PERCEIVER AND TARGET EFFECTS
EVALUATING THE PROFESSIONAL
COMPETENCIES OF OTHERS. DOES IT HAVE AN
IMPACT ON INTER-PROFESSIONAL
COLLABORATION (IPC)?

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1. INTRODUCTION

Although frequently mentioned as having an impact on collaboration, research on interprofessional perceptions in relation with interprofessional collaboration is rather scarce. The focus of the present study is on inter-professional perceptions (IPP), defined for the purpose of this study as a particular type of interpersonal perceptions (Kenny, 1994). While interpersonal perceptions - as used in team research - refer to members’ beliefs and attitudes about and toward other team members, we have adapted this definition for inter-professional perceptions as follows: a set of beliefs and attitudes of an individual belonging to a certain professional category (e.g. nurse) about and toward individuals from other professions (psychologists). Specifically, we analyze the impact of inter-professional perceptions on inter-professional collaboration in community mental health centers, measured as a percentage of the actual time spent daily in inter-professional collaboration. Moreover, we model this analysis as an examination of social relations among four professional categories: psychiatrists, psychologists, nurses and social workers. Our primary goal in the present study is to examine how inter-professional perceptions related to a set of nine competencies influence IPC. In order to do so, we make use of the social relations model (SRM), which proposes that three independent processes vary across dyads and within groups: assimilation, consensus, and unique relations [1]. We continue to build on the introduction of the SRM theoretical and methodological framework into team research by [1], while adapting and expanding it for inter-professional research.

1.1. The measurement approach

The social relations model (SRM) has been developed as a conceptual and statistical basis for understanding group interaction and perceptions (Kenny, 1994) and represents one of the few models designed to process multi-perspective data collected through round-robin methods. Although the round robin designs are the preferred method for eliciting inter-personal perceptions [2], they have had limited use in the analysis of inter-professional relations. The round robin method requires that each member of a group/team (perceiver) rates each of the others members of a group/team (target). When dealing with inter-professional perceptions, due to the multiple views collected, the integration of the data in a meaningful way can prove to be difficult. The SRM provides a simplified framework to understand multiple relations. The basic assumption of the model is that the variability of the observed data is composed out of the mean score plus perceiver variability (assimilation), target variability (consensus), relationship variability and error.

1.2. Hypotheses

While inter-professional perceptions (IPP) are likely to have an impact on actual collaboration in mental health care teams, the investigation of these - most probably interconnected - concepts in functional teams has not yet been investigated. Nevertheless, professional stereotypes have been analyzed in educational contexts (e.g. medical and nursing students) and have been
proven to negatively influence the openness to collaborate [3–5]. This study, therefore, draws on inter-professional collaboration (IPC) research as well as on the social relations model in order to better understand how social relations between different professional categories impact IPC in an ecologic setting.

By definition, IPC requires different professional competencies from different professional categories in order to fulfill complex tasks for each single professional are not enough. A large volume of research has concentrated on showing how the role clarity/lack of clarity impact collaboration [6–8]. Based on this knowledge, we predict that a higher level of consensus and a lower level of assimilation of more professional competence, academic ability and practical skills would lead to higher levels of IPC.

Hypothesis 1a: Levels of within group assimilation for professional competence, academic ability and practical skills will be negatively correlated with collaboration behaviors

Hypothesis 1b: Levels of within group consensus for professional competence, academic ability and practical skills will be positively correlated with collaboration behaviors

A recent study shows that low leadership clarity is also associated with relatively unclear objectives, low levels of participation, low emphasis on excellence in work, and low support for innovation in healthcare teams [9]. The authors also argue that conflict over the leadership role is negatively associated with team innovation. Other studies show that when decision-making is shared within teams and there is a high level of interaction among team members a cross-fertilization of perspectives takes places, which can positively impact creativity and innovation. Based on the existence of positive benefits on team level following participation to leadership and decision making we argue that higher levels of assimilation means is equivalent with perceptions of a more horizontal power structure within teams and will lead to higher levels of collaboration. Based on the leadership clarity body of evidence we argue that high levels of consensus concerning leadership and decision making will have a positive impact on collaboration.

