

Entrepreneurial intention at university Intenção empreendedora na universidade Intención emprendedora en la universidad

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Abstract: Entrepreneurship may be an occupational alternative for university students, especially in a scenario with high unemployment rates. In the present study, we aimed to verify the differential functioning (DIF) of an entrepreneurial intention scale (EIQBr-b) in students of humanities ($n = 50$), social sciences ($n = 50$), health ($n = 47$) and exact sciences ($n = 50$). We used Rasch-Rating-Scale-Score Model and analyzed DIF by the Mantel-Haenszel method for polytomous items. We found that students of social sciences presented less difficulty in the items that emphasized the planned proposition of their own company. The items related to self-determination and career did not present DIF between the different areas. For that reason, it is necessary to plan, develop and improve the actions of education and professional orientation for entrepreneurship, considering particularities among the areas of knowledge that differentiate the manifestation of entrepreneurial intention among the groups.

Key words: entrepreneurship, higher education, item response theory, educational measurement, occupational interest measures

Resumo: Empreender pode ser uma alternativa ocupacional para os universitários, especialmente num cenário com elevado desemprego e dificuldades de inserção profissional. No presente estudo, objetivou-se verificar o funcionamento diferencial (DIF) de uma escala de intenção empreendedora (EIQBr-b) em estudantes das áreas de ciências humanas ($n=50$), sociais aplicadas ($n=50$), saúde ($n=47$) e exatas ($n=50$). Empregou-se o Modelo Rasch-Rating-Scale-Score analisando-se o DIF pelo método Mantel-Haenszel para itens politômicos. Os resultados demonstraram que os estudantes das ciências sociais aplicadas apresentaram menor dificuldade nos itens que enfatizavam a proposição do próprio negócio de forma sistemática. Os itens que versavam sobre aspectos relacionados à autodeterminação e carreira não apresentaram DIF entre as diferentes áreas. Assim, faz-se preciso planejar, desenvolver e aprimorar as ações de educação e orientação profissional voltadas para o empreendedorismo, considerando-se particularidades entre as áreas do conhecimento que diferenciam a manifestação da intenção empreendedora entre os grupos analisados.

Palavras-chave: empreendedorismo, ensino superior, teoria de resposta ao item, medidas educacionais, medidas do interesse profissional

Resumen: La actividad emprendedora puede ser una alternativa ocupacional para estudiantes universitarios, especialmente en un escenario con alto desempleo. En el presente estudio, buscamos verificar el funcionamiento diferencial (DIF) de una escala de intención emprendedora (EIQBr-b) en estudiantes de humanidades ($n = 50$), ciencias sociales ($n = 50$), salud ($n = 47$) y ciencias exactas ($n = 50$). Utilizamos Rasch-Rating-Scale-Score Model y analizamos el DIF mediante el método de Mantel-Haenszel para ítems politômicos. Encontramos que los estudiantes de ciencias sociales presentaban menos dificultades en los ítems que enfatizaban la proposición planificada de su propia compañía. Los ítems relacionados con la autodeterminación y la carrera profesional no presentaron DIF entre las diferentes áreas. Por eso, es necesario planificar, desarrollar y mejorar las acciones de educación y orientación profesional para los emprendedores, considerando las particularidades entre las áreas de conocimiento que diferencian la manifestación de la intención emprendedora entre los grupos.

Palabras clave: emprendedurismo, educación superior, teoría de respuesta al ítem, medidas educacionales, medidas de interés profesional

Received: 04/20/2018 Revised: 11/14/2018 Accepted: 03/07/2019

How to cite this article:

Cortez, P.A. & Veiga, H.M.S. (2019). Entrepreneurial intention at university. *Ciencias Psicológicas* 13 (1), 134-149. doi: 10.22235/cp.v13i1.1815

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Introduction

Entrepreneurship is essential to overcome economic difficulties and increase employment alternatives. Thus, it is essential to understand how students from different areas think about the phenomenon and intend to generate business. It is also important because it impacts on the ability to generate viable alternatives to education and career guidance. It is also fundamental focusing on how students propose their own business as an occupational alternative (Coan, 2013), especially in a scenario where the number of unemployed is high, like in Brazil and other countries (ILO, 2018).

