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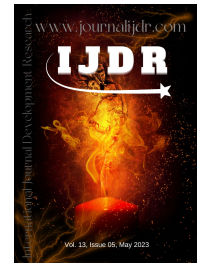
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RESEARCH ARTICLE

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CONGRUENCE, PERSONALITY AND CENTRALITY IN SMALL ORGANIZATION SOCIAL NETWORKS

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ABSTRACT

Objective: To analyze the associations between congruence, personality and centrality in two intra-organizational networks: search for support and selection of professional teams. **Originality:** Investigate how person-environment adaptation works in work groups using social networks. **Method:** 61 professionals linked to a tertiary sector organization participated. The Vocational Interest Scale (VIS) and the Occupational Classification Inventory Revised (OCI-R) were used to estimate congruence, and the Next Big Five Inventory (BFI-2) was used to measure personality, as well as centrality measures using the Social Networks Analysis. **Results:** Congruence was positively associated with Out Closeness Centrality (OCC) for the two investigated networks. Only in the support network were found negative associations between Agreeableness and Out Closeness Centrality (OCC) and also between Neuroticism and In Degree Centrality (IDC) and In Closeness Centrality (ICC). Limitations and implications are at the end of the study.

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INTRODUCTION

Studies involving personal characteristics and Social Network Analysis (SNA) have been the subject of research in recent years (Bols et al., 2017; Bringmann et al., 2019; Constantini et al., 2019; Costello & Srivastava, 2021; Ramos et al., 2019). The intraorganizational network is composed of actors who occupy different positions and interact continuously (Klein et al., 2004). When they need social and affective support, individuals select similar co-workers who are more friendly. However, if the work demands are related to the execution of projects, the choice falls on more competent colleagues (Mickael & David, 2014). Although the two networks are equivalent in terms of importance for the dynamics in the work environment, in highly competitive organizations, technical-professional networks, whose focus is on task performance, may be more important when compared to affinity, which focus on building and maintaining bonds of friendship and affective bonds (Laakasuo et al., 2020). Evidence in the literature highlights that adaptation to the work environment and personality characteristics can be significantly associated with the position occupied in the organizational network (Morelli et al., 2017; Rocconi et al., 2020). A study by Ismail et al., (2018) concluded that industry workers with high scores in agreeableness and neuroticism had a higher incidence

of counterproductive behaviors. However, Ferreira and Nascimento (2016) found a lower incidence of undesirable behaviors in workers with high scores in agreeableness and low scores in neuroticism. These results raise doubts about the relationships between the person-environment fit (hereinafter congruence) and personal traits (personality) in understanding the position that professionals occupy in their job networks. Therefore, the main objective of this study was to identify whether congruence and personality characteristics would be associated with the centrality of professionals in intraorganizational social networks. It was based on the assumption that the dynamics of interactions between individuals in the intraorganizational network can occur due to their personal traits, and the person-environment fit, which in the literature could be labeled as congruence (Brito, & Magalhães, 2017; Holland, 1997). The study also intended to investigate two intraorganizational networks concomitantly: The Support Search Network (SSN) and the Team Selection Network (TSN). SSN is structured around the identification of professionals who demonstrate willingness to cooperate and teach (seeking support). TSN, in turn, is organized around individual capabilities and common professional interests, in which selection favors the performance of tasks and the achievement of career goals (search for competence). It is expected that the study will add value to the existing literature on person-environment adaptation and generate inputs for the development of tools and interventions in the field of

people management with a view to improving micro-organizational processes.

Person-environment adaptation: the RIASEC model: According to Holland (1997), the person-environment fit referred to as congruence represents the compatibility between professional interests and occupational demands and opportunities in the work environment (Vianen, 2018). Congruence is positively associated with job satisfaction (Daryanto, 2014), performance (Nye *et al.*, 2016), and learning at work (Sun *et al.*, 2020).



Note. Own elaboration based on Holland (1997).

Figure 1. Representation of the hexagonal RIASEC model

The vocational types called Realistic, Investigative, Artistic, Social, Enterprising and Conventional make up the RIASEC hexagonal model, represented in Figure 1. In his theory of vocational personalities and work environments Holland (1997) postulates that there is attraction between the individual and the environment, in which the professional develops activities based on their interests and capabilities and seeks environments in which people with similar profiles are working.