Hypothesis 2a: Levels of within group assimilation for leadership, confidence and decision-making will be positively correlated with collaboration behaviors

Hypothesis 2b: Levels of within group consensus for leadership, confidence and decision-making will be positively correlated with collaboration behaviors

For interpersonal skills, team working skills and the ability to work independently, we argue that both perceived similarity and consensus will lead to higher levels of collaboration.

Hypothesis 3a: Levels of within group assimilation for interpersonal skills, being a team player, being an independent worker, will be positively correlated with collaboration behaviors

Hypothesis 3c: Levels of within group consensus for interpersonal skills, being a team player, being an independent worker will be positively correlated with collaboration behaviors

Finally, we argue that assimilation and consensus are negatively associated for professional competence, academic ability and practical skills, competencies areas which based on professional separation should be different, and positively associated for the remaining six investigated competencies.

Hypothesis 4a: Levels of within group assimilation for professional competence, academic ability and practical skills will be negatively correlated with consensus for the same variables.

Hypothesis 4b: Levels of within group assimilation interpersonal skills, being a team player, being an independent worker, leadership, confidence and decision-making will be positively correlated with consensus for the same variables.

2. METHODS

The pilot study, which aimed to gain some insight into the dynamics of inter-professional collaboration in mental health care community services, was conducted in the period 14-22.01.2010. Four professional categories working in community mental health services were targeted: psychiatrists, psychologists, nurses and social workers.

2.1. Participants

A total of 40 professionals from 18 CSM’s (Alba Iulia, Arad, Bistrita, Bucharest, Campulung Moldovenesc, Cluj Napoca, Iaşi, Resita, Roman, Satu Mare, Sibiu, Siret, Slatina, Targu Mures, Timișoara, Tulea, and Turda) responded to the questionnaire. Among them, 35 per cent were psychiatrists, 30 per cent psychologists, 20 per cent nurses and 15 per cent social workers. The average age of participants was 39 years (SD = 9.63), with an average of years working in the workplace of 9.9 years (SD = 8.7) and a balanced gender distribution (47.5 per cent male and 52.5 per cent female). For the social relation model, due to the constraints related to data analysis requiring equal number of members in each group (2) (de Vries, 2010) participants from each group had to be reduced to the number of respondents from the least represented group (in this case the social workers group). A number of 24 participants have, therefore, been included in the SRM analysis (6 X 4 professions) which is consistent with the minimum required for the SRM analysis to be valid (2X4 groups) [10]. The mean age of the sub-sample was of 37.20 years (SD =9.99).

2.2. Procedure

An electronic questionnaire was developed to assess perceptions about the professional competencies of the
four categories of professionals in nine areas: interpersonal skills, professional competence, leadership, academic ability, being a team player, being an independent worker, confidence, decision-making and practical skills. Demographic data, information about the team size, the organization and coordination of the teams, the support for teamwork available at organizational level, and the frequency and the average duration of team meetings have also been collected through the questionnaire. An email including a short presentation of the research project and a link to the online questionnaire was sent to Community Mental Health Centers and responses were automatically centralized in an Excel file, by using the Google drive application.

2.3. Instruments

Inter-professional stereotypes scale

In order to measure the inter-professional perceptions of multiple professional groups, a nine item round-robin scale, developed by Barnes (2000) and adapted by Hean et al. (2006), was used. Four professional categories were included in the study (psychiatrists, psychologists, social workers and nurses), and each respondent had to evaluate his own and the other three professions on the following competencies: leadership, interpersonal skills, professional competence, academic ability, being a team player, being an independent worker, confidence, decision-making and practical skills. For each competency respondents (the perceiver) had to indicate on a 5 point Likert scale, how high/low was the competency of each of the four professional categories investigated, including his own (the target). Therefore, in the end, for each perceiver we had four different data sets (one for each target). Hean et al. (2006) report that the instrument was extensively piloted, and that following the calculation of the test–retest reliability of each item using Pearson's R, items not reliable over time at a 5% level of significance have been excluded.

