Towards a Better Understanding of Negotiation in Group Recommender Systems

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Variable	Conditions		
	No Negotiation	30 sec Negotiation	5 min Negotiation
Satisfaction	4.72 (1.22)	6.89 (1.54)	7.89 (1.12)
Actual Duration	-	25.08 (4.46)	80.27 (33.63)

Table 1. Satisfaction ratings and negotiation times by condition: means, and standard deviations.

Post-test answers about the **process** (1–10, 10 best):

- How important was the option to see your team members' choice: *M* = 5.37, *SD* = 2.71
- How important was the option to change your choice during the discussion process: *M* = 5.57, *SD* = 2.49
- How important was the option to communicate with your team members: *M* = 9.07, *SD* = 1.41.

Post-test open answers for pros and cons of…

…No negotiation condition:

- 18 (8+, 10-) comments on recommendations and 12 (5+, 7-) on negotiation process
- Positive examples: 'simple and fast', 'quick results', 'new [previously unknown] movies', 'no group dynamics, no group pressure'.
- Critical examples: 'no option to contradict', 'no compromise possible', 'problematic if none of the recommendations fit'.

… Short negotiation condition:

- 0 on recommendations and 18 (10+, 8-) on negotiation process
- Positive examples: 'fast decisions', 'short timeframe avoids lengthy discussions', 'possible to find a compromise'
- Critical examples: 'short duration is difficult for shy people who need to warm up', 'not enough time for compromise', 'not suitable for groups of more than three people since some people might talk too much'.

…Long negotiation:

- 3 (0+, 3-) on recommendations and 16 (13+, 3-) on negotiation process
- Positive examples: 'can have discussions', 'can talk about contents as well as reviews', 'no time pressure', and even 'the more time, the better'
- Critical examples: 'five minutes are too long for most decisions', 'too much time', and 'lengthy discussion can still lead to negative outcomes'.

Table 2. Post-Test Answers.

Introduction

Group recommender systems identify items that fit group members' preferences. The final step—the group negotiation for finding consensus on the item to choose—is essential for user satisfaction with the system and its outcome.

We report on preliminary results of our exploratory study on the effect of 3 different negotiation conditions on user satisfaction.

Method

Participants

30 (23 male, 7 female) students, average age of 23.63 years (*SD* = 2.37) with affinity to movies and cinema.

Materials

Recommendation DB: movies actually shown in the movie theatres in the city and at the time of the study that fit to participants. User questionnaires: post-trial questionnaire and post-test questionnaire.

Procedure

Groups of 3 sitting around a table mounting a large screen that showed the group recommendations (i.e., title, poster, description). 3 repetitions for each of the following 3 conditions:

- **No negotiation:** single recommendation, without time for discussion.
- **Short negotiation:** 3 recommendations, 30 seconds to discuss (verbally and non-verbally), vote individually for favourite.
- **Long negotiation:** maximum time increased to 5 minutes, all other settings unchanged.

Design

3 conditions x 3 repetitions within-group design leading to 9 trials.

Results

One-way repeated-measures ANOVA: user satisfaction differs across conditions ($F(2, 58) = 26.05$, $p < .01$, $\eta_p^2 = 0.47$). Paired samples t-tests: significant differences in users' satisfaction between the no negotiation condition and the 2 others (t's(29) < -4.65, p's < .01).

Discussion and Conclusions

We identified a strong need for communication and a **sweet spot** of negotiation time of 60-120 seconds in negotiating movies suggested by a GRS. From the participant's open feedback it became clear that there is a users' need for understanding the **soft facts** in the group such as the current mood and motivation to go to the cinema; aspects which cannot be completely covered by the system. It also corroborates that communication for **consensus finding** can only follow a profound acquisition of information about users' preferences as well as the generation and presentation of recommendations.

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