In this study, we emphasise a psychological understanding of the phenomenon, considering that the mental strategies and psychological aspects of individuals define the decision-making process of creating their own business. For this reason, it must be analysed in order to optimise them and facilitate the expression of entrepreneurship (Basheer & Toledo, 2013). About that topic, it is possible to find multiples comprehensions (Mills & Gielnik, 2014). In the present work, the focus is on the psychological perspective, because the central variable of study – entrepreneurial intention – emphasises individual beliefs associated with the possibility of creating their own business in the future (Cortez & Veiga, 2018).

The entrepreneurial intention is defined as "personal belief to open a new business shortly" (Thompson, 2009, p. 276). To understand that variable, we need to highlight,

a priori, that careers and professional plans are the results of the interaction between personal and contextual aspects. In that conception, it is fundamental to analyse the context in which individuals build their own professional and careers (Teixeira & Costa, 2017). For this reason, it is crucial to understand this question in higher education because it is common that college students do not have a crystallised career plan as a freshman. It makes useful professional guidance in this level of education, enabling entrepreneurship to appear as an occupational choice (Camacho & Rubio, 2007).

In higher education, formal and informal education actions influence the development of entrepreneurial intent among students (Long, Portillo, Escobedo, & Mogollón, 2017). Also, educational actions focused on entrepreneurship at higher education tend to enhance entrepreneurial success, which makes it desirable to promote entrepreneurship in higher education as a way to increase the effectiveness of students' business creation (Dickson, Solomon, & Weaver, 2008). For this reason, it is crucial to understand the relationships between entrepreneurial education and business creation (Bae, Qian, Miao, & Fiet, 2014; Martin, McNally, & Kay, 2013).

In the Brazilian context, the entrepreneurial education happens primarily in the upper-level courses through disciplines focused on own business creation, which tends to be insufficient. High-impact educational practices for promoting entrepreneurship in higher education should cover, affective and

cognitive aspects that facilitate the expression of innovation and inventiveness associated with the business (Higgins, Smith, & Mirza, 2013). Additional evidence proposed many practices of teaching entrepreneurship at the higher education which is multifaceted and comprehensive among the different areas (Silva & Patrus, 2017).

However, the formulation of educational alternatives for successful entrepreneurship in Brazil needs to understand the target audience. In the case of college students, it should consider specificities among different courses, for example. In that framework, the experience of the student and, especially, the area of knowledge, of course, tend to impact on career choices and should be considered in the formulation of strategies for education and professional orientation (Araújo, Sousa, Muniz, Gomes, Antonialli &, 2008).

For this reason, it is expected for each area of knowledge distinct processes regarding entrepreneurial intention. It implies the existence of differences in the intentional entrepreneur process between students of different courses. Through this proposition, we hypothesised on each knowledge area differences in the entrepreneurial intention. That differences demand for career guidance practices and entrepreneurial education suited to each area. This hypothesis is grounded in literature. The level of entrepreneurial intention among different areas of knowledge is substantially different, as well as there is an enormous variation in how entrepreneurial education and professional guidance happen between them (Noel, 2002).

In the humanities, the promotion of entrepreneurship hardly ever happens. When asked about the topic, humanities students reproduce poor speeches about entrepreneurship, not showing ways to propose and manage their own business (Carvalho, 2012). In social science, students exhibit increased levels of entrepreneurial intention (Paradise et al., 2016). It happens because there are these courses and activities directed to entrepreneurship that make more accessible to them propose their own business (Vieira & rock, 2015). Applied social sciences students

understand how to formulate business strategies and talk about entrepreneurship as an occupational alternative due to familiarity with management topics (Vieira, Melatti, Slavers, & Ferri, 2015).

In the exact sciences, it is possible to visualize efforts to promote entrepreneurship among engineering students through multidisciplinary, innovative projects and work as a team, but it is needed to maximize these actions through more structured educational policies, as they are not as widespread as those proposed in social sciences (Pereira, Hayashi, & Ferrari, 2016). In the health sciences, in addition to entrepreneurial education practices may be scarce, they do not consider the need to sensitize students about the importance of the subject and the impacts of this practice in the future professional performance of students, which makes the entrepreneurial intent among students of this group reduced (Pereira, 2017).

