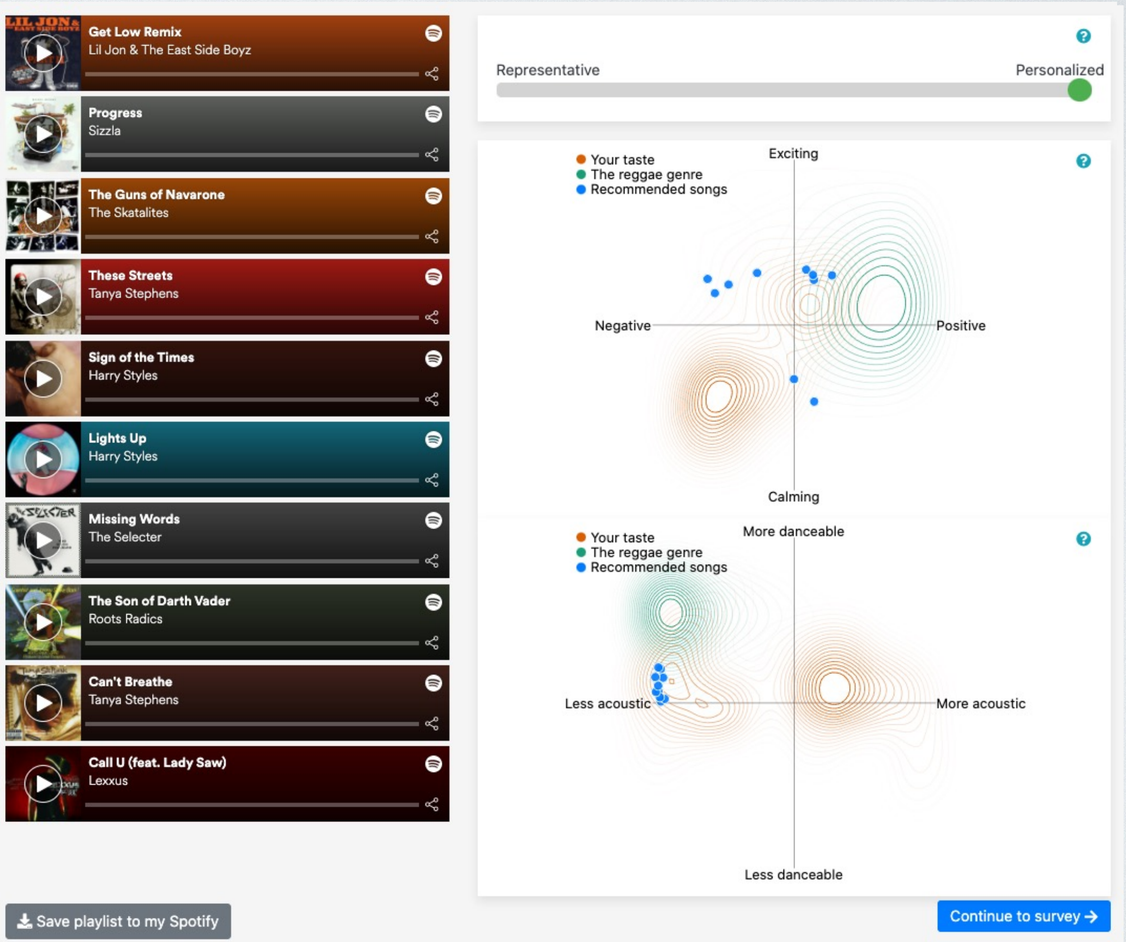


Non-personalized approach → The most representative

Mixed approach → In the middle

Personalized approach → The most personalized

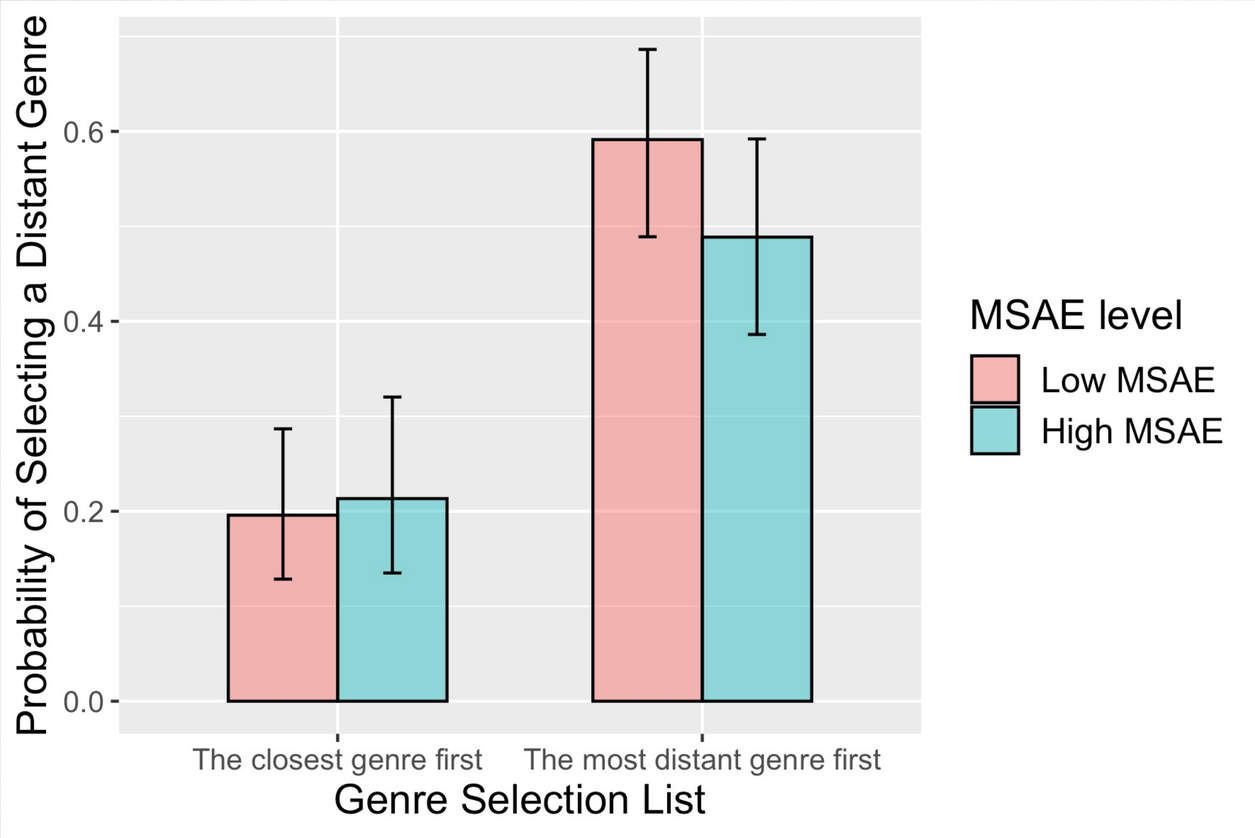
[Liang and Willemsen, 2019, 2021]



