# INSPECTABILITY

## AND CONTROL

## IN SOCIAL

### RECOMMENDERS

ALEX BOSTANDJIEV

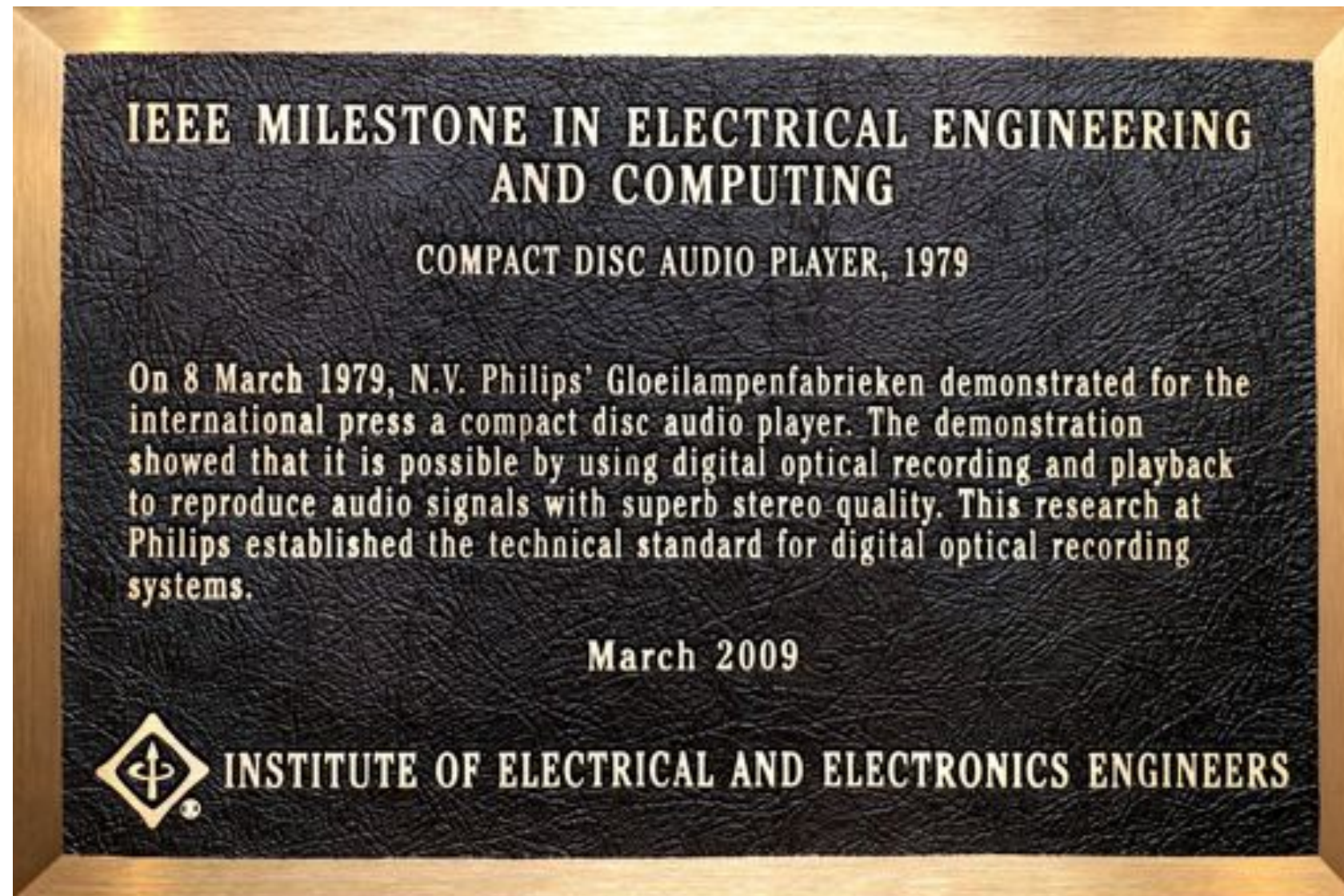ALFRED KOBSA

JOHN O'DONOVAN

BART KNIJNENBURG

# IF DIGITAL AUDIO



## IEEE MILESTONE IN ELECTRICAL ENGINEERING AND COMPUTING

### COMPACT DISC AUDIO PLAYER, 1979

On 8 March 1979, N.V. Philips' Gloeilampenfabrieken demonstrated for the international press a compact disc audio player. The demonstration showed that it is possible by using digital optical recording and playback to reproduce audio signals with superb stereo quality. This research at Philips established the technical standard for digital optical recording systems.

March 2009

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

# HAS A HIGHER QUALITY

THEN WHY DO DJ'S STILL USE VINYL?

INSPECTABILITY

**CONTROL**

IF **BIG DATA**

RMSE

**LEADS TO HIGHER QUALITY RECOMMENDENDATIONS**

THEN WE

WHY SHOULD WE

RMSE

USE SOCIAL?

RECOMMENDERS

INSPECTABILITY

**INSPECTABILITY**

**INSPECTABILITY**

# CONTROL

**CONTROL**

**CONTROL**

**CONTROL**

HYPOTHESIS: INSPECTABILITY AND CONTROL INCREASE SATISFACTION

# ONLINE USER EXPERIMENT

# PARTICIPANTS

267 participants

MTurk + Craigslist

At least 5 music "likes" and overlap with at least 5 friends at least 10 recommendations

lists limited to 10 to avoid cognitive overload

Demographics similar to Facebook user population

# PROCEDURE

**STEP 1:** Log in to Facebook

System collects your music "likes"