Table 1. Description of the dimensions of the RIASEC Model

Dimensions	Acronym	Activities
Realist	R	Manual activities, involving the handling of objects, machines and things
Investigative	I	Analytical and scientific activities, with emphasis on explaining and predicting events
Artistic	A	Activities linked to creative and non-systematic expression, focused on the development of products and services
Social	S	Activities aimed at supporting, teaching and developing other individuals
Enterprising	E	Persuasive, group activities with a corporate, financial, and leadership focus
Conventional	C	Management activities, detailing and organization of data and processes

Note: elaborated based on Holland (1997)

RIASEC is an abbreviation of the dimensions corresponding to six types of vocational interests for specific types of activities: Realistic, Investigative, Artistic, Social, Enterprising and Conventional. Table 1 summarizes the dimensions of RIASEC and the main characteristics of its activities. The person-environment adjustment can occur in a supplementary or complementary way (Rocconi *et al.*, 2020). In the first case, adjustment occurs when individuals adapt to the work environment based on similar and dominant characteristics that facilitate communication and increase task efficiency. It occurs in a complementary way when the individual brings with them new resources in order to meet the demands of work (Rounds, & Su, 2014). Evidence suggests that both supplementation and complementation occur simultaneously. For example, in the

understanding of Lee *et al.* (2010), professionals first seek to stand out before supervisors, differentiating themselves from others to obtain favorable positions in the intraorganizational network.

Congruence, personality and centrality in organizational networks: Congruence is a psychological state resulting from the quality of the interest-work demand interaction (Holland, 1997) that takes place in the organizational environment in which other individuals interact concomitantly. This interaction generates a complex system that can be represented by intraorganizational social networks. Congruence and personality can be important in understanding the positions occupied by individuals in intraorganizational networks (Kim *et al.*, 2019; Leichner *et al.*, 2022). Interests provide data about the individual's willingness to perform or prevent/block activities (Holland, 1997). The environment informs demands that the organization presents as a condition for maintaining the person-organization fit (Brito, & Magalhães, 2017). Personality informs the behavioral tendencies that the individual consistently demonstrates at work (Wille, & De Fruyt, 2014). For example, Emery *et al.*, (2013) brought evidence that individuals with high extroversion, openness and conscientiousness occupied central positions and were described as task-oriented leaders, while those with high scores on the agreeableness dimension were referred to as task-oriented leaders for activities with high interpersonal demands.

Table 2. Definition of centrality and its main measures

Network Variables	Definitions
Centrality	Set of measures designed to determine which actor occupies a central position in a network
In Degree Centrality (IDC)	In-degree centrality refers to the number of times an individual is mentioned in a given network.
Out Degree Centrality (ODC)	Out-degree centrality refers to the number of Mentions/links that a person makes with others in response to a question
In Closeness Centrality (ICC)	In-closeness is the person that others can reach in the fewest steps
Out Closeness Centrality (OCC)	Out-closeness is the person who can reach others in the least number of steps
Intermediation Centrality (IntC)	Betweenness represents the frequency with which an individual is the shortest path connecting all others in the network.

The centrality in a social network can be represented in several ways. Each indicates a way in which an individual acquires importance in the intraorganizational network (Morelli *et al.*, 2017). The degree represents the number of interactions that reach a certain actor in the network (input) or leave that actor towards the others (output). Proximity represents the degree of accessibility of the actor in relation to peers (input), or the availability of individuals in relation to that actor (output). Finally, Intermediation represents the number of possibilities in which the actor is the best option to connect two other individuals in the network (Valente, 2010). Table 2 summarizes the main definitions of Centrality according to Valente (2010) and their respective abbreviations that will be used from now on. It is presumable that personality helps to explain the positions occupied by professionals in work networks. Personal characteristics are associated with the creation of affinity bonds, increasing cohesion and reducing the costs of maintaining these relationships (Centellegher *et al.*, 2017). Thus, it may be more linked to the search for support involving processes in the organization. When they need help, professionals seeking support select those colleagues with characteristics similar to their own (Laakasuo *et al.*, 2020). Therefore, the first hypothesis was formulated:

H1: The personality dimensions are associated with the Centralities of Degree (IDC and ODC), Proximity (ICC and OCC) and Intermediation (IntC) of professionals in the support-seeking network (SSN).