In synthesis, between the different higher education courses, it is common that students tend to be interested in activities which have a direct relation with courses contents (Nanda, Malhotra, Gurgel, & Ambiel, 2009). Thus, in the case of the health sciences, the preference for assistance activities or perceived as socially desirable in the course by students tend to reduce student interest to create their own business. It happens primarily in the health science area, but also play an essential role in humanities that interpersonal relations are prioritised over financial gain and need for achievement (Ravendren & Munhoz, 2009). Thus, to promote entrepreneurship, it is necessary to strengthen the social entrepreneurship idea, which can also be useful to promote shared values and social welfare (Rawhouser, Cummings, & Newbert, 2019).

When considering the different areas, a metanalysis of 73 studies, covering 37,285 students, found a significant effect ($r = .14$; $p < .01$) of entrepreneurial education in entrepreneurial intention (Bae, Qian, Miao, & Fiet, 2014). In this sense, experience and educational practices may foster the formulation of own business at higher

education, once respected the differences and particularities among the different courses (Borges, 2014). When executed correctly, the practices aimed to promote the entrepreneurship may increase the results that individuals obtain in future business creation (Costa, Santos, & Caetano, 2013). In summary, the entrepreneurial education in the higher level increases the entrepreneurial intention and improve the success levels of business developed by students (Izedonmi, 2010).

Focused on that dynamic, we explored the differences in entrepreneurial intention among the different areas of knowledge. We verified the differential functioning of items (Differential Item Functioning – DIF) Entrepreneurial Intention Questionnaire Brazilian - Brief Version (EIQBr-b). In four major areas of knowledge (humanities, social sciences, health sciences and exact sciences).

Method

Participants

197 students of Brazilian public institution. Most of the students were women (69.90%) with an average age of 22.50 years (SD = 0.44). On average students were attending 5th semester (SD = 1.80). Sample was composed by 50 subjects of human sciences (psychology = 27; pedagogy = 23), 50 of the social sciences (law = 27; management = 23), 47 of the health sciences (medicine = 16, nutrition = 13, nursing = 14) and 50 of the exact sciences (biomedical engineering = 26; chemical engineering = 24).

Instruments

The instrument was composed of two distinct sections. The first section presented the EIQBr-b. This measure consists of six items about students' plans and intentions to become an entrepreneur or create a business shortly. This measurement scale was proposed by Liñán and Chen (2009) in English language and unifactorial structure ($\lambda = .65 \sim .91$) with satisfactory internal consistency ($\alpha = .94$). The

reduced Brazilian version was adapted by Cortez (2017), which also identified the unifactorial structure ($\lambda = .89 \sim .97$) with robust empirical evidence of reliability ($\alpha = .94$). The response was a five-point Likert scale. The second part of the instrument included demographic characterisation of students (gender, age, semester and graduation course).

Procedures

The research was approved by the Brazilian Ethics Committee (CAAE record: 56875916.0.0000.5152). The application was collective in the classroom using a pencil-paper instrument. Students responded to the instrument after the explanation of research objectives and expressed voluntary consent to join the study group — application process used from 10 to 15 minutes.

Data analysis

We analysed data using Rasch Rating Scale Score, which is suitable for polytomous items in the Likert scale response format (Bond & Fox, 2015). We inspected dimensionality, that is a requirement for use Rasch model, using principal components analysis of residues. We also analysed using Rasch model infit and outfit, item-total correlations, internal consistency, test information and differential item functioning (DIF). For DIF, we used the Mantel-Haenszel method to polytomous items (Zwick & Ercikan, 1989).

We choose the Rasch model because it makes possible analyse parameters of items more specifically (Embretson & Reise, 2000). Rasch model is part of Item Response Theory which is a psychometric to empirical validity evidence of psychological instruments (Pai, 2007). The Rasch model has two assumptions, unidimensionality (refers to only one attribute) and local independence between the items. We analysed principal components analysis (ACP) of residuals to evaluate this aspect. Residual values should be less than 0.30 to point out unidimensionality (Pallant & Tenant, 2007).

Another significant contribution of the Rasch model is the possibility of analysing item invariance: the answer to an item is affected only by theta level (skill) of the respondent (Embretson & Reise, 2000). The items invariance between groups can be assessed by Differential Item Functioning (DIF), enabling to check interference related to groups biases that maximise or reduce item difficulty. For this reason, we used DIF analysis in our investigation.

