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COGNITIVE FLEXIBILITY AND ENTREPRENEURIAL SELF-EFFICACY: A STUDY ON ITS  
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**COGNITIVE FLEXIBILITY AND ENTREPRENEURIAL SELF-EFFICACY: A STUDY OF ITS INFLUENCE ON THE ENTREPRENEURIAL BEHAVIOR OF INTERNATIONAL LEADERS**

**FLEXIBILIDADE COGNITIVA E AUTOEFICÁCIA EMPREENDEDORA: UM ESTUDO SOBRE SUA INFLUÊNCIA NO COMPORTAMENTO EMPREENDEDOR DOS LÍDERES INTERNACIONAIS**

**FLEXIBILIDAD COGNITIVA Y AUTOEFICACIA EMPRESARIAL: UN ESTUDIO SOBRE SU INFLUENCIA EN EL COMPORTAMIENTO EMPREENDEDOR DE LÍDERES INTERNACIONALES**

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## ABSTRACT

**Purpose:** To analyze the influence of Cognitive Flexibility and Entrepreneurial Self-efficacy on the entrepreneurial behavior of international leaders representing entrepreneurs of the Young Entrepreneurs Alliance (G20 YEA - Young Entrepreneurs 'Alliance) and the Ibero-American Federation of Young Entrepreneurs (FIJE).

**Design/methodology/approach:** The study uses a mixed approach, with qualitative techniques, the application of Comparative Qualitative Analysis of Fuzzy Sets (fsQCA) and quantitative techniques, and comparison of parameters in different samples. Twenty-two world leaders were studied, represented by young entrepreneurs from G20 YEA and FIJE.

**Results:** The results of the comparative analysis showed that the presence of Cognitive Flexibility (FC) and initiative to create their own businesses is a necessary configuration for Entrepreneurial Self-Efficiency (AE). Leaders who had started their own businesses had higher CF and EA scores when compared to leaders who took on family businesses.

**Originality and theoretical implications of the study:** Although entrepreneurship is studied in several areas of knowledge, ranging from economics to psychology (Baron, & Shane, 2005), there are gaps in our understanding of the cognitive processes underlying entrepreneurial behavior. This study seeks to contribute to the construction of a new understanding for the development of an integrative theoretical model that recognizes the impact of executive functions, particularly cognitive flexibility, as an essential characteristic of entrepreneurial behavior.

**Keywords:** Cognitive Flexibility. Entrepreneurial Self-Efficacy. Entrepreneurial Behavior.

## RESUMO

**Objetivo:** Analisar a influência da Flexibilidade Cognitiva e Autoeficácia Empreendedora no comportamento empreendedor dos líderes internacionais representantes de jovens empreendedores da Aliança de Jovens Empreendedores (G20 YEA - Young Entrepreneurs' Alliance) e da Federação Ibero-americana de Jovens Empresários (FIJE).

**Metodologia:** O estudo tem abordagem mista, com uso de técnicas qualitativas, com aplicação de Análise Qualitativa Comparativa de Conjuntos Difusos (fsQCA) e quantitativas, com comparação de parâmetros em amostras diferentes. Foram estudados vinte e dois líderes mundiais representantes de jovens empreendedores da G20 YEA e FIJE.

**Principais resultados:** Os resultados da análise comparativa apontaram que a presença de Flexibilidade Cognitiva (FC) e iniciativa de criação de negócios próprios é uma configuração necessária para a Autoeficácia Empreendedora (AE). Líderes que iniciaram seus próprios negócios possuíam escores mais altos de FC e AE quando comparados com líderes que assumiram negócios familiares.

**Originalidade e implicações teóricas do estudo:** Apesar do empreendedorismo ser estudado em diversas áreas do conhecimento desde a economia à psicologia (Baron, & Shane, 2005), existem lacunas no que respeita à compreensão dos processos cognitivos subjacentes ao comportamento empreendedor. Este estudo busca contribuir para a construção de uma nova compreensão para o desenvolvimento de um modelo teórico integrativo que reconheça o impacto das funções executivas, nomeadamente a flexibilidade cognitiva, como essencial no comportamento empreendedor.