System collects your friends' music likes

# PROCEDURE

**STEP 2:** Control

3 conditions, between subjects



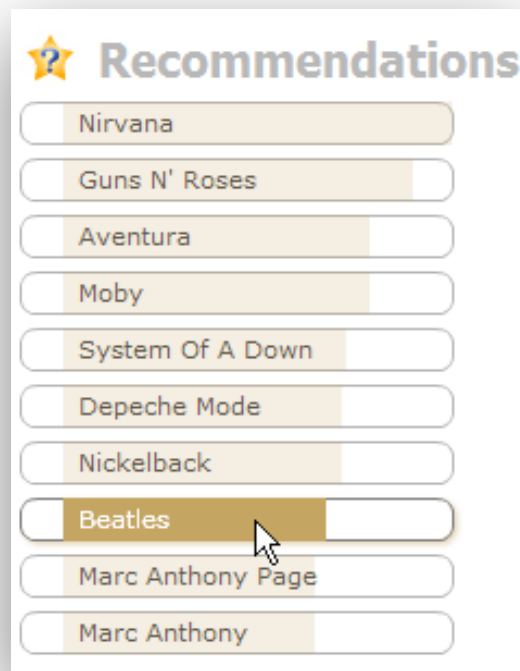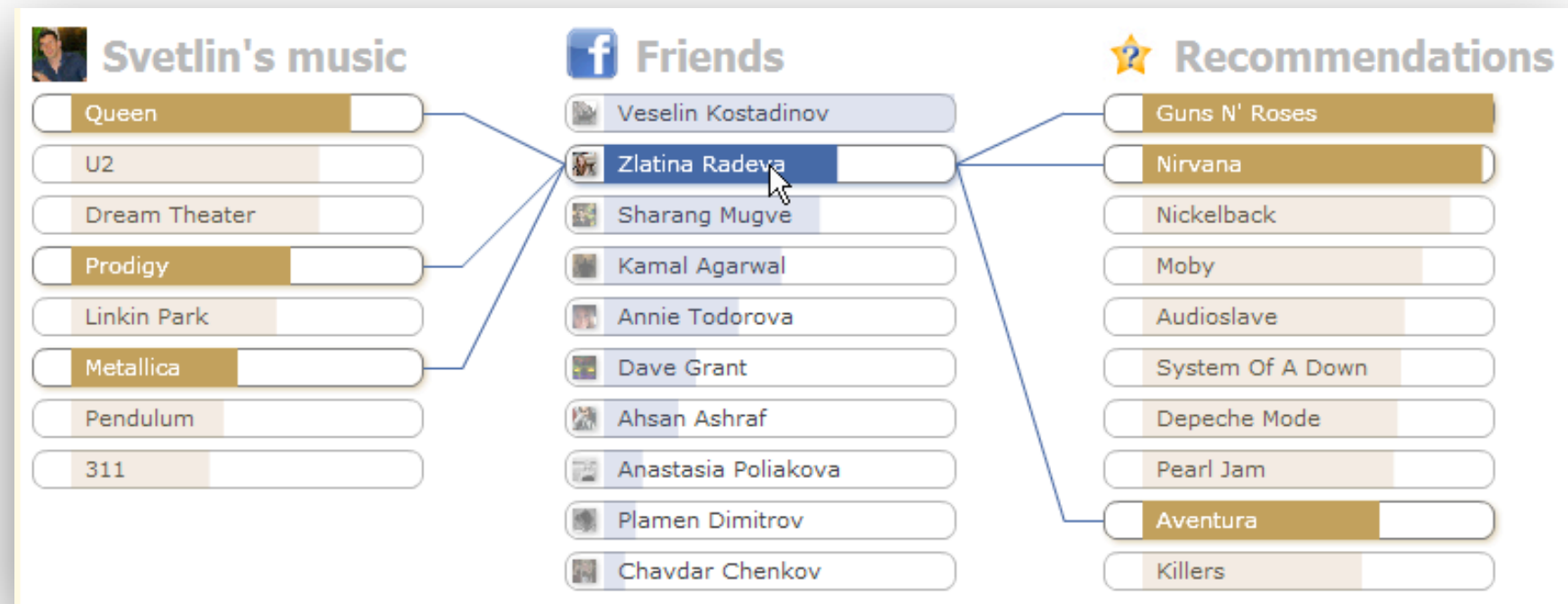**NOTHING**          **VS**          **WEIGH ITEMS**          **VS**          **WEIGH FRIENDS**

