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Advising Practices in Postgraduate Programs and Doctoral Students' Satisfaction

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Abstract: Academic advising in *Stricto Sensu* Postgraduate Programs is associated with postgraduate student satisfaction. Hence, this research aimed to investigate the relationship between the variables found in the advising process and the levels of doctoral students' satisfaction resulting from these practices. Postgraduate students from different educational institutions and areas of knowledge ($N = 372$) completed remotely/asynchronously the Questionnaire on Good Practices for Academic Advising in Postgraduate Research. Data were analyzed using *path analysis* and the Kruskall-Wallis test. The results showed an association between some characteristics of the advising process (access to advising and level of demand from the advisor) and postgraduate students' satisfaction (regarding the project, the advisor, growth opportunities, and relationships), intermediated the number of hours per month allocated to advising. The conclusion is that advising practices require further studies and discussions that can contribute to the quality of the advisor-student relationship, extending into the training of new researchers and professors.

Keywords: educacional counseling, postgraduated training, professional education

Práticas de Orientação na Pós-Graduação e a Satisfação dos Estudantes de Doutorado

Resumo: A orientação na Pós-Graduação *Stricto Sensu* associa-se à satisfação dos pós-graduandos. Destarte, o objetivo da presente pesquisa foi investigar as relações existentes entre as variáveis do processo de orientação e os níveis de satisfação de estudantes do doutorado com essas práticas. Pós-graduandos de diferentes instituições de ensino e áreas do conhecimento ($N = 372$) preencheram de modo remoto/assíncrono o Questionário de Boas Práticas de Orientação em Pesquisa na Pós-Graduação. Os dados foram analisados por meio da *path analysis* e do teste de Kruskall-Wallis. Os resultados evidenciaram a existência de relações das características de orientação (acessibilidade e nível de exigência do orientador) sobre a satisfação dos pós-graduandos (com o projeto, o orientador, oportunidades de crescimento e as relações), intermediada pelas horas de orientação mensais. Conclui-se que as práticas de orientação carecem de mais estudos e discussões que contribuam para a qualidade da relação orientador-orientando, estendendo-se para a formação de novos pesquisadores e docentes.

Palavras-chave: orientação educacional, pós-graduação, formação profissional

Prácticas de Orientación en el Posgrado y Satisfacción del Estudiante de Doctorado

Resumen: La orientación en el Programa de Posgrado Stricto Sensu está asociada a la satisfacción de los estudiantes. Esta investigación tuvo como objetivo investigar las relaciones entre las variables del proceso de orientación y los niveles de satisfacción de los estudiantes de doctorado con dichas prácticas. Estudiantes de posgrado de diferentes instituciones educativas y áreas de conocimiento ($N = 372$) completaron el Cuestionario de Buenas Prácticas de Orientación de Investigación de Posgrado (forma remota/asincrónica). Los datos se analizaron mediante análisis de ruta y prueba de Kruskall-Wallis. Los resultados mostraron relaciones entre las características de la orientación (accesibilidad y nivel de exigencia del asesor y la satisfacción de los estudiantes (con el proyecto, el asesor, las oportunidades de crecimiento y las relaciones), mediadas por las horas de orientación mensuales. Se concluye que las prácticas de orientación requieren mayores estudios y discusiones que contribuyan a la calidad de la relación asesor-alumno, extendiéndose a la formación de nuevos investigadores y docentes.

Palavras clave: orientación educacional, prosgrado, formación profesional

The challenges involving academic production and didactic, pedagogical, dialogic, and affective resources found in the learning process and in professor training are linked to the work-education relationship which is reflected in the work of advisors in *Stricto Sensu* postgraduate programs. In this sense, the association between affective, professional, theoretical-

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methodological, and institutional aspects and the advisor-student relationship is acknowledged. (Artiles et al., 2023; McAlister et al., 2022; Viana, 2008).

The advisor-student relationship is conceived as the supporting base for Postgraduate programs and these relations have implications in the training of researchers. Academic advising involves a dynamic and reciprocal relationship between the professor and the student, comprising the professional and personal aspects inherent to this relationship. Furthermore, academic advising is not restricted to making a good thesis, but also to turning the advisee into an independent researcher (Ferreira et al., 2009; McAlister et al., 2022).

In this context, it is observed that in Brazil, *Stricto Sensu* Postgraduate Programs accumulate almost the entire volume of national research and aim to provide professional training for high-level researchers as well as quality standards of teaching and research aligned with these objectives. For this purpose, advising activities are seen as essential to the training of new researchers (Ferreira et al., 2009; Freitas & Souza, 2018; Galvão, 2007; Leite Filho & Martins, 2006; Viana & Vieira, 2010).