Personality facilitates connections by identifying similar attributes that make interaction more likely. Congruence, in turn, requires

adequacy between activities of interest to the professional in relation to the tasks demanded by the organization. Evidence suggests that congruence is reflected in greater performance, commitment, organizational citizenship and permanence in the organization (Stone *et al.*, 2019). No evidence was found suggesting that congruence would correspond to favorable positions in the professional network in situations more focused on seeking support (SSN). However, the data indicate that congruence is essential in situations where it is necessary to form groups focused on performance and achievement (Ertl *et al.*, 2022; Hussain *et al.*, 2021; Nye *et al.*, 2016). For these cases, congruence would imply greater attractiveness of the professional to participate in teams, and thus could be associated with favorable positions in the intraorganizational network. In short, congruence would facilitate access to resources in the intraorganizational network, which corresponds to the sum of resources available as a result of the interaction between the actors. Congruent professionals would tend to be central since they have more access to people and information in the organization. Congruence informs that the activities developed are necessary and correspond to the expected performance (Holland, 1997; Nye *et al.*, 2016). The individual would have access to opportunities that result in better interactions with others in the team and better positions in the network. Based on these assumptions, the second hypothesis was formulated:

H2: Congruence is associated with the Centralities of Degree (ICC and OCC), Proximity (ICC and OCC) and Intermediation (IntC) of professionals in the team selection network (TSN).

METHODS

Participants: The sample consisted of 61 participants (15 men and 46 women) who were members of a private sector organization and service provider in Salvador/BA with representations in other regions of the state: Feira de Santana (n=2), North of state (n=2), West of the state (n=2), South Region (n=5), Center of the state (n=5), Southwest (n=11) and Salvador (n=34). The inclusion criteria were: a) minimum age of 18 years; and b) participation in a work team. In terms of educational level: 10 had incomplete higher education, 24 completed higher education, and 27 had postgraduate degrees. Regarding positions, nine participants were interns, 40 participants were permanent employees, and 12 held management positions. Time in the company corresponded to a minimum of 0.5 years, with a maximum of 26 years (M= 6.8 years; SD= 6 years).

Characterization of the organization: To conduct studies with social networks in work contexts, it is necessary to select an organization in which professionals interact on an ongoing basis to carry out their activities and achieve broader goals. The co-participating organization belongs to the third sector, namely the corporate sector, and is classified as a small company. Its focus is on innovation for the industry and its activities involve training and development of professionals, opening companies, training entrepreneurs, recruitment and selection. Such tasks characterize a work environment favorable to the Social and Enterprising types of the RIASEC model. Its structure is less hierarchical, but somewhat bureaucratic with power distributed among interns, permanent staff and managers, so that interns interact more with permanent staff, and only the latter have direct access to their respective managers. The organization adopts a centralization model, in which the headquarters located in the capital hold periodic meetings, delegate activities and monitor the performance of branches located in surrounding municipalities. All activities are carried out by composing small teams to carry out projects.

Ethical procedures: In order to demonstrate the adequacy of the proposal following the normative criteria for conducting research with human beings, the research project was submitted and approved by the coordination of the graduate program in Psychology and the research ethics committee (CEP) responsible for evaluating and approving research in Psychology. CAAE: 38443120.9.0000.5686.

Instruments

The next big five inventory (bfi-2) (translated to portuguese): It is based on the Big Five Personality Factors model (Soto, & John, 2016). It has a total of 76 items divided into five dimensions: extroversion ($\alpha = 0.87$), agreeableness ($\alpha = 0.82$), conscientiousness ($\alpha = 0.84$), neuroticism ($\alpha = 0.86$) and openness ($\alpha = 0.82$). Data are obtained using the Likert scale ranging from 1 (it has everything to do with me) to 5 (it has nothing to do with me). The article with the psychometric parameters of the BFI-2 in Brazil is in preparation.

Socioeconomic and sociometric questionnaire: A questionnaire prepared by the researcher to collect socioeconomic data relevant to interpersonal relationships in the work environment was used. Two questions were added: 1: If you need any support or information, indicate colleagues that you would certainly ask for help because they are specialists or very well informed. 2: you are one of the people responsible for forming a team and you need to select among your colleagues those who work most in tune with you and would add the most value to the group. Identify the people you would select to make up this team. The aforementioned questions were essential for the study, as they enable the composition of intraorganizational social networks.