Results

We found for EIQR-b instrument a unifactorial structure with eigenvalue = 14.10 and 70.10% of variance explained. The residual for unidimensional simulated model achieved 2.80 eigenvalues and 13.90% of explained variance. Considering the literature, absolute values near to eigenvalue | 2.0 | indicate no informational content to justify additional factors (Linacre, 1998). For that reason, the empirical model presented a high level of variance explained in the first factor and low value of residual variance for the one-dimensional structure, indicating favourable evidence to the unidimensionality that fits with Rasch model. In table 1, we showed residuals principal components analysis results.

Table 1
Residuals principal components analysis

Number of factors	Empirical model		Simulated model	
	Eigenvalues	Explained variance	Eigenvalues	Residual variance
1	14.10	70.10%	2.80	13.90%
2	16.90	84.00%	1.30	6.70%
3	18.20	90.70%	0.70	3.70%
4	18.70	94.40%	0.50	3.00%
5	19.20	97.00%	0.50	2.60%

Items parameters showed an average level of theta (ability), which settled near the centre of our Rasch model = 0.00. The minimum value of theta ranged from -. 51 and +.24, which is two standard deviations on the lower level and one standard deviation at the top level of the curve. The infit and outfit mean were adequate for the majority of items with values below | 1.0 |. Occurrences with apparent inadequacy in our model represented the maximum values for these indexes, respectively, 1.60 and 1.61. We decided to keep these items after analysing its contents, item-score correlation ($r = .94$) and internal consistency ($KR20 = .78-81$). Those indexes did not affect the model substantially (DeMars, 2017). We display descriptive statistics and indexes of adjustments in table 2.

Table 2
Descriptive statistics and fit indexes

Estimatives	Hability (theta)	Infit	Outfit	Correlation item-score	Internal consistency
Mean	0.00	0.99	0.97	0.94	0.78-0.81
SD	0.27	0.36	0.38		
Minimum	-0.51	0.67	0.62		
Maximum	0.24	1.60	1.61		

Considering table 2, the theta values near 0 indicated greater informational level for EIQR-b in the middle point (theta = -3.00 ~ 0.00) with an information level greater than 3. The second portion of the instrument with the greater informational level was the upper middle area (theta = 0.00 ~ + 3.00) with informational content higher than 2. We illustrated this dynamic in figure 1, which shows the informational incline of our model.

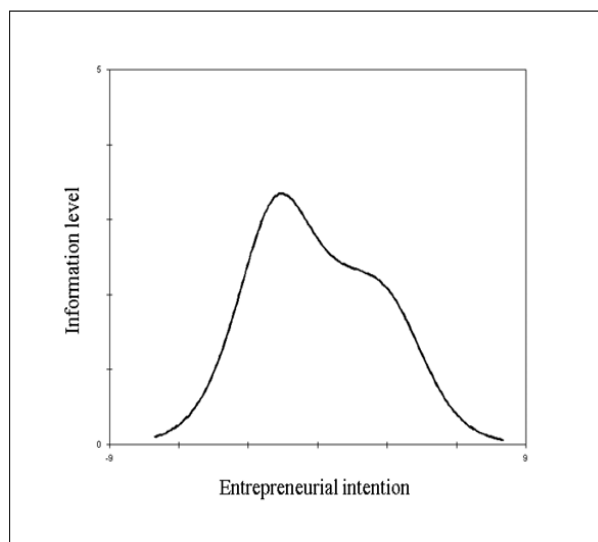


Figure 1.
Information function curve of EIQR-b

We also analysed the use of Likert scale considering the five options available. For the six items of EIQR-b, five levels were used, and the thresholds categories were increasing between options one to five. It means that individuals with higher skill level opted to high values and those with lower theta opted for low values, that fits with the Rasch model (Wetzel & Carstensen, 2014). For that reason, the five options of Likert scale were appropriate for analysing the informational level of entrepreneurial intention considering our sample. We showed in figure 2 participants' option in the Likert scale considering the five categories of response. Numbers indicate the category of response for each item considering the theta level.