Despite the relevance of the activities carried out in Postgraduate Programs, we can find reports in the literature about non-compliance with the guidelines and resolutions intended for a smooth running of these courses which include the existence of professors who are unprepared for conducting the advising activity, an excessive number of students per professor and a lack of advisors with time and availability to perform their advising task. In view of this, the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) uses quantitative indicators to assess the students' production in these programs such as the average time to degree, the ratio of students per professor, the percentage of degrees obtained and the dropout rates as some of the evaluation criteria for Postgraduate Programs. (Ferreira et al., 2009; Leite Filho & Martins, 2006).

Academic advising requires interaction between the advisor-professor and his or her advisee, resulting in a process of knowledge construction that comprises the respective academic qualification stages as well as the training of new researchers to ensure the continuity of their line of research (Ferreira et al., 2009; Galvão, 2007; Leite Filho & Martins, 2006; Santos & França, 2022). The appearance of new research groups is linked to an increase in the Brazilian scientific production, which led to the establishment of greater regional homogeneity among research groups aimed at reducing imbalances between areas of knowledge across the country (Ivashita & Vieira, 2017; Nazareno & Herbetta, 2019; Santos & França, 2022).

The advisor-student relationship is made up of stages, the first being the process of choosing the line of research to be followed, since the combination between the high-value of a certain topic and the advisor's intellectual production may lead to an increased demand among the students. The next stage refers to the selection process, that is, when the selection is adequate, there is greater reciprocity in fulfilling the established commitments and greater student commitment to the Postgraduate course. The next stage consists of the conduction of the pedagogical model by each advisor which involves a set of strategies and behaviors essential for the qualitative components of the training process, namely, enthusiasm, active participation, and student satisfaction (Ferreira et al., 2009).

The aspects underlying the advisor-advisee relationship make it possible to identify objective and subjective variables during the advising process. Leite Filho and Martins (2006) pointed out that the advisors value technical characteristics of the students, while advisees emphasize affective and personal elements of advisors. In this way, the activities developed in the advising process such as readings, guided studies, teaching internships, research participation and the process of writing the thesis and/or scientific articles can expand the students' knowledge in their specific area of interest, in addition to enhancing their professional training. The alignment between the advisor and his or her advisee is an essential condition for the quality of the thesis and for the Postgraduate Program itself, considering the production of knowledge as a product of the partnership and effective relationship assumed by both parties (Ferreira et al., 2009; Galvão, 2007; McAlister et al., 2022; Nogueira & Leite, 2014).

In terms of the advisor's characteristics, studies have highlighted aspects such as knowledge and experience in the respective area of research, professionalism, interest, flexibility, patience, communication, creativity, honesty, responsibility, organization, respect for their peers and integration with an international contact network. In terms of the advisees' profile, characteristics such as motivation, objectivity, curiosity, enthusiasm, ambition, respectful conduct, self-discipline, and dedication are expected (Ferreira et al., 2009; Freitas & Souza, 2018; Galvão, 2007; Leite Filho & Martins, 2006; Nogueira & Leite, 2014; Viana & Vieira, 2010).

Furthermore, CAPES recommends some skills for students at doctoral level, namely, being able to write a coherent plan for doctoral research, having sufficient command of the English language to publish articles, showing critical sense regarding their own work and the work of others, being able to formulate problems and results rigorously, being able to carry out a bibliographic survey independently, having the initiative and the ability to discover new related works and compare them to their own approach, showing willingness to participate and take responsibility in research projects with other students and professors (Ferreira et al., 2009; Galvão, 2007). Such skills may be improved in the advising process by combining teaching and research, thus providing conditions for academic and professional qualification (Agbonlahor et al., 2021; Ferreira et al., 2009; Galvão, 2007).

The advisor-advisee relationship brings bilateral benefits - for the advisee, it results in personal, professional, and academic growth, encouragement, guidance, development of critical thinking, independence, and self-confidence. In turn, for the advisor, it provides an increase in personal satisfaction, incentive, the opportunity to stay up to date in terms of techniques and knowledge, an increase in the ability to attract new collaborators for current and future projects, in addition to providing the opportunity to create a legacy for future generations that may follow that research

line. (Barnard & Shultz, 2020; Ferreira et al., 2009; Lopes et al., 2020; McAlister et al., 2022).

Good academic advising consists of combining the advisor's knowledge on the topic, his or her experience as a researcher/advisor and his or her sensitivity regarding the student's educational, psychological, and social needs (Barnard & Shultz, 2020). Freitas and Souza (2018) argue that the objective and subjective variables found in academic advising practices affect the decision and definition of the research topic, in addition to impacting the pace of the work to be developed and the way it is organized. Such decisions imply the establishment of an interactional process experienced between students and advisors that results in the construction of a final product derived from the developments emerged during the postgraduate program.

Among the numerous challenges faced by the advisor during the academic advising process, Viana (2008) highlights the work overload required to meet the demands of their educational institution and the fast pace to carry out their teaching duties which end up being reflected, positively or negatively, in their relationship with the student as well as in the quality of their production. Another challenge refers to the concept of the advising process which can be identified by two complementary perspectives: the first as a source of help and support and the second as a partnership work and a tool that promotes the advisee's autonomy (Barnard & Shultz, 2020; Viana, 2008).