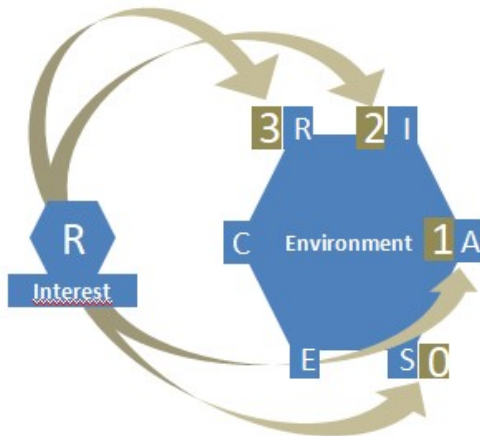
Vocational Interest SCALE (VIS): The Vocational Interests Scale - VIS (Teixeira *et al.*, 2008) - developed in accordance with the six dimensions of the RIASEC model was used. The version used in this study has 48 items, eight for each dimension. The scale demands that respondents inform how interesting the described activities are, regardless of the skills required to perform them. Participants marked their responses according to a Likert scale ranging from 1 (dislike very much) to 5 (like very much). The psychometric properties are: internal consistency (Cronbach's alpha): R (.64), I (.77), A (.81), S (.82), E (.68) and C (.74). principal axis factoring (PAF), with Oblimin rotation, demonstrated adequacy of the items to the six-factor model, explaining 49.20% of the total variance.

Occupational classification inventory Revised (OCI-R): A revised version of the Occupational Classification Inventory by Brito&Magalhães (2017) was used. It has six RIASEC dimensions and a total of 54 items, nine per dimension. The statement of the items asks the respondent to inform the frequency with which the described activities are carried out by a person in their occupation. Participants mark their responses on a Likert scale ranging from 1 (Never) to 5 (Always). The psychometric properties are: internal consistency (Cronbach's alpha): R (.85), I (.88), A (.79), S (.86), E (.80) and C (.79). The factors explained a total of 47% of the total variance.

Data collection procedures: The collection took place online using the Google questionnaire generator (Google forms). The link with the invitation and the consent form was forwarded to the organization's professionals who, by consenting to participate in the research, had access to the questionnaires. The data collection process lasted two months and took place during the pandemic caused by the SarsCov 2 virus (Covid 19) at a time when the organization migrated its activities to Home Office working.

Data processing procedures: The following procedures were carried out: a) evaluation and cleaning of the database; b) coding of participants (with fictitious names); c) construction of naming matrices d) verification of normality of data distribution referring to personality and congruence dimensions. Psychological measures were inspected using the Kolmogorov-Smirnov and Shapiro-Wilk tests to verify normality assumptions. While personality dimensions did not violate normality assumptions, centrality measures did. Thus, it was necessary to perform non-parametric analyses. After this stage, the following occurred: e) the creation of variables related to the dimensions of the psychological measures; f) generation of networks in dedicated software and estimation of centrality parameters.

Congruence score calculation



Note. Own elaboration based on Holland (1997)

Figure 2. RIASEC hexagonal model and congruence levels for the Realistic dimension

1. The three highest VIS and OCI-R scores are respectively converted into the letters of each dimension of the RIASEC model. For example, in SPSS this is done by tabulating the scores according to the position occupied in the hexagonal model. Being the value 1 for Realistic, 2 for Investigative, 3 for Artistic, 4 for Social, 5 for Enterprising and 6 for Conventional. With these nominal values corresponding to each RIASEC letter, it is possible to proceed to the comparison step.
2. Using Figure 2 as a reference for the Realistic dimension, three new variables were created comparing interests and environments in the previous step. When the pair has the same letter for the interest/environment (identical pairs) the assigned value is 3. When the interest/environment are close (e.g., interest R and environment I or C) the congruence value is 2 (adjacent pairs). When the interest/environment are distinct and are far apart (alternate pairs), the assigned congruence value is 1 (e.g., interest R and environment E or A). When the interest/environment are opposites (opposite pairs) the assigned value is 0 (e.g., interest R and environment S).
3. The C-index algorithm (Brito&Magalhães, 2017) was used, which has the following formula: $C = 3(x1) + 2(x2) + 1(x3)$. Where "C" represents the congruence and "x" represents the congruence of each respective interest/environment pair (values obtained in the previous step). The C-index produces a congruence score ranging from 0 (no congruence) to 18 points (maximum congruence).