**Palavras-chave:** Flexibilidade Cognitiva. Autoeficácia Empreendedora. Comportamento Empreendedor.

## RESUMEN

**Objetivo:** Analizar la influencia de la Flexibilidad Cognitiva y la Autoeficacia Emprendedora en el comportamiento emprendedor de líderes internacionales representantes de jóvenes emprendedores de la Alianza de Jóvenes Emprendedores (G20 YEA - Alianza de Jóvenes Emprendedores) y la Federación Iberoamericana de Jóvenes Emprendedores (FIJE).

**Procedimientos metodológicos:** El estudio tiene un enfoque mixto, utilizando técnicas cualitativas, con la aplicación de Análisis Cualitativo Comparativo de Conjuntos Difusos (fsQCA) y cuantitativo, con comparación de parámetros en diferentes muestras. Se estudiaron veintidós líderes mundiales que representan a jóvenes emprendedores del G20 YEA y FIJE.

**Resultados:** Los resultados del análisis comparativo mostraron que la presencia de Flexibilidad Cognitiva (FC) y la iniciativa para crear sus propios negocios es una configuración necesaria para la Autoeficiencia Empresarial (EA). Los líderes que iniciaron sus propios negocios obtuvieron puntajes de CF y EA más altos en comparación con los líderes que asumieron empresas familiares.

**Originalidad e implicaciones teóricas del estudio:** Si bien el emprendimiento se estudia en varias áreas del conocimiento desde la economía hasta la psicología (Baron y Shane, 2005), existen lagunas en cuanto a la comprensión de los procesos cognitivos subyacentes al comportamiento empresarial. Este estudio busca contribuir a la construcción

de una nueva comprensión para el desarrollo de un modelo teórico integrador que reconozca el impacto de las funciones ejecutivas, es decir, la flexibilidad cognitiva, como esencial en el comportamiento emprendedor.

**Palabras clave:** Flexibilidad Cognitiva. Autoeficacia Empresarial. Comportamiento Emprendedor.

## 1 INTRODUCTION

Ideas involving entrepreneurship have intensified in recent years due to transformations in the economic scenario, the opportunities arising from the globalization movement, the reduction in the number of available jobs, and the mobilization of professionals in search of new spaces where they can display their talents (Feuerschütte, Alperstedt, & Godoi, 2012, Vignochi, Lezan, & Paines, 2020).

Studying the psychosocial characteristics that permeate entrepreneurship, especially the figure of the entrepreneur, is a line of research of great interest given the current economic situation and the needs of the organizational environment to recruit individuals who are able to take advantage of the opportunities of a globalized market (Morian, Palací, & Morales, 2006).

The stages in the creation of a new business, involving the search for opportunities, planning, resourcing, and implementation, can be non-linear and interactive. These stages can be seen by aspiring entrepreneurs through the lens of different types of cognitive flexibility. The importance is emphasized of knowing how cognitive flexibility facilitates or inhibits these individuals' ability, intention, or self-efficacy when faced with the challenges associated with the different stages of the business creation process. Di Fabio, Bucci, and Gorro (2016) explain that in an environment of rapid change, people need to recognize and update their experiences and talents in order to achieve their career goals.

2010 saw the creation of the G20 Young Entrepreneurs' Alliance (YEA), a global alliance of young entrepreneurs and organizations that support them. The YEA meets every year before the G20 Summit, to defend, before the Summit member countries, the importance of the more than 500,000 entrepreneurs aged between 18 and 34, recognized as powerful drivers of economic renewal, job creation, innovation, and social change (G20 YEA, 2019).

In the same vein, operating at regional and national levels, is the Ibero-American Federation of Young Entrepreneurs (FIJE), created in 2008 with the mission "to represent the national entities of young entrepreneurs in Latin America in the search for a favorable environment for the achievement of their objectives" (FIJE, 2019). Also, the National Confederation of Young Entrepreneurs (CONAJE) was created in 2000 with the mission to "represent, integrate and inspire young entrepreneurs and their organizations, strengthening the Brazilian entrepreneurial environment, developing new leadership and contributing to the country's growth" (CONAJE, 2019).