Regarding the students, Viana (2008) identifies that the main challenge in the process of developing the academic production focuses on the advisor-advisee relationship. In this sense, Freitas and Souza (2018) point out the need to learn about the objective conditions of the students in light of the different activities and demands required by postgraduate programs, in addition to identifying the theoretical and methodological domains regarding research practice and knowledge production.

That said, the advisor-advisee relationship is one of the key points in postgraduate programs. Considering the complexity that characterizes the academic advising process, it is noted that this activity is essential for the production of scientific knowledge and for the training of researchers, and it comprises both subjective variables (level of demand from the advisor and form of access to academic advising by postgraduate students) and objective variables (number of hours per month allocated to student advising) which may bring benefits and, at the same time, create tensions and conflicts that impact the productivity and quality of academic research (Diogo et al., 2022; Ferreira et al., 2009; Freitas & Souza, 2018; Löfström & Pyhältö, 2020; Lopes et al., 2020). In view of the above, the objective of this research was to investigate the relationship between the variables found in the advising process and the levels of satisfaction of doctoral students with these practices. It is conjectured that this analysis, carried out using samples formed by doctoral students from different Postgraduate Programs, may be a way to better understand the prerogatives and characteristics of advisors and advisees, thus being relevant to make us reflect on the training of future researchers and university professors given that there are still few national studies focusing on the advising process in Postgraduate Programs (Ferreira et al., 2009; Freitas & Souza, 2018; Lopes et al., 2020).

Method

Participants

This is a non-randomized sample made up of 372 Doctoral students (M_{age} = 32.84 years; SD = 7.06) coming from courses in nine different areas of knowledge (Agricultural Sciences, Biological Sciences, Health Sciences, Exact and Earth Sciences, Human Sciences, Applied Social Sciences, types of Engineering, Interdisciplinary Programs and Linguistics, Literature and Arts). Most students pointed out that they receive some type of funding (scholarship) to pursue a Doctoral degree (n = 281; 75.5%); are enrolled in a public educational institution (n = 298; 80.1%); and the CAPES grade obtained by the most recommended postgraduate program was 5 (n = 130; 34.9%). Regarding sociodemographic characteristics, the majority of the sample was made up of women (n = 257; 69.1%); who were married/in a stable union (n = 148; 39.8%); without children (n = 257; 83.6%); self-declared as white (n = 269; 72.3%); currently living in the Southeast region of Brazil (n = 217; 58.3%); and who declared that they did not have to move to attend postgraduate school (n = 215; 57.8%).

Instrument

Questionnaire on Good Practices for Academic Advising in Postgraduate Research. Developed for this research, the questionnaire evaluates variables associated with the advising process in doctoral courses. The instrument has 13 items that focus on the advisor-advisee relationship in the advising practice – form of access to academic advising and level of demand from the advisor, which are characterized as subjective advising variables, and the number of hours per month allocated to student advising, conceived as an objective variable of this practice. The perspective of the postgraduate students is accessed by their level of enthusiasm with the doctoral project, their degree of satisfaction with the advisor, the opportunities for gaining academic/professional maturity offered by the advisor and the interpersonal relationship with the advisor.

Procedure

Data collection. The research was performed remotely through Google Forms. The snowball sampling method was applied to collect the data. Participants were contacted through the researchers' contact network, in addition to social media promotions (Facebook, Instagram) and access to postgraduate programs via email sent to *Stricto Sensu* Postgraduate Programs (PPGs). By using this format of data collection, postgraduate students from various PPGs established in higher education institutions located in the five Brazilian regions were able to participate.

Data analysis. The *path analysis* technique was used to test a predictive model focused on direct and indirect relationships involving the effect of the independent variables on the dependent variables, whose descriptive statistics can be found in Table 1. The variable 'number of hours per month allocated to student advising' (objective characteristic of the advising practice) intermediated the

relationship between the independent and the dependent variables (subjective aspects inherent to the advising practice and the perception of postgraduate students regarding these practices). The control variables included in the model refer to the number of articles published by the postgraduate students, the participation in paid teaching activities (weekly classroom hours), the doctoral program stage, the autonomy in choosing the advisor, the opportunity to choose the line of research of their interest and the area of knowledge in the PPG (see descriptive statistics in Table 1). Before structuring the regression model, the nominal independent variables were converted into *dummy variables*, namely, access to academic advising and area of knowledge, having as reference categories respectively "pre-scheduled days of advising" and "Agricultural Sciences", the latter being a dependent control variable inserted in the model. The Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimator was used in the *path analysis*, given the deviation from normality of the sample data identified by the result of the Shapiro-Wilk test with $p > .05$ applied to the model's dependent variables. Indirect predictive effects were automatically calculated by the Mplus *software*. To interpret the plausibility of the regression model, the value of the χ^2 ratio divided by the degrees of freedom ≤ 5 was used, as well as the Root Mean Square Error of Approximation (RMSEA) adjustment indices with a value equal to or lower than .80; and the Confirmatory Fit Index (CFI) and Tucker-Lewis Index (TLI) were also used, with values greater than .80 (Marôco, 2014).