The Participants

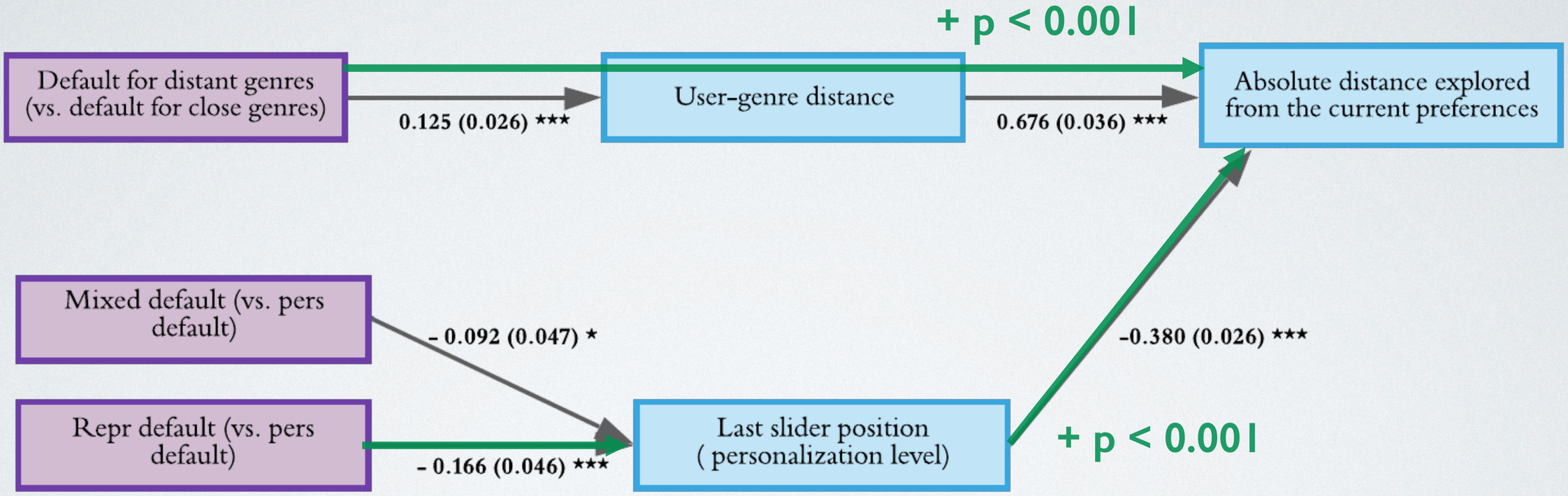
353 valid responses form Prolific

Nudged to Explore More Distant Genres?



- When the distant genres are presented at the top of the list, they are more likely to be selected by users ($p < 0.001$)
- Users with high MSAE are less likely to select distant genres than those with low MSAE ($p < 0.05$), even when nudged to explore

Path Analysis - Absolute Distance Explored



The effect of conditions on the absolute distance explored

Path Analysis - Absolute Distance Explored

Genre selection: default for distant genres first makes users explore further away from their current preferences ($p < 0.001$)

Slider position: the default slider at the representative position makes users explore further away from their current preferences ($p < 0.01$)

Users can be nudged to explore away from their current preferences!

JADS Jheronimus Academy of Data Science TU/e

What We Have Learned

Users with higher musical expertise have more consistent preferences than those with lower expertise

Users tend to explore closer to their current preferences, especially the expertise users

Nudging for exploration is useful to trigger users' exploration away from their comfort zone, however, the effect is less strong for users with high musical expertise

Thanks for Your Attention!

y.liang1@tue.nl

@ylyuliang

M.C.Willemsen@tue.nl

@ McWillemsen