Inter-professional collaboration (IPC) is operationalized, for the purpose of this study, as the actual working time spent in inter-professional collaboration and was measured by the self-reported actual percentage of the daily time spent in collaboration (0 to 100%).

2.4. Data analysis

For the descriptive analysis (means and SDs), for calculating Pearson Correlation Coefficients, for testing mean differences with ANOVA and for testing the reliability and validity of instruments we have used SPSS 20.0. For the social relation model based analysis Triple R package for the statistic software R was used. Triple R analyzes multivariate Round-Robin data using a Social Relations Model (SRM) approach [2,11]. TripleR can be used for analyzing data based on a single, or on multiple Round-Robin groups [12]. One of the advantages of using it instead of WIN-SOREMO (the classic software for SRM) is that it allows allows for missing values. The estimation of the SRM parameters is based on formulas provided by Kenny (1994; p. 236-244). For tests of significance, Triple R computes standard errors by using formulas published by Bond and Lashley (1996) for the case of a univariate SRM analysis.

3. RESULTS

Target, perceiver and relationship effects have been calculated by using the TripleR software. The variance partitioning results for professional competencies inter-professional ratings are presented in Table 1. As it can be observed, significant perceiver variance was obtained for seven out of the nine competencies evaluated. Only for “academic ability” and “being a team player” the perceiver effect was not found to be significant. However, the perceiver effects for “being an independent worker” were highly significant. The ability to work independently was the only category for which a significant target variance was obtained while significant relationship variance emerged for all of nine competencies evaluated.

In order to better understand the professional level perspectives, a one-way ANOVA was used to test differences of Perceiver Effect (PE) and Target Effects (TE) for the nine professional abilities evaluated among professional categories (psychiatrist, psychologist, nurse, social worker). Target effects for leadership ($F (3, 23) = 6.26, p = .004$), teamwork ($F (3, 23) = 7.29$, $p = .002$), decision making ($F (3, 23) = 3.20, p = .045$), and the ability to work independently ($F (3, 23) = 3.75, p = .027$) differed significantly across professional categories. Nevertheless, the perceiver effect was found to be significantly different only for leadership abilities, $F (3, 23) = 5.18, p = .008$.

Subsequent pairwise comparisons (with the Bonferroni correction) revealed differences in target variability of leadership abilities, which were found to be significantly lower for nurses when compared to psychiatrists (mean difference = 496.66; 95% CI = 88.58, 904.74; $p < .05$), psychologists (mean difference = 458.33; 95% CI = 50.25, 866.41; $p < .05$) and social workers (mean difference = 518.33; 95% CI = -926.41, 110.25; $p < .05$). Target effects were found to be higher also when psychiatrists were compared with nurses with respect to decision making abilities (mean difference = 405.00; 95% CI = 9.59, 800.40; $p < .05$) and the later were compared with the social workers concerning the perceived ability to work independently (mean difference = 659.16; 95% CI = 1306.64, 11.68; $p < .05$). When looking at teamwork abilities, for psychiatrists we have found lower target effects than for psychologists (mean difference = 646.00; 95% CI = 1165.79, 126.20; $p < .05$), nurses (mean difference = 741.66; 95% CI = 1261.46, 221.87; $p < .05$) and even social workers (mean difference = 623.33; 95% CI = 1143.12, 103.54; $p < .05$). The only perceiver effect found to be significant when comparing among the four different
disciplines, was for leadership abilities where nurses had a higher variability than the social workers (mean difference = 841.33; 95% CI = 186.22, 1496.44; p < .05).

As it can be observed in Table 2, hypotheses 1a and 1b have not been confirmed, the levels of within group assimilation for professional academic ability and practical skills being positively associated with collaboration behaviors while levels of within group consensus for academic ability and practical skills being negatively associated with collaboration. While these results are not statistically significant, the associations observed are opposite to those hypothesized.

The only statistically significant results partially support hypothesis 2a, levels of within group assimilation for leadership and confidence (but not for decision-making) have been found to correlate positively with collaboration behaviors. Levels of within group consensus for leadership and confidence (H2b) hypothesized to be positively correlated with collaboration behaviors was not supported and although not significant, the relationship was found to also (as for H1a and H1b) be opposite than expected (negative correlation). For decision making the direction of the association, though not statistically significant, was confirmed.