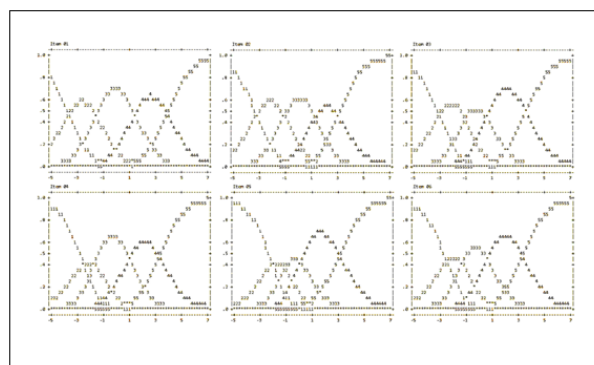


Figure 2.
Use of response categories in EIQR-b

In summary, we found satisfactory evidence to our instrument in the Rasch model, allowing the differential item functioning analysis (DIF). We highlight that we reported our data adequacy to the Rasch model because it minimises the possibility of differences due to fit errors, which makes the a priori adequacy inspection indicated when using DIF (Oliveri, Ercikan, & Zumbo, 2014). To DIF analyses, we used three criteria: 1) differences between groups with t above 2.00; 2) differences in parameter $bDIF > |.40|$ between the groups; and 3) a minimum level of statistical significance for differences found equal to $p < .05$ (Ambiel, Carvalho, Moreira, & Bacan, 2016; Linacre, 2009; Primi, Carvalho, Miguel, & Silva, 2010). The DIF we found between the areas of knowledge is disposed in table 3.

Table 3
DIF between areas considering entrepreneurial intention

Items	Humanities	Social Sciences	Health	Exact Sciences	Group Differential Functioning (DIF)
Item 01 PT: Eu farei qualquer coisa para me tomar empreendedor EN: I am ready to do anything to be an entrepreneur	$b_{DIF} = -.28$ ($t=-1.11$)	$b_{DIF} = 1.01^{**}$ ($t=3.83$)	$b_{DIF} = -.30$ ($t=-1.22$)	$b_{DIF} = .30$ ($t=-1.25$)	Social Sciences
Item 02 PT: Meu objetivo profissional é me tomar empreendedor EN: My professional goal is to become an entrepreneur	$b_{DIF} = -.32$ ($t=-0.34$)	$b_{DIF} = .38$ ($t=1.53$)	$b_{DIF} = .12$ ($t=0.50$)	$b_{DIF} = .13$ ($t=-0.59$)	None
Item 03 PT: Eu farei todo o esforço possível para abrir minha firma EN: I will make every effort to start and run my own firm	$b_{DIF} = .08$ ($t=0.35$)	$b_{DIF} = .05$ ($t=0.22$)	$b_{DIF} = -.16$ ($t=-0.67$)	$b_{DIF} = .03$ ($t=0.11$)	None
Item 04 PT: Eu estou determinado a criar uma firma no futuro EN: I am determined to create a firm in the future	$b_{DIF} = .13$ ($t=0.57$)	$b_{DIF} = -.49^*$ ($t=-2.05$)	$b_{DIF} = .17$ ($t=0.75$)	$b_{DIF} = .15$ ($t=0.67$)	Social Sciences
Item 05 PT: Eu penso seriamente em começar um negócio EN: I have very seriously thought of starting a firm	$b_{DIF} = .32$ ($t=1.49$)	$b_{DIF} = -.27$ ($t=-1.22$)	$b_{DIF} = -.11$ ($t=-0.51$)	$b_{DIF} = .05$ ($t=0.23$)	None
Item 06 PT: Eu tenho a intenção de abrir uma firma algum dia EN: I have the firm intention to start a firm some day	$b_{DIF} = -.04$ ($t=-0.18$)	$b_{DIF} = -.39$ ($t=-1.70$)	$b_{DIF} = .25$ ($t=1.10$)	$b_{DIF} = .17$ ($t=0.75$)	None

Note: PT = Brazilian Portuguese; EN = English; * $p < .05$; ** $p < .01$.

Item 01 showed DIF for social sciences. The level of difficulty for social sciences was increased compared to other areas. Item 04 also had DIF to the area of social sciences with the reduced difficulty level. In items 02, 03, 05, and 06, there was no DIF. For item 02, the difficulty was close to $\theta = .30$ for all groups. The item 03 had $\theta = 0.00$. Items 05 and 06 showed greater variability between areas, but do not show DIF between areas. In synthesis, we found that the students of social sciences compared with the other areas showed DIF for items 01 and 04.

Discussion

In our study, we identified satisfactory validity evidence to the EIQR-b using the Rasch model. We also found DIF for some items between students from different areas of knowledge at higher education when analysing their entrepreneurial intention. Specifically, there is DIF in our instrument of entrepreneurial intention for the area of social sciences, which differs from other areas when creating their own business.