To investigate the interaction effects between the independent and the dependent variables, the Kruskall-Wallis (*H*) test was applied to compare groups. The effect size of the statistical significance resulting from the comparisons was analyzed using *r* values: up to .49, low magnitude; between .50 and .79, moderate magnitude; equal to or above .80, high magnitude (Cohen, 1992).

Table 1

Descriptive Statistics of the Prediction Model Tested using Path Analysis

Independent Variables: Characteristics of Postgraduate Advising				
Form of access to academic advising				
Advisor always available = 191 (51.3%)		Pre-scheduling = 150 (40.3%)		Pre-scheduled days* = 31 (8.3%)
Level of demand from the advisor				
Very low = 18 (4.8%)	Low = 24 (6.5%)	Medium = 77 (20.7%)	High = 129 (34.7%)	Very high = 124 (33.3%)
Number of hours per month allocated to advising				
Minimum = 1 hour	Maximum = 10 hours		*M* = 3.70	*SD* = 2.84
Dependent Variables: Postgraduate student satisfaction				
Level of enthusiasm with the project				
Very dissatisfied = 5 (1.3%)	Dissatisfied = 22 (5.9%)	Regular = 80 (21.5%)	Satisfied = 149 (40.1%)	Very satisfied = 116 (31.2%)
Level of satisfaction with the advisor				
Very dissatisfied = 27 (7.3%)	Dissatisfied = 40 (10.8%)	Regular = 60 (16.1%)	Satisfied = 106 (28.5%)	Very satisfied = 139 (37.4%)
Level of satisfaction with opportunities for gaining maturity				
Very dissatisfied = 28 (7.5%)	Dissatisfied = 33 (8.9%)	Regular = 69 (18.5%)	Satisfied = 92 (24.7%)	Very satisfied = 150 (40.3%)
Level of satisfaction with interpersonal relationship				
Very dissatisfied = 24 (6.5%)	Dissatisfied = 26 (7.0%)	Regular = 53 (14.2%)	Satisfied = 96 (25.8%)	Very satisfied = 173 (46.5%)
Control Variables				
Experience in publishing articles				
Minimum = 0	Maximum = 5		*M* = 2.09	*SD* = 1.72
Execution of paid teaching activities				
No = 305 (81.99%)	Yes, 8 hours of classes per week = 26 (6.99%)	Yes, 9 to 20 hours of classes per week = 19 (5.10%)	Yes, 21/40 hours of classes per week = 17 (4.57%)	Yes, more than 40 hours of classes per week = 5 (1.35%)
Doctorate stage				
Initial stage = 164 (44.09%)				Final stage = 208 (55.91%)
Autonomy in choosing the advisor				
Yes = 282 (75.8%)				No = 90 (24.2%)
Choosing the research area of interest in the doctoral program				
Yes = 39 (91.1%)				No = 33 (8.9%)
Areas of knowledge				
Agricultural Sciences* = 25 (6.75%)	Biological Sciences = 18 (4.88%)	Health Sciences = 44 (11.85%)	Exact and Earth Sciences = 21 (5.67%)	Human Sciences = 177 (47.61%)
Social and Applied Sciences = 18 (4.86%)	Types of engineering = 23 (6.21%)		Interdisciplinary = 22 (5.96%)	Linguistics, Literature and Arts = 23 (6.21%)

Note. *Reference category for conversion into a *dummy* variable.

