

A Preliminary Analysis on Self and Peer Evaluation of Personality Models for Recommender Systems

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1 Introduction

The individuals' personality has been used in Recommender Systems to improve the quality of the recommendations. In the case of individual recommender systems, the use of personality has been proposed for addressing the cold-start problem [9, 22, 21, 3, 7], and for adapting the degree of diversity of the provided recommendations to the specific user [20, 24, 25]. The model used in such applications is the Five Factor Model (FFM) [5, 4] (also known as *Big Five* or *OCEAN* model) [8], which identifies five major dimensions of personality (often referred as “factors” or “traits”): Emotional Stability (Emo), Extraversion (Ext), Openness to Experience (Ope), Agreeableness (Agr), and Conscientiousness (Con). Furthermore, considering the context of *Group Recommender Systems* (GRSs), researchers employed group members' personalities to model group dynamics and replicate the group decision-making process [6, 18, 13], or to improve explanations, adapting these to the personality of the user receiving them [15]. In group settings, models of conflict resolution styles are mostly employed, using the Thomas-Killman Instrument (TKI) [10, 11] or the ROCI II model [16, 17]. In this study, we focus on the ROCI II instrument, which defines five conflict resolution styles based on the two dimensions *concern for others* and *concern for self*: Integrating (Int), Obliging (Obl), Dominating (Dom), Avoiding (Avo), and Compromising (Com).

When using personality-based recommender systems, one big challenge concerns the acquisition of such information, in the so-called *elicitation step*. Explicit questionnaires are often time-consuming, while implicit strategies, which try to infer personality from the user interactions with the system, tend to be less accurate. Furthermore, in contexts such as group recommendations, it is important to consider both individuals' self-evaluations of their personalities, and how they are perceived by other group members (peer evaluations). This peer evaluation

can be crucial for modeling group dynamics. In Psychology, previous studies analyzed the relationship between self and peer evaluations via the Five Factor Model (FFM) reporting inconsistent results that often show low correlations [12]. However, observer evaluations have been used to enhance the operational validity of the FFM [14]. In contrast, self-reported measures of the ROCI II have demonstrated lower predictive validity than peer-reported measures due to personal biases [19].

2 User Study and Results

In Barile et al. (2024) [1] we presented a pre-registered mixed-design user study³ (N=29) investigating the relationship between self and peer evaluations for both FFM and ROCI II. The main goal of this research was to provide indications on personality modeling and facilitate the elicitation step. We focus on the following research question: **“What is the relation between self-evaluations of personality (specifically regarding the *FFM* and the *ROCI II* models) and the evaluations performed by another close (in terms of the strength of the relationship) person?”**.⁴ We further analyzed the correlations between the two models (for both self and peer evaluations, and also considering average evaluations).

Our results highlight a good consistency between peer and self-evaluation for the Five Factor Model, with stronger correlations than the one reported in McCrae and Costa (1987) [12]. Based on this result, we suggest using either peer or self-evaluations, depending on which is easier to collect. On the contrary, for the ROCI II model, we found a significant correlation between self and peer evaluations only for the Dominance style. Therefore, we suggest collecting both self and peer evaluations in group recommendation applications, given the importance of self-perception, but also of how group members perceive each other. Furthermore, our exploratory analysis of the relations between the ROCI II and FFM instruments found a clear negative correlation between Agreeableness and Dominance - considering self, peer, and average personality evaluations. The results align with the assumptions presented in previous work, where the Agreeableness trait was used to model the cooperativeness dimension of the TKI [23] (which models the concern for other person’s needs). Furthermore, we found a negative correlation between the Extraversion trait and the Avoiding style. This also aligns with expectations and is coherent with [23] assumptions, where Extraversion was used to model assertiveness (which models the concern for self in conflict situations), as Avoiding is identified with a low level of assertiveness. However, these results do not provide a consistent method for directly obtaining conflict resolution styles from the FFM factors.

³ Note that this is part of a wider focusing on the impact of personality on interpersonal social influence [2]. The time-stamped pre-registration is available at the link: <https://doi.org/10.17605/OSF.IO/4Q38J>

⁴ Note that this corresponds to RQ4 in the pre-registration.

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