(cited) and is a relative measure, as it varies depending on the sample size. The maximum degree centrality will correspond to $n-1$, since in this case the possibility of the participant citing himself is excluded. The estimation of closeness centrality in directed networks is divided into in closeness (professional is more accessible to others) and out closeness (professional accesses others more easily). In a didactic way, the algorithm for estimating proximity centrality is $CC_c(i) = \frac{n-1}{\sum_{j=1}^n d(i,j)}$, where $n-1$ represents the number of total participants minus the individual themselves, and $\sum_{j=1}^n d(i,j)$ represents the sum of the shortest paths (smallest number of possible interactions that an actor needs to reach another). In directed networks, it is necessary to apply this algorithm both for incoming interactions (in which the person is mentioned) and for outgoing interactions. Furthermore, the algorithm handles special cases where it is not possible to reach a certain actor by replacing the null value (since the Actor cannot be reached) with the sample size (N), assuming that the interaction with that specific actor would be the equivalent to traversing the entire network (Freeman, 1979). Finally, betweenness centrality (IntC) measures how much an actor mediates, that is, it represents the shortest path for the interaction of two other actors in the network. Its formula is given by $C_B(i) = \sum_{j < k} \frac{P_{jk}(i)}{P_{jk}}$ which, in a simplified way, means that the betweenness centrality of an Actor i (betweenness) is given by the sum of the shortest paths that involve Actor i ($P_{jk}(i)$) divided by the total number of shortest paths of all actors in the network (P_{jk}). These algorithms are then applied in network software such as Ucinet, which was used in the present study so that it was possible to reach the results that will be presented below.

Data analysis procedures: The analyzes carried out were as follows: a) descriptive statistics of the variables; b) *Spearman* correlation to assess the association between the dimensions of personality, congruence and measures of centrality (degree, closeness and intermediation). It is noteworthy that for the interpretation of the scores, the recommendations of Akoglu (2018) were used. c) *Kruskal-Wallis* test to test the differences in the scores of the investigated variables between interns, permanent employees and managers. The software/tools used were: SPSS 23 (Statistical Package for the Social Sciences) for statistical analysis and Ucinet 7.72 for estimating network scores.

RESULTS

Personal traits (personality), Congruence and centrality: Table 3 briefly describes the data obtained in the studied sample. For personal characteristics, it is observed that the minimum scores of extroversion, agreeableness, conscientiousness were high.

Table 3. Descriptive Statistics of Personality Characteristics, Congruence and Centrality Measures

Variables	Minimum	Maximum	Median	Mean	SD
	Personal characteristics				
Ext	2,43	4,86	3,64	3,59	0,49
Agr	2,90	4,71	4,14	4,10	0,35
Csc	3,07	4,93	4,07	4,04	0,45
Neu	1,31	4,00	2,31	2,28	0,54
Opn	2,14	4,43	3,35	3,40	0,53
Cng	2,00	18,00	11,00	11,29	3,79
Support Search Network (SSN)					
IDC	0	23,00	0,01	2,54	3,58
ODC	0	9,00	0,03	2,53	1,76
ICC	0,10	0,38	0,05	0,15	0,07
OCC	0,10	0,15	0,34	0,13	0,01
IntC	0	525,00	0,05	50,16	99,86
Team Selection Network (TSN)					
IDC	0	18,00	0,03	3,28	3,33
ODC	0	9,00	0,05	3,28	2,05
ICC	0,08	0,30	0,84	0,18	0,07
OCC	0,08	0,17	0,62	0,15	0,02
IntC	0	845,00	0,41	89,03	166,2

Note. Ext: Extroversion; Agr: Agreeableness; Csc: Conscientiousness; Neu: Neuroticism; Opn: Openness; Cng: Congruence; IDC: In Degree Centrality; ODC: Out-Degree Centrality; ICC: In Closeness Centrality; OCC: Out Closeness Centrality; IntC: Intermediation Centrality; SD: Standard Deviation.