Ethical Considerations

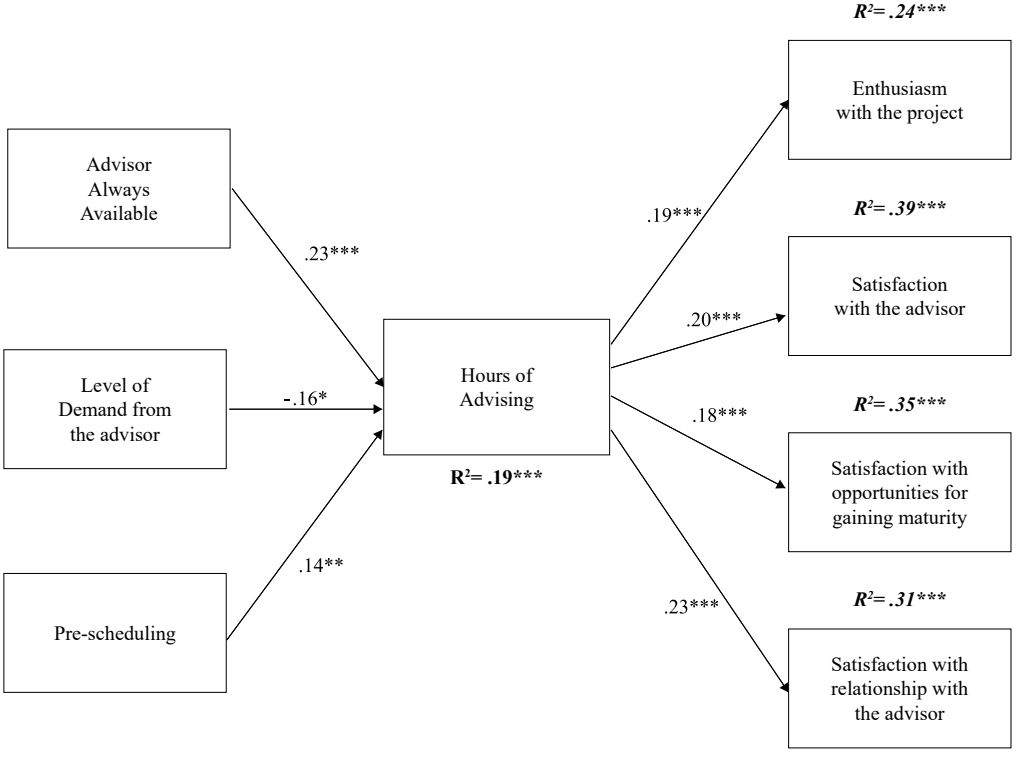
This research report is linked to the last author's broader project approved by the IES Research Ethics Committee (CAAE: 21757813.9.0000.5514). Therefore, this authorization covers all its stages. Notably, ethical procedures in research with human beings were adopted and respected, and participation criteria included being 18 years of age or older, as well as reading and signing the free and informed consent term.

Results

Figure 1 displays the explanatory model involving the direct and indirect relationships between the advising characteristics and postgraduate students' aspects of satisfaction. Additionally, the top of Table 2 presents β direct values involving the independent variables over the model 's dependent variables, and the lower part of the referred table shows the result obtained with the inclusion of the control variables.

Figure 1

Relationships between the Characteristics of the Advising Practice and Postgraduate Students' Satisfaction



Note. $\chi 2/gl$ = 2.06; RMSEA = .05 (CI .02 – .08), CFI = .99 and TLI = .90; Values in bold *indicate statistical significance, where* ***p < .001; **p < .01; *p < .05.

Figure 1 and Table 2 show that the type of access to advising (advisor always available) and the level of demand from the advisor increased the level of postgraduate students' satisfaction with the advisor, with an explained variance of 39%. Both independent variables also contributed indirectly and positively to the satisfaction with the advisor, mediated by the number of hours per month allocated to advising – access to advising: β = .04; p = .02 and level of demand from the advisor: β = .03; p < .01. Postgraduate students' satisfaction with the opportunities for growth and maturity offered by the advisor was also increased both by the level of demand from the advisor and by having the advisor always available for the advising practice, with an explained variance of 35%. The indirect predictive contribution involving the number of hours allocated to advising was β = .02 (p < .01) for the level of demand from the advisor, and β = .04 (p = .02) for the access to advising, with the advisor always available. Satisfaction with the relationship established between the student and the advisor had 31% of its variance explained based on its increase, with the advisor always available for the advising practice. The indirect effect value of this independent variable mediated by the number of hours allocated to advising was β = .05 (p = .01). It was also found that the number of hours allocated to advising intermediated the indirect relationship between the level of demand and the satisfaction with the relationship between advisor and advisee, with β = .03 (p < .001). The level of enthusiasm of postgraduate students with the doctoral project had 24% of its variance explained directly by the level of demand from the advisor and indirectly both by the number of hours allocated to the advising practiced and this independent variable, β = .02 (p < .01), and by having the advisor always available for the advising practice, β = .04 (p = .02).

Table 2

Direct Relationships between the Characteristics of the Advising Practice and the Control Variables regarding Postgraduate Students' Satisfaction

β of the Independent Variables over the Dependent Variables				
	Ent_Proj	Sat_Adv	Sat_Opor_Growth_Mat	Sat_Rel
AA: pre-scheduling	-.04	.01	-.01	.05
AA: advisor always available	.10	**.28*****	**.22***	**.27***
Level of demand from the advisor	**.10***	**.21*****	**.21*****	-.02
β of the Control Variables o*ver the Dependent Variables*				
	Ent_Proj	Sat_Adv	Sat_Opor_Growth_Mat	Sat_Rel
Number of articles published	**.14****	.07	.04	**.10***
Paid teaching activity	.03	**.08***	**.11***	**.17*****
Doctorate stage	**-.14****	**-.10***	**-.12****	**-.12****
Choosing the advisor	.08	.04	.03	-.02
Choosing the research line	**.20*****	**.10****	**.10***	.09
AK: Biological Sciences	-.05	.04	**.12***	**.12***
AK: Health Sciences	-.04	.09	**.19****	.07
AK: Exact and Earth Sciences	-.06	-.01	.11	.06
AK: Human Sciences	.01	**.32****	**.39*****	**.42*****
AK: Social and Applied Sciences	-.10	.06	.10	.07
AK: Types of Engineering	-.10	.04	**.12***	.09
AK: Interdisciplinary Programs	-.11	.10	**.11***	**.17****
AK: Linguistics, Literature and Arts	-.06	.08	**.12***	**.18****

Note. Bold *β* values indicate statistical significance, where $^{***}p < .001$; $^{**}p < .01$; $^{*}p < .05$.