# PROCEDURE

**STEP 3:** Inspection

2 conditions, between subjects



**LIST ONLY**

**VS**

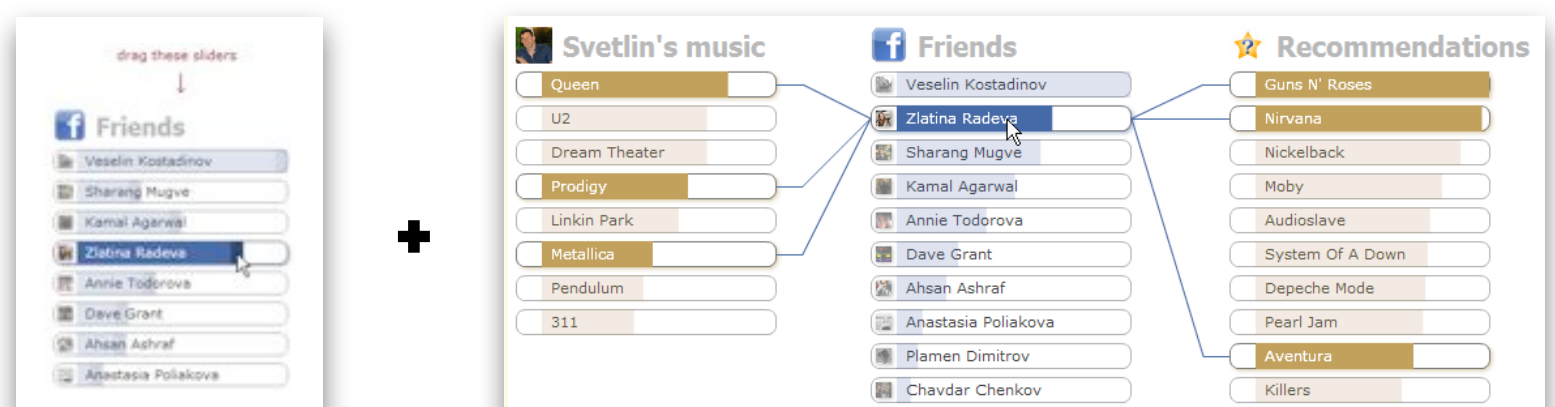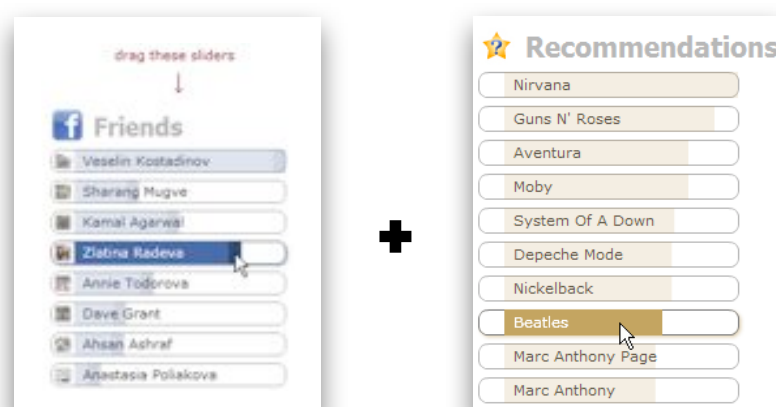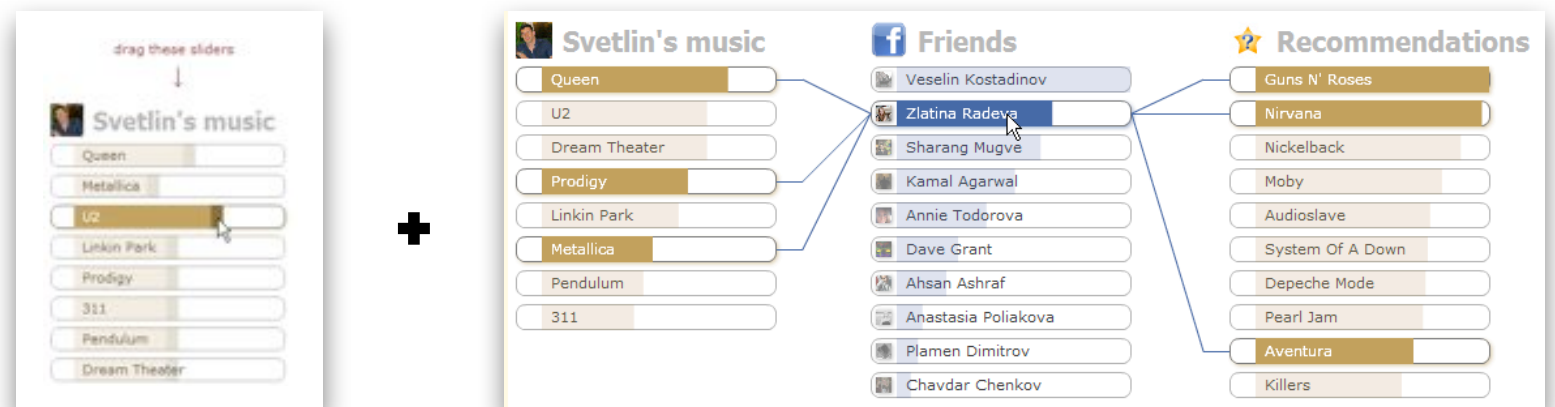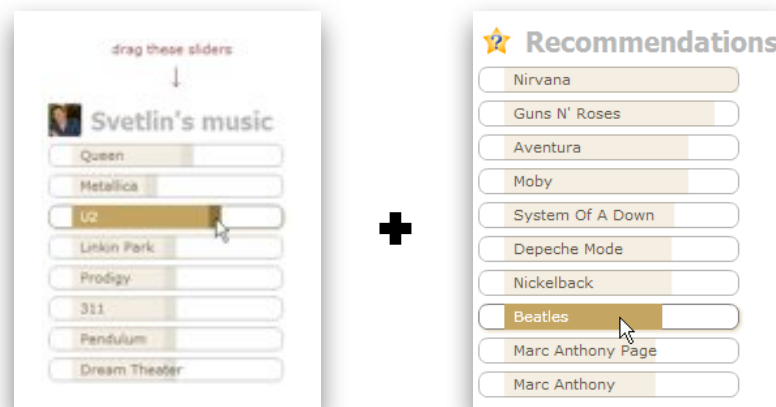**FULL GRAPH**

# PROCEDURE

# PROCEDURE

**STEP 4:** Evaluation

For each recommendation:

Do you know this band/artist?

How do you rate this band/artist?
(link to LastFM page for reference)

# PROCEDURE

**STEP 5:** Questionnaires

– understandability

– perceived control

– perceived recommendation quality

– system satisfaction

– music expertise
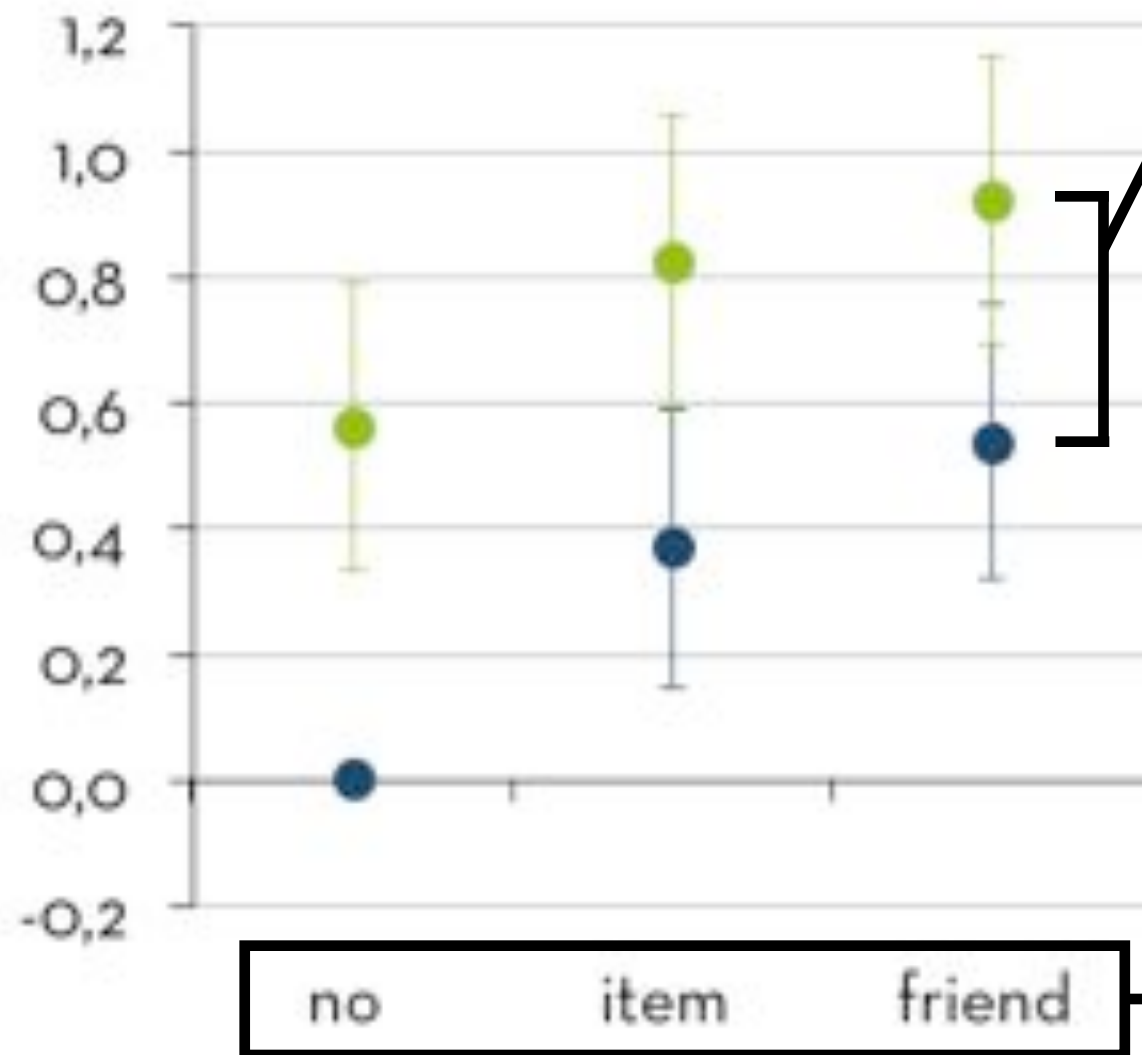
– familiarity with recommender systems