Students of social sciences presented greater difficulty to adhere to item 01 ("I will

do anything to become an entrepreneur") when compared with other areas. We hypothesised this DIF in social sciences is caused because of their different level of knowledge about management practices (Krakauer, Santos, & Almeida, 2017; Salusse & Andreassi, 2016). Students in the areas of social sciences tend to course disciplines with greater time for business topics (Cross, coast, Wolf, & Ribeiro, 2006; Vieira & rock, 2015). In this sense, unlike the students from other areas, social sciences students can realise that create their business demand for a prior business' plan with goals and specific actions (Samra, 2016; Vieira et al., 2015). In this way, social science's student's entrepreneurial intention diverges from the notion of "do anything" expressed by item 01, making it more difficult for this group. Entrepreneurship between social sciences is systematic, involves planning, which makes it difficult for students of that area agree with an unsystematic way of proposing their own business (Cruz et al., 2006).

When examining the item, 01 showed no difference in the areas of health, human sciences and exact sciences. Students of these fields adhere to the item easier than social sciences. Between these three areas the health sciences students were those with greater adherence to the item, followed by the human sciences and exact sciences. In practical terms, it is possible to infer that the students of the health sciences and the humanities tend to express easy agreement about unsystematic and nonspecific entrepreneurial intention (Carvalho, 2012; Santos, 2011). They agree with more ease with the notion of "do anything to become an entrepreneur" expressed in item 01. We think it may be an effect generated by the lacking of educational alternatives that allow them to develop their own business with greater rigour and systematisation.

Social sciences students DIF in item 04 ("I am determined to create a firm in the future") made it easier for that group. It may indicate that, with a higher level of knowledge about business creation, these students see the entrepreneurial activity as a viable occupational alternative (Paradise et al., 2016).

For that reason, they may have a higher degree of determination to create their own business in the future when compared with other areas, making it easier item to social science students (Krakauer, Porto, Moura, & Almeida, 2015). The difference found in item 04 seems to complement that evidenced in item 01. Social sciences students' entrepreneurial intention process is systematic; they can anticipate risks and benefits, which can maximise the determination of this group to create their own business, reducing the difficulty of item 04 for these students.

Synthetically, the differences found between the groups in 01 and 04 items allows hypothesising that applied social sciences students experience the entrepreneurial intention process more systematically and therefore has more ease of accepting the entrepreneurship as a planned occupational alternative. Among students in health sciences, human sciences and exact sciences entrepreneurial intent is more unsystematic and hard to intent the creation of own business, which tends to make the expression of planned entrepreneurship harder in these groups (Pereira, 2017; Ravendren & Munhoz, 2009).

When we contrast these findings with the existing curriculum guidelines at the higher education, it is easy to visualise that increased time for business content and management-oriented disciplines seem able to maximise the level of knowledge necessary to become an entrepreneur. It probably can lead to differences in the entrepreneurial intention experienced between university students from different areas (Bae et al., 2014; Noel, 2002). That evidence makes possible to promote a favourable agenda of entrepreneurship among university students focuses on increasing the time and specific content in curricular and extracurricular activities related to management, business administration and creation (Elmuti, Khoury, & Omran, 2012). It is consistent with the literature about entrepreneurial education, which demonstrates the effectiveness of educational practices strictly related to the field of business and entrepreneurship in higher education as a vital

source to expand the entrepreneurial intention among university students (Byabashaija & Katono, 2011; Dickson et al., 2008).

Specifically in Brazilian reality, it may also be useful to understand if the DIF we found refers to 1) existence of educational experiences focused in promoting entrepreneurship among university students in the area of applied sciences or 2) lacking promotion of entrepreneurship and essential business topics among other groups (Ribeiro, Oliveira, & Araujo, 2014; Silva & Patrus, 2017; Verga & Silva, 2015). In the first case, the successful educational practices among students of social sciences need to be systematised, so that can be promoted among students from other areas (Zatti, Luna, Silva, & Feigel, 2017). In the second situation, which the difference found between the groups refers only to the business content areas of social sciences, it may demand for the revision of curricular policies and practices for all areas, in order to integrate entrepreneurship between the curricular strategies (Curran & Stanworth, 1989; Izedonmi, 2010; Rock & Freitas, 2014).