These collegiate bodies of young entrepreneurs seek to debate, equalize, and deliberate on the various problems that affect their members, such as the lack of skills and previous experience that can limit the chances of success of these emerging entrepreneurs, as well as the same entrepreneurship problems that adults face: the bureaucracy involved in import/export, high taxes, lack of institutional support for training and information, and the difficulty in accessing resources, including microcredit (Ribeiro, & Teixeira, 2012).

The business associations that are members of these collegiate bodies are represented by their leaders, who have first-hand knowledge and experience of the reality common to the young entrepreneurs they represent, as well as the cognitive skills needed to debate and make decisions on behalf of their members, in light of constantly-changing situations in the market. The deliberative meetings take place at assemblies and congresses, such as the G20 YEA Leaders Assembly, the FIJE Ibero-American Congress of Young Entrepreneurs, and the CONAJE National Congress of Young Entrepreneurs.

The discussions, at these meetings, are focused on extracting information on certain cognitive skills of the G20 YEA and FIJE leaders, both of which are represented in Brazil, with mental attributes becoming increasingly important to career researchers, educators, and policymakers. In World Economic Forum reports (2009; 2016), Entrepreneurial Self-efficacy (AE) and Cognitive Flexibility (CF) were listed as skills and capabilities for addressing the global challenges of the 21st century.

This research aimed to answer the following guiding question: What is the influence of Cognitive Flexibility and Entrepreneurial Self-efficacy on the entrepreneurial behavior of international leaders representing young entrepreneurs from the Young Entrepreneurs' Alliance (G20 YEA) and the Ibero-American Federation of Young Entrepreneurs (FIJE)? The general objective was to analyze the influence of Cognitive Flexibility and Entrepreneurial Self-efficacy on the entrepreneurial behavior of international leaders representing young entrepreneurs from the G20 YEA and FIJE, bearing in mind that knowing how entrepreneurs think and act has become indispensable to support entrepreneurial activities, whether carried out independently or within organizations, as well as in the starting up of new businesses (Hisrich, Langan-Fox, & Grant, 2007).

We used the De Noble, Jung, and Ehrlich (1999) scale to measure the Entrepreneurial Self-Efficacy of the G20 YEA and FIJE leaders. The authors developed skills in the field of self-efficacy that reflect the demands and needs of entrepreneurs. Furthermore, it identifies individuals who may be more likely to be self-employed, confident in the belief that they have the skills required to lead their businesses successfully (Simões, 2016).

To analyze Cognitive Flexibility, Dennis and Vander Wal's (2010) instrument was used. This is a brief self-reporting instrument used to measure of the type of CF needed for individuals to successfully challenge and replace rigid thoughts with more balanced and adaptive ones (Dennis, & Vander Wal, 2010). The study took a qualitative and quantitative approach and is descriptive in nature. The statistical processing was performed using Qualitative Comparative Fuzzy Set Analysis (fsQCA) and comparison of means. The results of the comparative analysis showed that the presence of Cognitive Flexibility (CF), and the initiative to start up one's own business, are necessary characteristics of Entrepreneurial Self-efficacy (AE). Leaders who had started their own businesses had higher FC and AE scores when compared to leaders who had taken over existing family businesses.

It is also noted that the study of Cognitive Flexibility is important for understanding the subjects' ability to receive knowledge (problem-situation), represent it, (re)structure it, and develop a repertoire of responses to extract the most effective solution (Guerra, 2012). The study of Entrepreneurial Self-efficacy is also important, as it demonstrates a person's belief in their abilities to carry out a task (Miao, Qian, & Ma, 2017).

Despite the existence of entrepreneurship studies in several areas of knowledge, from economics to psychology (Baron & Shane, 2005), there are gaps in the understanding of the cognitive processes underlying entrepreneurial behavior. This study, therefore, seeks to contribute to the construction of a new understanding for the development of an integrative theoretical model that recognizes the impact of executive functions, particularly cognitive flexibility, as essential for entrepreneurial behavior.