# RESULTS

# SUBJECTIVE

## UNDERSTANDABILITY



**INSPECTABILITY**

- 🟢 full graph
- 🔵 list only

## 3 items:

– The recommendation process is clear to me
– I understand how TasteWeights came up with the recommendations
– I am unsure how the recommendations were generated*

**CONTROL**

# SUBJECTIVE

## PERCEIVED CONTROL
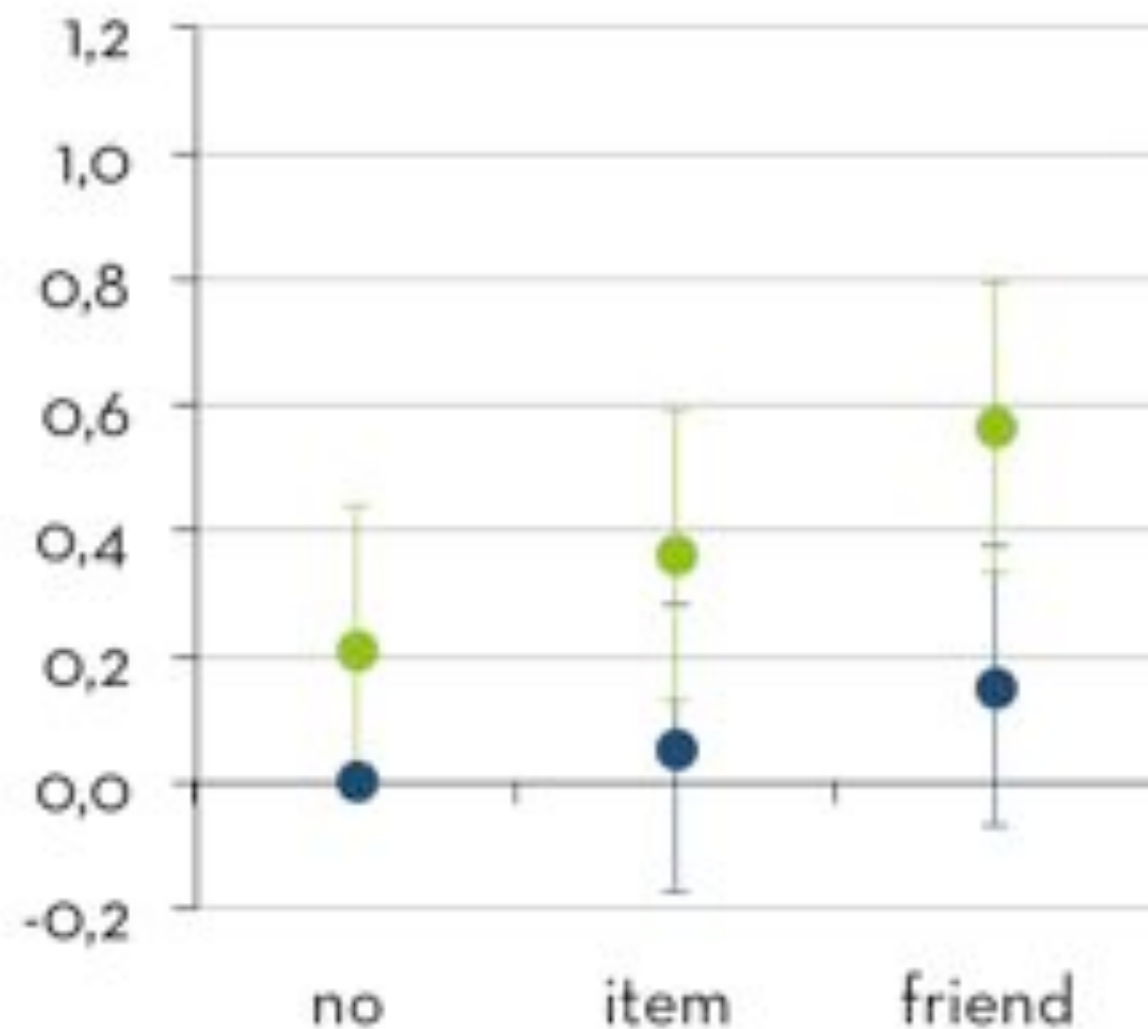


4 items:
- I had limited control over the way TasteWeights made recommen-dations*
- TasteWeights restricted me in my choice of music*
- Compared to how I normally get recommendations, TasteWeights was very limited*
- I would like to have more control over the recommendations*