The same does not apply to the openness and congruence dimensions. The degree centrality can reach the maximum value of interactions corresponding to N-1 actors in the network, which in the case of this study corresponds to 60 interactions, and it is possible to highlight that the degree of entry ranged from 0 (no interaction) to 23 interactions in the SSN and 18 interactions in the TSN. The output degree, however, ranged from 0 (no interaction) to 9 interactions for support seeking (SSN) and team selection networks (TSN). Closeness centrality (CC) is a measure that oscillates between zero and 1 (one) and indicates how close an actor is to the others. To ICC the maximum value was 0.38 for SSN and 0.30 for TSN, corresponding to professionals with 38% and 30% accessibility/availability to other professionals, respectively. For out closeness (OCC), the maximum value corresponded to 0.15 for SSN and 0.17 for TSN. This indicates that the professionals with the most access to the others in the network have only 15% and 17% of access in relation to the other 60 actors that make up these networks.

dimensions, a weak and negative association was found between agreeableness and OCC (Out Closeness Centrality) in the SSN (Rho=-0.28, $p<.028$). The neuroticism dimension showed weak and negative associations with IDC (Rho=-0.31, $p<.018$) and ICC (Rho=-0.34, $p<.007$) only in SSN. No associations were identified between personality dimensions and TSN centrality measures. Analyzing the data referring to Hypothesis 2, it can be seen that in Table 5 the congruence showed weak and positive associations with the OCC measures in the SSN (Rho=0.26, $p<.044$), and weak associations with the OCC in the TSN (Rho=0.31, $p<.016$). Due to the data found in Table 4, it was deemed necessary to explore the variables studied, seeking to identify possible biases that could help in understanding these results. For this, a non-parametric *Kruskal-Wallis* test was conducted, distributing the sample according to the occupational status of the participants as described in the method (intern, employee, manager). Table 5 shows that both for the SSN and the TSN, the measures corresponding to the centrality IDC, ICC and IntC

Table 4. Spearman correlation between Personality, congruence and positions in the Support Seeking Network (SSN) and Team Selection Network (TSN)

Network		Personal characteristics					
		Ext	Agr	Csc	Neu	Opn	Cng
SSN	IDC	-0,06	-0,04	0,08	-0,31*	-0,09	-0,02
	ODC	-0,04	-0,02	-0,06	0,06	-0,11	0,13
	ICC	0,03	0,13	0,18	-0,34*	-0,09	0,03
	OCC	-0,22	-0,28*	-0,01	0,22	-0,17	0,26*
	IntC	0,02	0,09	0,11	-0,23	-0,11	-0,02
TSN	IDC	-0,1	-0,03	0,1	-0,2	-0,13	0,1
	ODC	-0,1	-0,04	0,09	-0,01	-0,1	0,19
	ICC	-0,14	0,03	-0,04	-0,06	-0,16	0,1
	OCC	-0,23	-0,15	0,08	-0,08	-0,06	0,31*
	IntC	-0,01	0,02	0,05	-0,19	-0,1	0,02

Note. Ext: Extroversion; Agr: Agreeableness; Csc: Conscientiousness; Neu: Neuroticism; Opn: Openness; Cng: Congruence; IDC: In Degree Centrality; ODC: Out-Degree Centrality; ICC: In Closeness Centrality; OCC: Out Closeness Centrality; IntC: Intermediation Centrality. * $p < .05$; ** $p < .01$

Table 5. Rank difference test (Kruskal-Wallis) between centrality measures for Trainees, Employees and Managers