We also highlight that before implementing those modifications it is necessary to overcome real difficulties. In Brazil, entrepreneurship disciplines and practices usually do not present entrepreneurship considering areas of knowledge specificity (Nazareth, Souza, Leite, Coqueiro, & 2016; Silva & Patrus, 2017). In this regard, we suggested that there may be a common core of entrepreneurship training about the techniques and management processes between areas. However, considering the nature of the business and the formulation of the type of product or service being offered, educational plans should consider particularities of different areas to maximise the interest and facilitate students' entrepreneurial intention (Heck, Carvalho, Mônico, & Santos, 2017). That way, it is possible to ensure students different perspectives of entrepreneurship which seems more technical correlated within the area of knowledge. For that, it is always necessary to consider the student's interests (Aguilar et al., 2008; Nanda et al., 2009).

At the classroom, effective ways to promote entrepreneurship refers to the dissemination of education and professional guidance through the implementation of career and business plans (Curran & Stanworth, 1989). The development of the business plans as classroom activity shows up as a successful alternative to the teaching of entrepreneurship university (Krakauer et al., 2015), being recurrently used in social science courses. Another alternative for the dissemination of entrepreneurship at the university is through junior companies and business incubators. Students who participate in junior companies have a higher skill level to become an entrepreneur and when compared to those who have not had this kind of experience at university (Ferreira & Freitas, 2014). In this sense, it is possible to infer when there is a massive course load of entrepreneurial education programs and experiences; the student will get a more significant positive impact on entrepreneurial intention. The literature advises long-term programmes, such as those covering the different school semesters continuously, rather than individual actions to maximise the results of professional guidance and education practices in entrepreneurship (Heuer & Kolvereid, 2014).

We highlight that putting into practice such actions of entrepreneurial education at university is not that easy. There is ambiguity at university between the need for innovation of our time and the curricular stagnation that gives low autonomy and inventiveness opportunities in university classic programs. This contradiction can only be bypassed through the formulation of a policy focused on entrepreneurial education (Diehl, 2016). To that end, we must overcome these antagonistic between innovative and classic elements that are usually proposed as barriers to the development of entrepreneurial education and professional orientation in universities. It can be done, when we act in 1) more professional training of educators and professional counsellors to treat on the subject and 2) foster political and financial resources to develop policies about entrepreneurship education (Raposo & Paço, 2011).

When we consider the action of educators and counsellors, professionals need to be able to develop plans and activities in the classroom and outside of university space, involving the student for multiple actions that develop skills for entrepreneurship. For that, it is needed prior preparation of these professionals to formulate the content, apply it and to sensitise students to perform the entrepreneurial activities (Krakauer et al., 2017). In short terms, it is necessary teachers and tutors capacitation for entrepreneurial practices, which requires making able to inform and develop with students joint partnerships with the market, in order to provide the student experiences in and out of university space (Hussain, 2015; Silva & Birth, 2014).

Such a relationship is crucial because the successful entrepreneurial education happens when the university becomes a bridge with the existing working practices in the industry, allowing the student to develop skills to deal and improve the reality outside university environment (Ribeiro, Oliveira, & Ahmad, 2014). Therefore, business incubators exert a strategic role in promoting entrepreneurship at universities. It is the channel for the proposition of these partnerships between universities and industry (Samra, 2016). In this sense, student experiments in incubators, junior companies and over the vocational training courses can serve as space for formulating career guidance practices for entrepreneurship at the university at the same time it can foster students insertion at industry (Luna, Bardagi, Gaikoski & Melo, 2014). For this reason, the development of junior companies and ideas in business incubators can enhance entrepreneurial intention levels in university students (Nazareth et al., 2016).

In addition to the curricular aspects, discussed so far, it is critical to consider other elements for the promotion of entrepreneurial intention at university. Primarily, it is fundamental to consider students' expectations and knowledge about occupational alternatives. It needs to include management models and business plans, but also cover soft skills like socioemotional aspects (Hussain,

2015; Rosary & Sandra, 2010). In an intersubjective dimension, students' professional choice also seems related with individuals' interests, which are influenced dynamically by the relationship between the subject and its environment (Diehl, 2016; Teixeira & Costa, 2017). Considering our results, we need to pay attention to the absence of differences between areas in items 02, 03, 05 and 06. We were dealing with groups from different areas, that we expected differences (Rizzato & Moran, 2013), but we did not find it.