# SUBJECTIVE

## PERC. REC. QUALITY



6 items:
- I liked the artists/bands recommended by the TasteWeights system
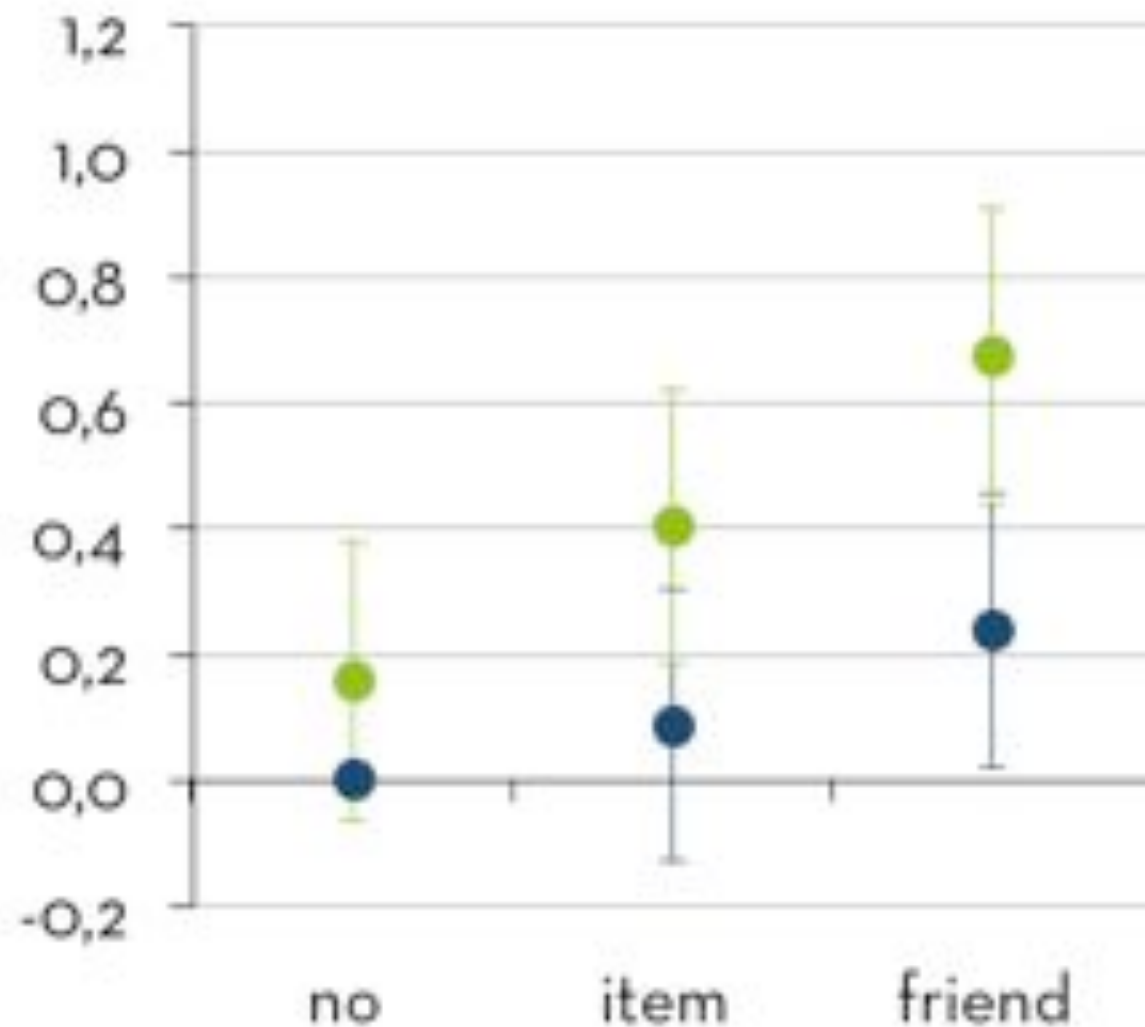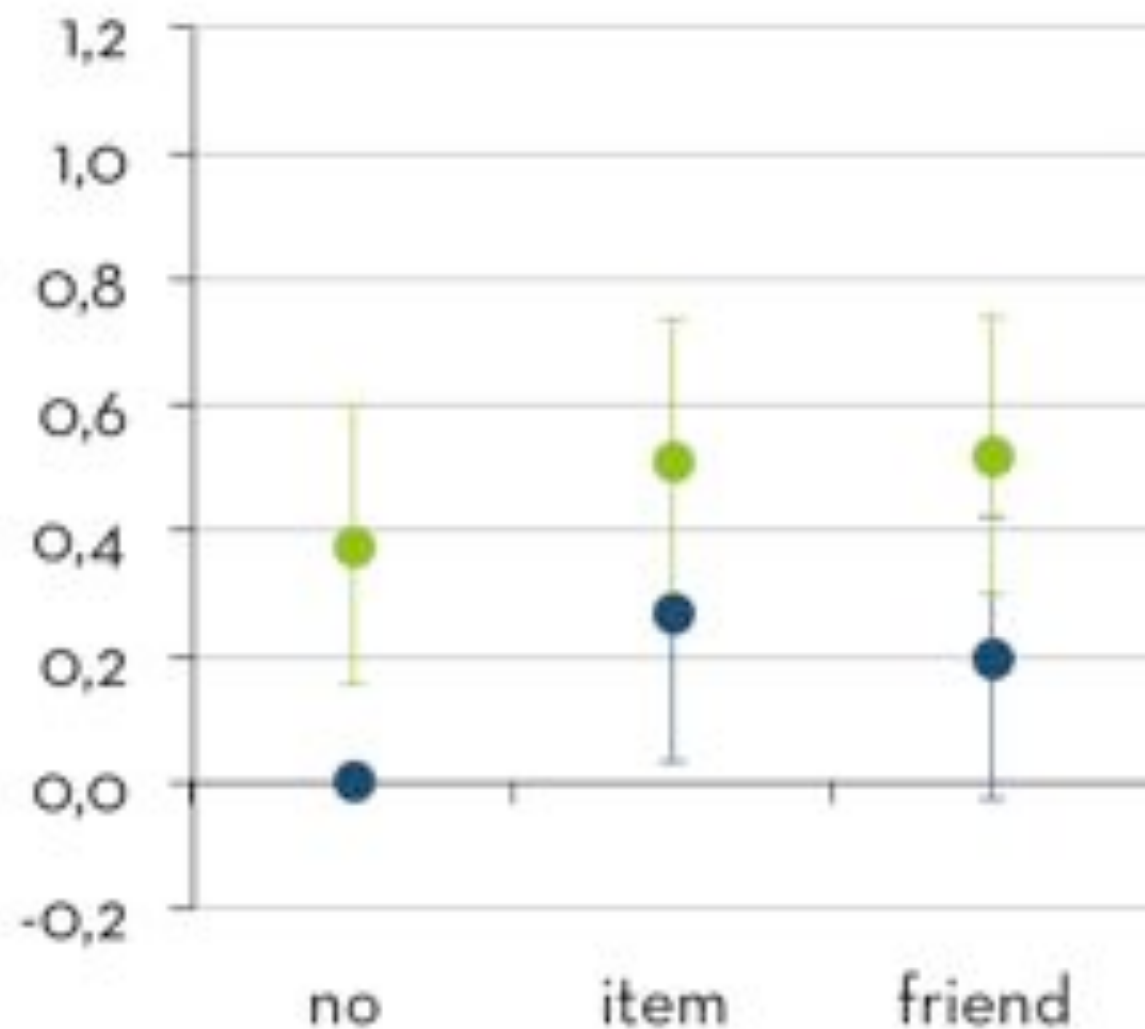- The recommended artists/bands fitted my preference
- The recommended artists/bands were well chosen
- The recommended artists/bands were relevant
- TasteWeights recommended too many bad artists/bands*
- I didn't like any of the recommended artists/bands*