Caption. AA = Access to advising; Ent_Proj = Enthusiasm with the project; Sat_Adv = Satisfaction with the advisor; Sat_Opor_Growth_Mat = Satisfaction with the opportunities for growth and maturity; Sat_Rel = Satisfaction with the relationship with the advisor; AK = Area of Knowledge

Subsequently, the result of the Kruskall-Wallis test indicated the existence of interaction effects between the independent variables (form of access to academic advising and level of demand from the advisor) and the dependent variables (aspects regarding postgraduate students' satisfaction). The comparisons between the pairs showed that students who had their advisor always available had higher levels of enthusiasm for the project than those who accessed advising through pre-scheduling (z = -5.408; $p < .001$; r = .29) – H = 29.731 ($p < .001$); in addition, having the advisor always available led to higher levels of satisfaction with the advisor when compared to the pre-scheduling scheme (z = -7.941; $p < .001$; r = .43) and to the strategy of having pre-established days allocated to advising (z = -3.803; $p < .001$; r = .26) - H = 66.642 ($p <$,001); in turn, having the advisor always available resulted in a higher level of satisfaction regarding opportunities for academic and professional maturity when compared to the strategy of having pre-scheduled days of advising (z = -3.291; $p < .01$; r = .22) and to the pre-scheduling scheme (z = -7.235; $p < .001$; r = .39) - H = 54.743 ($p < .001$); finally, having the advisor always available resulted in a higher level of satisfaction in interpersonal relationships between the student and the advisor when compared to the strategy of having pre-scheduled days of advising (z = -3.086; $p < .01$; r = .21) and to the pre-scheduling scheme (z = -6.590; $p < .001$; r = .36) - H = 45.681 ($p < .001$). All these comparisons had a low effect magnitude.

Regarding the variable 'level of demand from the supervisor', the comparison between pairs showed that postgraduate students who indicated a Low level of demand had lower level of enthusiasm with the Doctoral project than those who marked Very High (z = -3.257; $p < .05$; r = .27) or High (z = -2.875; $p < .05$; r = .23) – H = 19.275 ($p < .001$) for the variable 'level of demand'.

Students who marked Very Low for the variable 'level of demand from the advisor' showed lower satisfaction with the advisor when compared to those who marked Intermediate (z = -4.419; $p < .001$; r = .45), High (z = -6.376; $p < .001$; r = .53) or Very High (z = -5.988; $p < .001$; r = .50) for 'level of demand'. Those who marked Low regarding the variable 'level of demand' showed lower level of satisfaction with the advisor when compared to those who marked Intermediate (z = -2.846; $p < .05$; r = .28), High (z = -5.005; $p < .001$; r = .40), or Very High (z = -4.569; $p < .001$; r = .38). Those who selected the option High for the variable 'level of demand' showed greater satisfaction with the advisor than those who picked the Intermediate alternative (z = -3.105; $p < .05$; r = .22) – H = 64.747 ($p < .001$).

Regarding the variable 'satisfaction with opportunities for gaining academic and professional maturity', postgraduate students who marked Very Low for the variable 'level of

demand from the advisor' showed lower levels regarding this variable when compared to those who marked Intermediate (z = -4.453; p < .001; r = .46), Very High (z = -5.895; p < .001; r = .49), or High (z = -6.011; p < .001; r = .50) levels of demand. Students who indicated Low levels of demand had lower levels of satisfaction with opportunities for gaining maturity than those who marked the options High (z = -4.423; p < .001; r = .36) or Very High (z = -4.294; p < .001; r = .35) – H = 56.208 (p < .001) regarding the level of demand from the advisor.

Regarding the variable 'satisfaction with interpersonal relationships', postgraduate students who selected a Very Low level of demand from the advisor had lower levels of satisfaction in this aspect compared to those who marked the options Very High (z = -3.217; p < .05; r = .27), High (z = -4.420; p < .001; r = .36), or Intermediate (z = -3.198; p < .05; r = .33) regarding the level of demand. Students who classified the level of demand from the advisor as Low had lower satisfaction with interpersonal relationships in contrast to students who indicated an Intermediate level of demand *(*z = -3.349; p < .01; r = .33) – H = 27.652 (p < .001). The magnitudes of statistical significance of these comparisons ranged from low to moderate.

It was also found that the number of hours allocated to the advising practices differed in a statistically significant way in all variables linked to student satisfaction in Postgraduate programs. The magnitudes of pairwise comparisons in the Kruskall-Wallis test varied between low, moderate and high.