Var	Trainees		Effective		Managers		Statistics	
	Support Search Network (SSN)							
	Md(IQR)	Posts	Md(IQR)	Posts	Md(IQR)	Posts	CS	p
IDC	0(0)	9,1	0,03(0,05)	34,1	0,06(0,07)	38,8	17,4	<.001
ODC	0,03(0,02)	23,2	0,04(0,03)	30,4	0,05(0,05)	43,0	5,7	0,057
ICC	0(0)	9,1	0,17(0,84)	34,8	0,23(0,86)	34,4	16,6	<.001
OCC	0,42(0,16)	42,2	0,33(0,07)	28,3	0,38(0,08)	32,9	4,6	0,099
IntC	0(0)	13,0	0,15(0,95)	33,1	2,21(5,07)	40,1	12,8	0,002
Team Selection Network (TSN)								
IDC	0(0)	10,4	0,05(0,08)	33,8	0,07(0,11)	38,5	14,9	0,001
ODC	0,05(0,03)	26,2	0,05(0,05)	30,1	0,07(0,05)	41,1	3,5	0,173
ICC	0(0)	9,4	0,84(0,82)	33,8	0,84(0,02)	39,7	16,5	<.001
OCC	0,63(0,05)	36,8	0,62(0,02)	29,9	0,62(0,01)	30,2	1,1	0,571
IntC	0(0)	11,4	0,95(3,15)	33,1	2,37(7,86)	41,1	14,6	0,001
Personal characteristics								
Ext	3,64(0,71)	33,0	3,64(0,75)	31,4	3,28(1,02)	26,3	0,75	0,687
Agr	4,09(0,52)	32,0	4,11(0,48)	28,2	4,40(0,42)	45	6,1	0,047
Csc	3,85(0,68)	26,1	4,11(0,63)	32,7	3,96(0,59)	27,1	1,4	0,484
Neu	2,31(1,15)	30,2	2,31(0,77)	31,9	2,19(0,94)	26,8	0,56	0,754
Opn	3,71(0,96)	37,5	3,15(0,91)	28,2	3,64(0,71)	39,1	3,95	0,138
Cng	10,00(5,5)	24,0	11,5(4,5)	32,1	11(8,25)	32,9	1,67	0,433

Note. Var = Variables; CS = Chi-Square; Md = median; IQR = interquartile range.

Betweenness centrality (IntC) indicates in how many ways the professional appears as the most economical interaction to connect another professional in the network. The maximum value of possible interactions is estimated by $N*(N-1)$ (where N is the number of participants) which in this sample corresponds to 3660 possibilities. The maximum values obtained correspond to 525 (14%) interactions for SSN and 845 (23%) interactions for TSN. This indicates that professionals who mediate more interactions do so for 14% and 23% of interactions in the respective investigated networks. The results presented in Table 4 demonstrate the association between the variables studied in the two networks, but considering the objectives of this study, only the associations of interest were highlighted. Analyzing the data referring to Hypothesis 1, for the personality

showed significant differences between their scores among interns, staff and managers. These data indicate biases in the distribution of these scores, indicating that for IDC, ICC and IntC, the positions occupied by professionals in networks suggest that they are influenced by occupational status.

DISCUSSION

The results point to relationships between personality, congruence and the positions occupied by professionals in intraorganizational networks. Hypothesis 1 assumed that personality dimensions would be directly associated with measures of centrality when professionals needed support from peers (SSN). The data in Table 5 indicate that

personality can contribute when the professional asks for help in the face of a demand that they cannot resolve on their own. Agreeableness was weakly and negatively associated with CCs in the SSN ($Rho = -0.28$, $p < .028$), indicating that to some extent pleasant professionals have less access to others or need to issue more actions to obtain access. These data do not fully corroborate H1, as they point in the opposite direction, opposing the results of Bradley *et al.*, (2013) who identified that agreeableness would correspond to greater effectiveness in-group composition and performance in-group tasks. The assumption is that the positive effect of agreeableness on the formation of social networks at work is more evident when the interaction is face-to-face, considering the information presented by Blumer and Döring (2012) in which agreeableness was associated with the frequency of digital interactions and reduction of online altruistic behavior. In other words, mediated forms of interaction end up making relationships “colder” and affectively distant. Another possibility of interpreting the result is found in the study carried out by Ismail *et al.* (2018) in which it was concluded that there is a negative effect of agreeableness in highly competitive work environments that are more focused on technical demands. Agreeableness is not directly associated with technical competence (Wille, & De Fruyt, 2014). This means that the evaluation of the person as someone pleasant does not allow inferring that the person is also professionally competent within the organization. Agreeableness in corporate environments could increase distrust, assuming that this personal trait would work as a relational strategy to hide some technical-professional weakness (Costello & Srivastava, 2021). In other words, agreeableness could be hiding some level of incompetence or compensating for low performance. Additionally, in periods of economic instability and risk of unemployment, the nicest professionals can be seen as “sycophants”, in an effort to get closer to the boss and have a favorable image before everyone in the organization, which can be frowned upon among peers and have bad repercussions. The negative association between the neuroticism dimension and IDC ($Rho = -.31$, $p < .018$) and ICC ($Rho = -0.34$, $p < .007$) suggests that more emotionally unstable professionals tend to be seen as professionals little accessible (Constantini *et al.*, 2019). The perception of these traits of neuroticism in someone can make them less required to help others, and consequently lead them to occupy peripheral positions in the network. The negative association between neuroticism and IDC ($Rho = -.31$, $p < .018$) and ICC ($Rho = -0.34$, $p < .011$) suggests less frequent interactions when the professional has high scores in this dimension. Neuroticism reflects the tendency to experience more states involving anxiety, anger, stress, indicating that they are more emotionally unstable professionals and susceptible to stressors at work. There is evidence about the negative effects of neuroticism in the work environment, such as susceptibility to stressors and poor ability to regulate emotion (Ismail *et al.*, 2018).