# SUBJECTIVE

## SATISFACTION



7 items:
- I would recommend TasteWeights to others
- TasteWeights is useless*
- TasteWeights makes me more aware of my choice options
- I can make better music choices with TasteWeights
- I can find better music using TasteWeights
- Using TasteWeights is a pleasant experience
- TasteWeights has no real benefit for me*
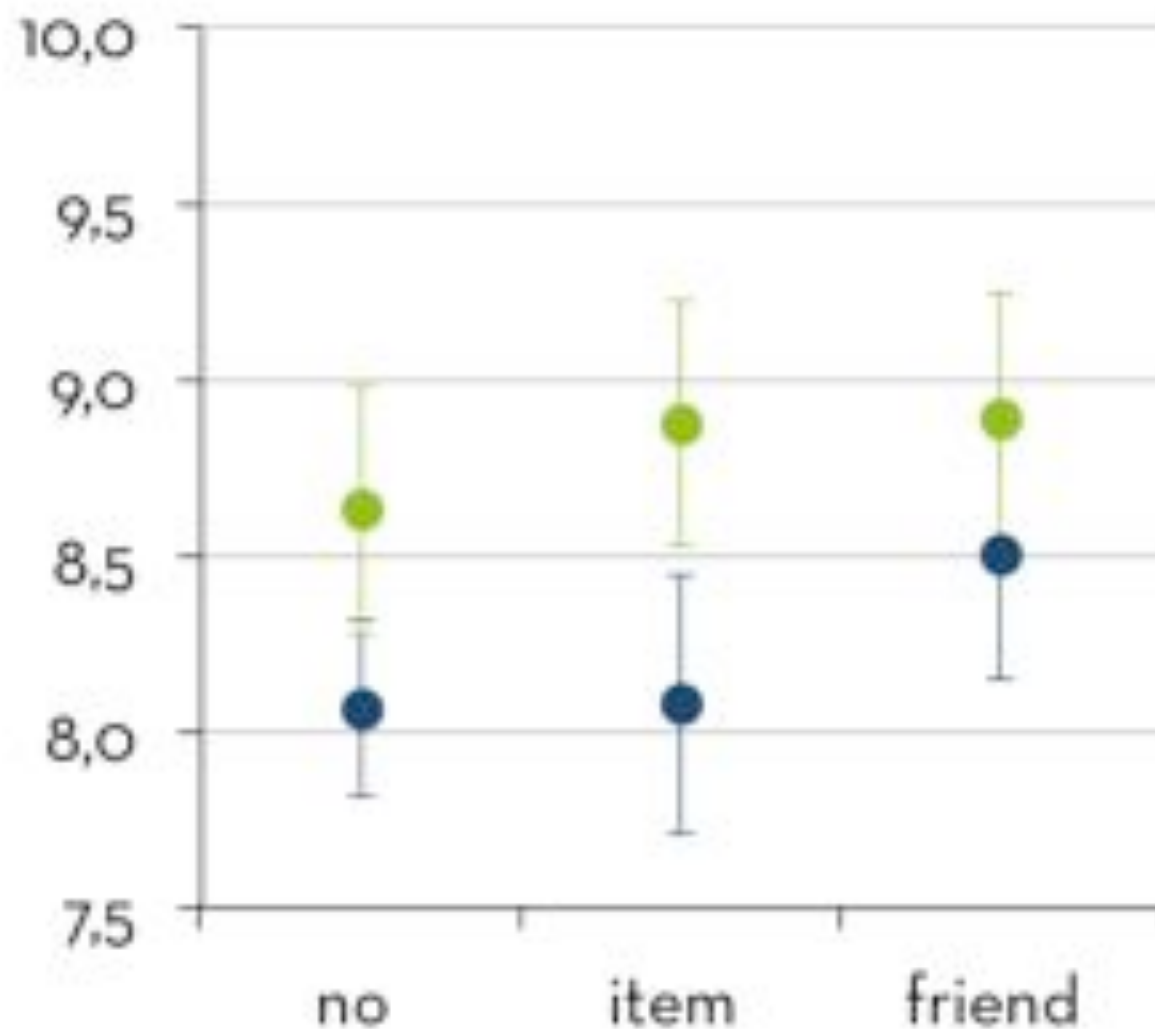
# BEHAVIOR

