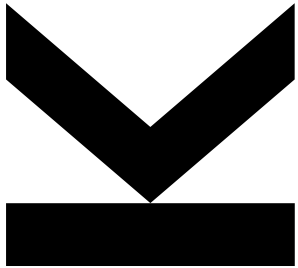


THE INFLUENCE OF USERS' PERSONALITY TRAITS ON SATISFACTION AND ATTRACTIVENESS OF DIVERSIFIED RECOMMENDATION LISTS



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DIVERSITY IN RECOMMENDATIONS

■ “Filter-bubble”

Choice difficulties (Willemsen et al. 2011)

Choice overload (Bollen et al. 2010)

■ Moderating factors

Expertise (Bollen et al. 2010)

Cultural background (Ferwerda et al. 2016)

MODERATORS

- Domain dependent (i.e., expertise)
- Too general (i.e., cultural background)

- Implicit acquisition
 - Facebook (e.g., Celli et al., 2014, Ferwerda et al., 2016)
 - Instagram (Ferwerda et al., 2016; Skowron et al., 2016)
 - Twitter (e.g., Golbeck et al., 2011; Quercia et al., 2011)

THE STUDY

1. Data preparation
 - Crawling music listening history
 - Offline recommendations
2. Experiment
 - Subjective evaluations of differently diversified recommendation lists

DATA PREPARATION

1. Amazon Mechanical Turk (AMT)
 - 254 Turkers (95% HIT approval rate, 1000 HITs approved, >25 Last.fm listening events)
 - Last.fm total listening history
 - 44-item Big Five Inventory
 2. LFM-1b dataset
 - Total history of +120,000 users
 - 196 countries
 - ~1.1 billion listening events
 - +500,000 artists
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- Complemented the AMT dataset with LFM-1b US users
 - 10,250 additional users
 - 387,037 Last.fm listening events

DATA PREPARATION

1. Implicit feedback (i.e., listening events)
 - Weighted matrix factorization algorithm (Hu, Koren, Volinsky, 2008)
2. Diversified recommendation lists
 - Topic diversification method (Ziegler et al., 2005)
 - 3 levels of differently diversified recommendation lists
 - Low, medium, high

EXPERIMENT

- Within-subject experiment
- Amazon Mechanical Turk
 - 100 Turkers
 - Age 18-65 (median 28)
 - 54 male, 46 female
- Procedure
 - Present diversified recommendation lists in random order
 - Subjective evaluation of each
 - Rank order of diversified lists (manipulation check)

RESULTS (MANIPULATION CHECK)

■ Evaluation of diversification

■ Wilcoxon signed-rank test

■ Low ($M=1.28$)

■ Medium ($M=2.08$)

■ High ($M=2.65$)

Ranking the recommendations

Rank order the lists below on the diversity they consist.

Nirvana
The Beatles
Weezer
Pink Floyd
Queen
The Black Keys
Coldplay
Red Hot Chili Peppers
Radiohead
Daft Punk

1 2 3
Most Diverse ● ● ● Least Diverse


Maroon 5
Belle And Sebastian
Sonic Youth
Van Morrison
Drake
Linkin Park
The Beatles
Ok Go
Black Sabbath
Panic! At The Disco

1 2 3
Most Diverse ● ● ● Least Diverse

Pink Floyd
Nirvana
The Beach Boys
The Beatles
The Smiths
Third Eye Blind
Daft Punk
Foo Fighters
Coldplay
Adele

1 2 3
Most Diverse ● ● ●

Next



L = #Listeners, P = Playcounts

Genre: Pop

T1: Wouldn't It Be Nice	L: 653707, P: 3416251
T2: God Only Knows	L: 542656, P: 2852774
T3: Good Vibrations	L: 521806, P: 2403494
T4: I Get Around	L: 375860, P: 1650636
T5: Sloop John B	L: 347757, P: 1478498
T6: California Girls	L: 299397, P: 1158287
T7: Kokomo	L: 253642, P: 1061076
T8: Barbara Ann	L: 227741, P: 880013
T9: You Still Believe in Me	L: 212067, P: 920061
T10: Little Saint Nick	L: 207378, P: 551136

RESULTS (MEASURES)

- Perceived diversity
 - E.g., Many of the artists differ from other artists in the list
- Recommendation satisfaction
 - E.g., I am satisfied with the recommended artists
- Recommendation attractiveness
 - E.g., The list of recommendations matched my preferences
- Confirmatory factor analysis
 - Convergent validity
 - Discriminant validity

RESULTS

- Repeated measures ANOVA

- Perceived diversity
 - Increased diversity was perceived
 - No differences between personality traits

- Recommendation satisfaction
 - Conscientiousness → high diversity
 - Agreeableness → medium diversity

- Recommendation attractiveness
 - Conscientiousness → high diversity
 - Agreeableness → medium diversity

CONCLUSION & IMPLICATIONS

- Personality traits play a role in the preferred level of diversity of recommendation lists
 - Conscientiousness
 - Agreeableness
- Tailoring recommendations
 - Counteract on negative psychological effects of recommendation lists
 - Optimize subjective system/recommendation perceptions of users

FUTURE WORK

- Increase sample size
- Between-subject experiments

END

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