Unlike items 01 and 04, whose focus the entrepreneurial intention as behaviours needed to become an entrepreneur and open own business, the assertions expressed by items 02, 03, 05, and 06 showed contents related to thoughts, professional goals and individual efforts to become an entrepreneur (Cortez, 2017). For this reason, the lack of difference between the groups in these items alarmed us, considering that the differences found between the areas in terms of entrepreneurial intention seem limited only to the technical aspect covered in items 01 and 04. In other words, DIF seems to refer only to the knowledge of management practices that allow students to create their own business, not covering; therefore, differences in socioemotional aspects.

In this way, the absence of DIF in items 02, 03, 05 and 06 appears to reveal that in the university the different areas of higher education do not consider the students' soft skills when dealing with professional guidance and entrepreneurship education (Camacho & Rubio, 2007). In other words, the thoughts of the students about their own professional goals and the subjective dimension, involving efforts of the subject, are not integrated into the actions of entrepreneurial education, although it demonstrates significant impact on student entrepreneurial intention (Lackéus, 2014). It possible can explain the uniformity between the groups being supported empirically by the absence of DIF between areas in items 02, 03, 05 and 06.

In this context, in addition to the political-educational and curricular alternatives

explored previously, we urge the promotion of entrepreneurship university with career guidance practices that articulate the formal entrepreneurship contents with the socioemotional dimensions of the students (Coan, 2013; Cortez & Veiga, 2018; Guimarães & Macedo 2013). In these practices, throughout the process of education and vocational guidance, it is fundamental cover issues related to the individual's interests, their life plan, career and occupational activity (Lima & Fraga, 2010; Lima, Malik, Salim, & Nunes, 2016; Valentini et al., 2009).

Also, we also emphasise the importance of developing teamwork with specific goals, with a reasonable level of uncertainty and ambiguity, because they tend to present effectiveness in promoting entrepreneurial intention and soft skills (Lackéus, 2014). Focusing on behavioural domains, entrepreneurial education and vocational guidance should develop in the student skills to 1) identify business opportunities; 2) decide on risk-based investments; 3) analyse the context in order to take advantage of contingencies; 4) establish strategic relations with pairs of interest (Salusse & Andreassi, 2016). These practices of entrepreneurial education and vocational guidance must generate as an outcome: better students' planning, self-realisation, risk tolerance and innovation (Rocha & Freitas, 2014). It is also desirable as an outcome of those practices' improvement in self-efficacy, that must also be covered by entrepreneurial education studies and practices (Rizzato & Moran, 2013).

Finally, it is necessary to highlight a crucial point when we seek to maximise the entrepreneurial intention among students. Students need to know the ways to make their own business socially and economically viable, which can be made possible by the transdisciplinary practices between areas at university (Higgins et al., 2013; Silva & Birth, 2014). However, it cannot be done to be if students cannot envision themselves as an entrepreneur (Basheer & Toledo, 2013). Own business generation requires that students answer a fundamental question: "Am I

interested in to create my business and do I know enough about being an entrepreneur?". Regardless of positive or negative response, professional orientation and entrepreneurial education can serve as a way to trace processes that facilitate students on building their answers to this question and plan their professional future successfully.

Conclusions

We proposed validity evidence and differential item functioning for EIQBr-b, which consolidates the instrument as a viable alternative for the measurement of entrepreneurial intention in the context and with similar participants that we applied in our study. Also, the identification of differences between the areas considering entrepreneurial intention reveals the need for enhancing curricular practices relating to entrepreneurial education at higher education. We showed up Brazilian case because most of our alternative seems incomplete by the absence of public policy and systematisation of our practices. We also lack on considering the specificities and needs of different areas, which we highlighted during our manuscript and supported with DIF evidence. Before the conclusion, we need to bring up a limitation of our study the sample restriction to Brazilian public context that urges new evidence in different countries and contexts. We aim that this study can impact other Latin American countries in order to maximise entrepreneurial activity and education on our continent.

Authors' participation:

a) Conception and design of the work; b) Data acquisition; c) Analysis and interpretation of data; d) Writing of the manuscript; e) Critical review of the manuscript.

P.A.C. has contributed in a,b,c,d,e; H.M.S.V., in b,c,d,e.

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