**INSPECTION TIME**
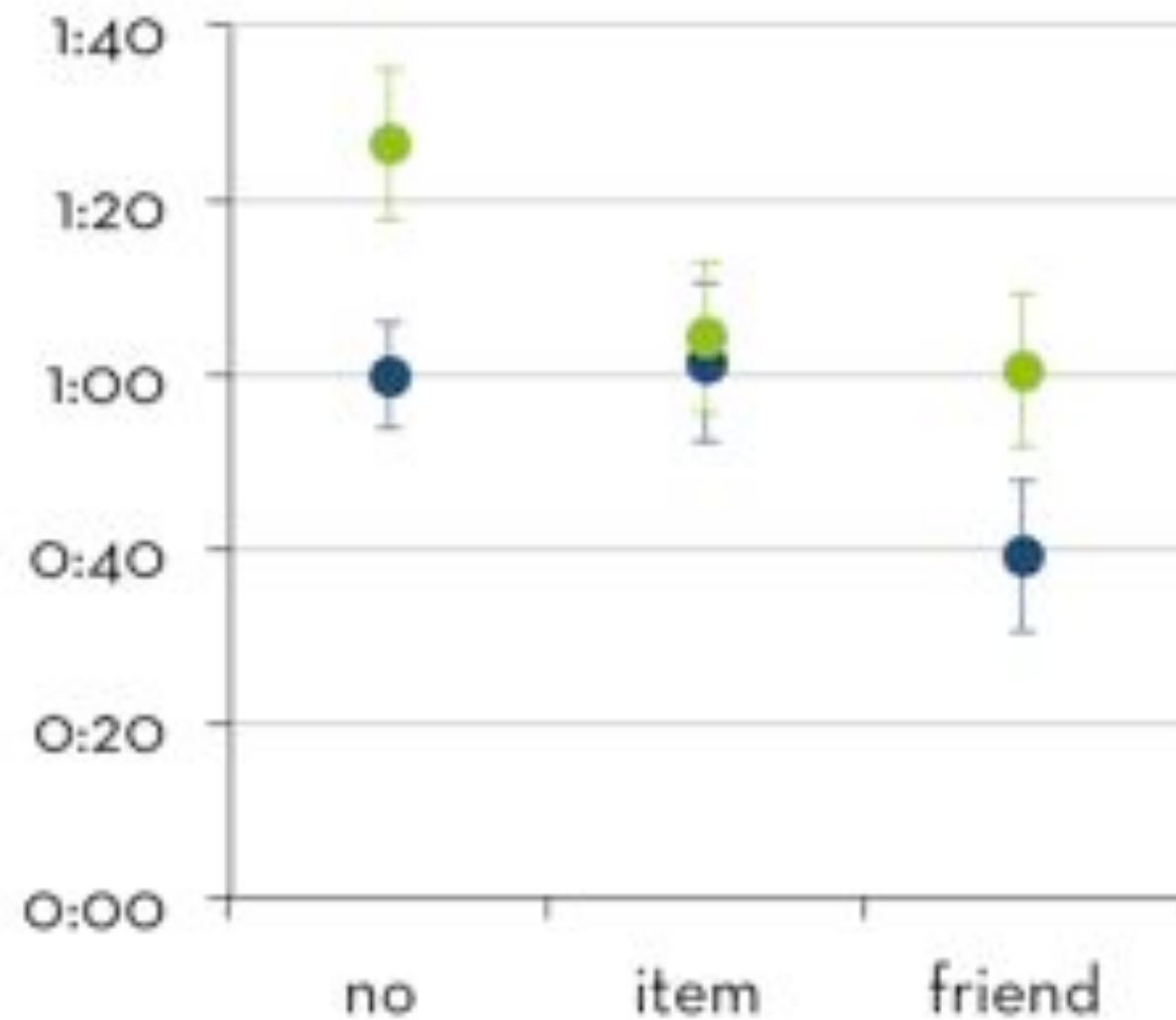


Time (min:sec) taken in the inspection phase (step 3)

- Including LastFM visits

- Not including the control phase (step 2)

- Not including the evaluation phase (step 4)
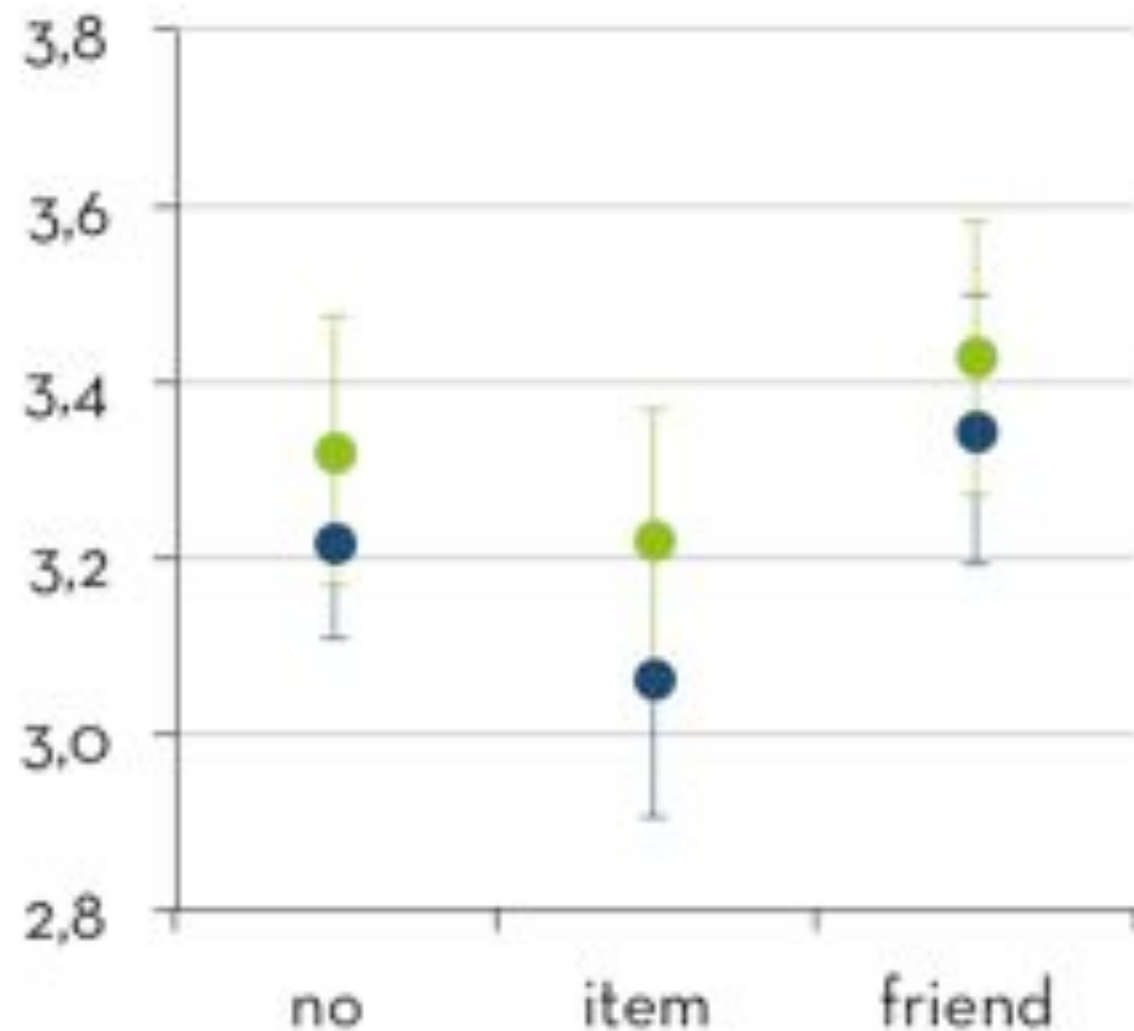
# BEHAVIOR

## # KNOWN RECS



Number of artists the participant claims she already knows

Why higher in the full graph condition?