Also not statistically significant, but in concordance with the predicted the directions of the associations were the results for H3a and, partially, for H3b, levels of within group assimilation for interpersonal skills, being a team player and being an independent worker being positively correlated with collaboration behaviors and levels of within group consensus for being a team player, being an independent worker being positively correlated with collaboration behaviors.

Finally, our results partially confirm H4a, levels of within group assimilation for professional academic ability being statistically significantly negatively correlated with consensus for academic ability. For H4b, a non-significant positive association was found for levels of within group assimilation for leadership ability and practical skills being positively associated with collaboration behaviors while levels of within group consensus for academic ability and practical skills being negatively associated with collaboration.
assimilation interpersonal skills and being a team player. The remaining variables (being an independent worker, leadership, confidence and decision-making) have been found to negatively correlate with consensus for the same variables.

4. DISCUSSION

Kenny’s (1994) model of interpersonal perception proved to be a valuable means of understanding inter-professional perceptions regarding nine different professional competencies: interpersonal skills, professional competence, leadership, academic ability, being a team player, being an independent worker, confidence, decision-making and practical skills. SRM analysis posits that variances in perceptions of competencies are consistently due to three sources of variance: perceiver, target, and relationship effects. Therefore, the model enabled us to identify, by analyzing target effects (TE), that the four professional categories investigates reached consensus (significant TE) only for the ability to work independently, for the remaining eight competencies the four different professional categories showing disagreement. The perceiver effects variances were significant for seven out of the nine variables (not for academic ability and teamwork), showing a low level of differentiation between targets by single perceivers. Finally and importantly, we found significant SRM relationship effects for all nine competencies. These reflect unique liaisons (alliances) among the four analyzed professional categories.

Looking at professional differences in TE variance, we have discovered that for leadership abilities, these were found to be significantly lower for nurses, psychologist and social workers by comparison with the psychiatrists. Target effects were found to be higher also when psychiatrists were compared with nurses with respect to decision making abilities and the later were compared with the social workers concerning the perceived ability to work independently. Nevertheless, when looking at teamwork abilities, for psychiatrists we have found lower target effects than for psychologists, nurses and even social workers. These results show the existence of stereotypes professional profiles in the same time with disagreement concerning these profiles. Following the hypothesis testing phase, only two positive significant associations have been found between the competencies investigated and IPC, namely confidence and leadership. This significant result suggest that the more the four categories of professionals are perceived to have similar confidence levels and leadership abilities, the higher is the actual time spent in inter-professional collaboration. Two negative significant correlations have been also found between assimilation and consensus for academic ability and decision making. This result suggests that the higher is the perceived level of similarity between the four investigated professions regarding their academic ability and decision making competencies, the lower is the consensus.

We are also aware of some of the limits of our research. As other authors have already suggested, the interpretation of the target and perceiver variation is not always straightforward [13-15]. We have also faced such difficulties as well when trying to understand negative correlations established between target effects and collaboration. One of the possible explanation would consist in the influence of the data collection instrument used, a recent study in personality research highlighting the possibility that the use of short adjective scales results in higher perceiver and relationship variance when compared with other types of questionnaires [10]. As we fall in the above mentioned category of measurement, we think that further research should explore this potential bias by using different measurement approaches and by comparing the results obtained.

5. CONCLUSION

The perceived similarity of leadership abilities seems to be the most important factor associated with increased inter-professional collaboration in mental health care teams. This result is consistent with the vast body of nursing research claiming for higher professional status of nurses in the health care system and for expanded leadership roles inside the therapeutic team [16–18]. Nevertheless, nurses are not the only professionals that seem to need a more horizontal leadership structure. Psychologists and
social workers share this opinion, as reflected by our ANOVA (and post-hoc) analysis. This pilot study also aimed to test the applicability of Social Relations Model to inter-professional research. While a new perspective can be obtained by using this model, there are still methodological issues that need to be clarified before generalizing the use of this model.

References

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