Students who marked the option Very Satisfied regarding the variable 'enthusiasm with the research project' reported receiving more hours of advising than those who marked the Regular (z = -4.732; p < .001; r = .51) or Dissatisfied (z = -4.426; p < .001; r = .85) options. Regarding this same variable, students who marked the option Satisfied received more hours of advising than postgraduate students who marked the option Dissatisfied (z = -3.144; p < .05; r = .24) – H = 36.383 (p < .001).

Regarding the variable 'satisfaction with the advisor', postgraduate students who chose the Very Satisfied alternative received more hours of advising than those who marked the options Dissatisfied (z = -7.368; p < .001; r = .55), Very Dissatisfied (z = -4.894; p < .001; r = .38), or Regular (z = -5.076; p < .001; r = .36). Postgraduate students who marked Satisfied had more hours of orientation than those who marked Dissatisfied (z = -5.238; p < .001; r = .43) or Very Dissatisfied (z = -3.238; p < .05; r = .28) – H = 75.970 (p < .001).

Regarding the level of satisfaction with the opportunities for academic and professional maturity offered by the advisor, postgraduate students who selected the option Very Satisfied received more hours of advising than those who marked Very Dissatisfied (z = -5.588; p < .001; r = .63), Dissatisfied (z = -4.820; p < .001; r = .36), Regular (z = -5.436; p < .001; r = .37), or Satisfied (z = -3.689; p < .01; r = .24). Postgraduate students who marked Satisfied for this variable received more hours of advising than students who marked the alternative Very Dissatisfied (z = -3.067; p < .05; r = .32) – H = 59.696 (p < .001).

Regarding the level of satisfaction with the interpersonal relationship with the advisor, students who indicated it as being Very Satisfying received more hours of advising than those who marked the Satisfying (z = -2.824; p < .05; r = .17) or Unsatisfying (z = -3.000; p < .05; r = .21) options. Postgraduate students who selected the Satisfied option received more hours of advising than those who selected the options Regular (z = -3.920; p < .001; r = .32), Very Dissatisfied (z = -4.412; p < .001; r = .40), or Dissatisfied (z = -4.862; p < .001; r = .44) – H = 45.171 (p < .001).

Discussion

The objective of the present study was to investigate the relationships between the objective and subjective characteristics of the advising practices offered in *Stricto Sensu* Postgraduate Programs (doctoral level) and the satisfaction of postgraduate students when receiving these practices. In short, the results showed that the students' level of satisfaction with the advisor and their satisfaction with the opportunities for gaining professional growth and maturity increase if the advising practices include broader accessibility and higher levels of demand from the advisors. Satisfaction with the interpersonal relationship between advisor and student increases when advising is always available to postgraduate students and the enthusiasm of doctoral students with the research project increases when there is a high level of demand from the advisor.

The increase in the number of hours per month allocated to advising resulted in higher levels of satisfaction among postgraduate students. In this sense, it is important to pay attention to the result obtained by the *path analysis* regression model, which showed that this variable, characterized in this study as an objective element in the performance of advising practices in postgraduate programs, was responsible for intermediating the relationships between the access to advising/the advisor's level of demand (subjective variables) and student satisfaction. This finding is an indication that the evaluation of the advising practices carried out in postgraduate programs must consider the intersections between these variables, since the phenomenon underlying the doctoral training process proves to be complex and, therefore, it is not recommended to analyze them separately.

Similarly, the knowledge-building process is not an isolated activity and requires interaction between the professor-advisor and his or her advisees, setting up a follow-up of postgraduate students in the various stages of their academic qualification process (Agbonlahor et al., 2021; Ferreira et al., 2009; McAlister et al., 2022). To this end, this research corroborates the indications of Barnard and Shultz (2020) that claim that the accessibility and the level of demand from the advisor are essential conditions to stimulate the development of the student's autonomy, which include the

search for knowledge and the interest in the research topic, as indicated by them. Based on this perspective, the advisor making himself/herself accessible to the student did not prove to be just an implicit condition for the relationship between this dyad, as pointed out by Severino (2006), since the access availability to the advisor is seen as a process of solidarity-based construction that goes through an exchange of experiences at different stages (Severino, 2006).

The dynamics of this relationship will be established at different levels between the advisor and each of his or her students, keeping in mind that they have different personal and professional characteristics. Such characteristics found in the advising process discussed by the authors converge to the notion of horizontality proposed by Freire (1997). The ethical-methodological principles of his theory were based on the sense of respect for the student and on their achievement of autonomy, having the dialogue as the guiding principle of the teaching-learning process. In this sense, respect for differences is an essential condition to achieve quality in the relationship, ensure the success of the project and overcome conflicts that may occur throughout the advising process (Freitas & Souza, 2018; Viana, 2008).

The pedagogical work based on the principle of horizontality derives from a thematic investigation focused on verifying the cultural level and the knowledge that the student brings about their reality in order to spark debates that can problematize the situations experienced. Thus, Freire (1997) points out that education must be capable of promoting self-confidence using a constant perspective of dialogue and reflection on one's actions with the aim of expanding the individual's world view and their active participation in all spheres of life in society.