– Link to friends reminds the user how she knows the artist

– "If all my friends know this artist, I should too"
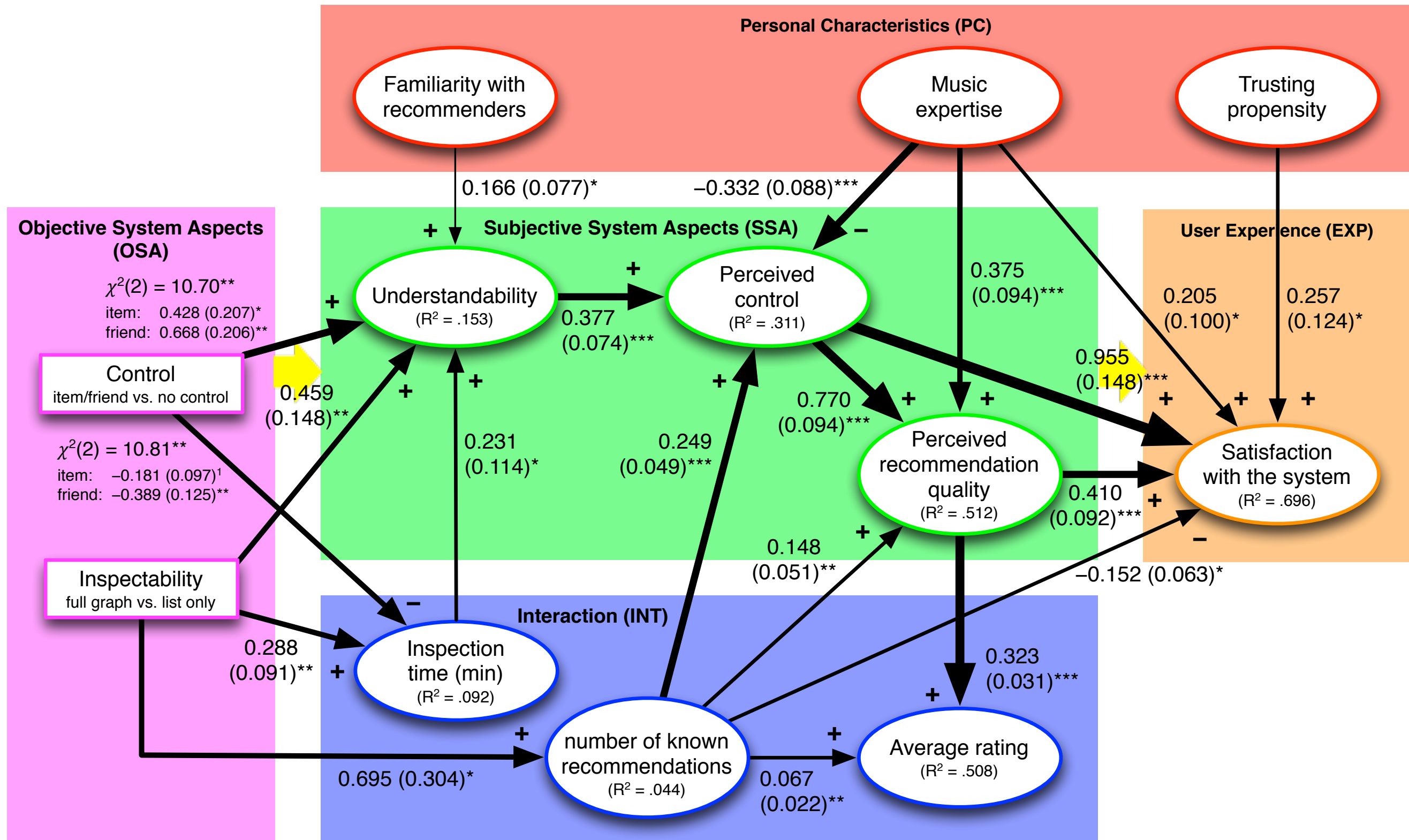
# BEHAVIOR

**RATINGS**



Average rating of the 10 recommendations

- – Lower when rating items than when rating friends
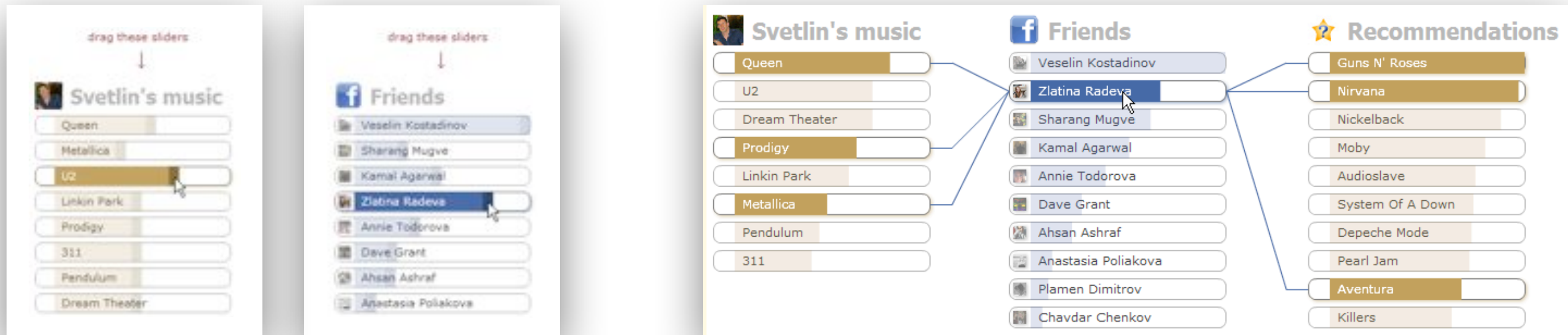- – Slightly higher in full graph condition

# SEM

# CONCLUSION

# CONCLUSION

Inspectability and control work

– Separately

– What about together?

# CONCLUSION

Inspectability and control work

– Separately

– What about together?

# CONCLUSION

Don't dismiss the idea of social recommenders!

– They may have a higher RMSE

– But they can give users control and inspectability

## Inspectability:

– Increases understandability and perceived control

– Improves recognition of known recommendations

## Control:

– Friend control: higher accuracy

– Items control: higher novelty

SOCIAL
RECOMMENDERS

LET YOU
BE A
RECOMMENDATION
DJ

# THANK YOU!

WWW.USABART.NL

BART.K@UCI.EDU

@USABART