Hypothesis 2 tested whether congruence would be associated with centrality measures. Congruent professionals remain in the organization, invest in activities and perform better (Nye *et al.*, 2016). In Table 5, congruence showed weak associations with OCC for SSN ($Rho = 0.26$, $p < .044$) and TSN ($Rho = 0.31$, $p < .016$). This result indicates that professionals whose interests are more adapted to occupational demands have a little more transit in the organization, access more relevant individuals and essential resources, consequently minimally increasing their importance (Lee *et al.*, 2010). The person-environment fit studied here also ensured access to colleagues when it is necessary to compose work teams (Deepa *et al.*, 2019; Rocconi *et al.*, 2020). Congruence would work as a backup tool in which the professional would seek to maintain favorable contacts that can be accessed later depending on the work demand. However, this result requires caution in its interpretation, because the associations found were weak. These data indicate that congruence would not be the main explanatory variable of centrality in the SSN and TSN networks. Therefore, the results partially support Hypothesis 2. It is also necessary to consider that for the two networks investigated, personality characteristics and congruence are not associated with ICC, IDC, and IntC. It is possible that for these variables, the professional's occupational status influences the results, so that being an intern, an employee or even a manager has practical effects on the centrality of the professional in the social network

(Boero, 2020; Park *et al.*, 2020). In organizations with a hierarchical structure in terms of occupational status, professionals do not have as much freedom to interact with each other, so that those higher in the hierarchy have greater control of interactions when compared to the others. In these environments, effective professionals need to turn to the manager when they need to make decisions, making those professionals acquire more relevance. With the interns, the opposite would happen since they would be isolated in their units, being able to interact only with their supervisors. Scenarios like the ones described can generate distortions like those observed in the present study.

Limitations: The organization in which the study was conducted operates in the tertiary sector with corporate demands that in RIASEC are classified as Enterprising and Social activities. It is recommended that the study be carried out in other professional environments for a better understanding of the associations between the tested variables. Data were collected during the period of the SarsCov 2 (Covid-19) pandemic, and thus, it was not possible to directly observe the organizational context. In addition, the organization in which the study was conducted underwent changes in its mode of operation that may have influenced the results. It was identified that some of the centrality measures vary according to the position held by the professional (occupational status). It is recommended that, in subsequent studies, occupational status be treated as a key variable in the composition of social networks, given that permanent (stable) professionals establish ties that are different from interns (temporaries) and managers (power holders). And just like the positions, the age of the professionals was not controlled in the study. When it comes to personality development and professional maturity, this variability can occasionally produce possible biases in the results. Holland's congruence (1997) derives from a theory focused on vocational guidance, therefore, it has limits compared to other person-environment fit approaches existing in the literature. The correspondence between interests and occupational demands that is considered as congruence in this study does not take into account whether the professionals have the necessary skills to satisfactorily meet the demands or the social and group aspects.

CONCLUSIONS

The agreeableness and neuroticism dimensions were negatively associated with centrality measures only in the SSN. Although the literature supports evidence between personality and positions in networks, in the present study, the personality dimensions alone offered little useful information. Congruence showed positive associations with OCC for both intraorganizational social networks, although the associations were weak. Considering the scarcity of studies that addressed Holland's congruence and organizational social networks, it is recommended that further studies investigate this interaction in a new sample. Finally, studies involving social networks and psychological constructs are scarce. Thus, investigating congruence in social networks including other variables such as job satisfaction, emotional intelligence and work engagement may help explain the positions that professionals occupy in intraorganizational networks.

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