Regarding the level of demand, it is recognized that depending on the student's degree of autonomy, the advisor's work will be more/less intense, frequent, and diverse. Viana (2008) highlights some characteristics of the student that are valued by the advisor, namely: be able to responsibly carry out the required readings and other proposed activities, meet institutional deadlines, have good writing and present a thought-provoking work based on the topic to be investigated, which must be consistent with their line of research.

Another important aspect to be considered is the time dedicated to the advising process. In some cases, it is possible to observe that the advisor dedicates little time to assisting his or her students during the development of their academic project (dissertations and theses), giving more attention to students who are still in the early months of their training and/or who had finished or are about to finish their project and are close to their defense date, thus highlighting the lack of dialogue between them. Managing time with the purpose of guiding and assisting the student, creating a constructive dialogue that enables the establishment of a partnership and allows them to practice their autonomy is a challenge that arises for the advisor in the advising process (Sun & Cheng, 2021; Viana, 2008; Viana & Vieira, 2010). Based on this concept, the advisor's availability is essential, which is why it is necessary to limit the number of students per advisor (Barnard & Shultz, 2020; Ferreira et al., 2009; Leite Filho & Martins, 2006; Löfström & Pyhältö, 2020; Lopes et al., 2020).

Some advisors see the advising process solely as a professional relationship, while others consider the establishment of an empathetic relationship in which the emotional, personal, and affective aspects of the advisees that may interfere with this professional relationship are respected (Freitas & Souza, 2018). Sociability is essential to the advisor-advisee relationship, thus it must ensure good communication, attentive and interested listening, adjustment to differences, mutual respect, consistency and partnership to meet deadlines and commitments assumed by both parties (Diogo et al., 2022; Freitas & Souza, 2018; Lopes et al., 2020; Nogueira & Leite, 2014; Viana & Vieira, 2010). It is from the quality of the advising practices that the incentives, challenges, and proposal of ideas arise and ensure the continuity of the lines of research. If the relationship is healthy, it will be reflected in the results of the PPG, leading to an ethical, social, and civic responsibility in the promotion of the constructed knowledge (Ferreira et al., 2009; Galvão, 2007; Leite Filho & Martins, 2006; Löfström & Pyhältö, 2020).

When considering the concept of advising as a partnership work, Viana (2008) explains that the academic writing takes place in the dialogue between the parties involved through the critical and constructive eye of the advisor. Furthermore, the relationship in the advising process requires the development of a horizontal academic approach between advisor and student in postgraduate courses, as emphasized by Zilbermann (2006). For this author, horizontality must be characterized by an educational relationship between people who are at different levels of training and professional maturity but committed to a common goal intended for academic production.

In addition to the technical stages planned for the training of future doctors, it is possible to highlight research mentorships for students, which depend on the advisor-advisee relationship from the perspective of providing them with opportunities for professional maturity (Agbonlahor et al., 2021; Sala-Bubaré et al., 2022). Considering the set of variables analyzed in the present study, it is noted that the benefits of the relationship established in the advising process must be mutual. For advisees, it results in personal, professional, and academic growth in terms of encouragement and development of autonomy and critical thinking. In turn, for the advisor it is an opportunity to stay up to date on techniques and knowledge, acquire personal satisfaction, develop the ability to attract new collaborators for current and future projects and create a legacy for future generations that choose to follow the referred research line (Ferreira et al., 2009).

It is worth noting that these results were obtained using a structured model that counted with the inclusion of control variables, reflecting the display of direct relationships that led to an increase in postgraduate students' satisfaction levels. Among these variables, the following stood out:

being in the initial stage of the doctoral program, performing paid teaching activities, choosing a research line of their interest, and having published scientific articles. In this regard, postgraduate students of Human Sciences stood out regarding the levels of satisfaction of students in postgraduate programs compared to other areas of knowledge.

This scenario refers to the synergistic pedagogical model in the advising process, in which functional and multiplying knowledge is applied as well as constructivism, aiming to obtain as a result an increase in the student's cognitive and emotional capacity, whether formally or informally (Ferreira et al., 2009). The advising practice must consider the academic and professional training of postgraduate students, taking into account the scientific production derived from the advising process and the relationship with the professor-advisor. The ability to encourage creative and competitive research is one of the desired characteristics during the educational process, especially in the advising process, as well as the development of an effective relationship with the advisee aimed at their professional growth (Ferreira et al., 2009; Sala-Bubaré et al., 2022).

Although this research has reached its initial objective, it is observed that the advising process still lacks studies and discussions that can contribute to the quality of the advisor-advisee relationship and, consequently, to the quality of postgraduate training. It must be considered that the advisor's availability, interest, organization, and satisfaction are aspects that reinforce each other if the commitment and responsibility of the student match the dedication of the advisor (Viana & Vieira, 2010). Ultimately, knowledge is a process in which advisor and advisee study, work and learn together!

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