In practical terms, one can affirm or disprove the importance that cognitive flexibility may have significant competence in entrepreneurial behavior, particularly when it comes to recognizing business opportunities. The way entrepreneurs recognize business opportunities remains a principal research question in entrepreneurial behavior (McMullen, Plummer & Acs, 2007; Smith, Matthews & Schenkel, 2009).

This article has five sections: The first gives the introduction. The second presents the theoretical background, and the third describes the methodological procedures. The results are given in the fourth section, and the final chapter consists of some final considerations. Bibliographic references are cited at the end.

## 2 THEORETICAL BACKGROUND

This section begins by contextualizing the constructs studied: cognitive flexibility and entrepreneurial self-efficacy. At the end of this section, the study hypothesis is presented.

### 2.1 Cognitive Flexibility

The association between entrepreneurship and economic and social wealth (Acs, Audretsch, Braunerhjelm, & Carlsson, 2012), has sparked researchers' interest in identifying the characteristics of entrepreneurial individuals (Lechner, Sorthaix, Obschonka, & Salmela-Aro, 2018; Obschonka & Hahn, 2018; Tolentino, Sedoglavich, Lu, Garcia, &

Restubog, 2014). Early studies were focused on identifying the personalistic traits of entrepreneurial individuals (Crant, 1996). More recent research has focused on the cognitive processes of entrepreneurial behavior (Brännback & Carsrud, 2018; Carsrud, & Brännback, 2009; Mauer, Neegard, & Linstad, 2009; Treffers, Welp, Spörrle, & Picot, 2017; Zhoua, Mengb, Schmitta, Montaga, Kendricka, Becker, 2020). However, the mechanisms underlying the cognitive processes associated with entrepreneurship are still not fully understood (de Holan, 2014; Fuller, Liu, Bajaba, Marlec, & Pratt, 2018; Liñán & Fayolle, 2015; Mauer, Neegard, & Linstad, 2017).

CF is understood as an executive function that enables a person to change strategies and alter mental scenarios, especially in relation to problem-solving (Spiro, Vispael, Schimtz, Samarapungavan & Boerger, 1987; Spiro & Jehng, 1990). According to Cañas, Quesada, Antoli & Fajardo (2003), cognitive flexibility is the ability to adapt process strategies to new and unexpected environmental conditions. Kloo, Perner, Kerschhuber, Aichhorn & Schmidhuber (2010) define it as an executive function that relates to the higher cortical functions responsible for the conscious control of thought, action, and emotion. As such, it is an essential function in planning, controlling inferences, regulating attention, and inhibiting inappropriate actions.

Cognitive flexibility presupposes the ability to change or alter strategies of action or thought as required, based on the situation/problem. It is useful whenever the individual is faced with complex acts and is obliged to consider different information, shifting their focus of attention between two or more tasks according to environmental demands (Gazzaniga, Ivry, & Mangun, 2002; Gil, 2002; Lezak, Howieso, & Loring., 2004; Malloy - Diniz, Sedo, Fuentes, & Leite., 2008).

Few studies relate cognitive flexibility and entrepreneurship. Marxt, Kraus & Zagorac-Uremovic, 2018, found CF to be an essential aspect of entrepreneurial behavior. The authors report that CF allows individuals to shift their focus of attention between different sources of knowledge by establishing a connection between them. This translates into a higher ability to identify business opportunities (Nicolau, Shabe, Cherks, & Spector, 2009; Ward, 2004) and to believe in oneself and to take the risk of setting up one's own business (Mauer, Neergaard, & Linstad., 2017; Sternberg, 2004).

Clercq, Sapienza, & Zhou, 2014, also studied the relationship between CF and entrepreneurship. They found that CF helps entrepreneurs to break away from habitual and routine responses and forge new learning, which is essential when operating in a global environment of interactions between diverse and adverse realities, where uncertainty is a constant feature (Prigogine, & Stengers, 1997; Morin, Ciruana, & Motta, 2002). In a market with these characteristics, opportunities seem overshadowed by the potential risks and instability, and entrepreneurs need to make creative decisions that will enable them to adapt to the dynamics of the market.

Baron (2004, 2007) identified CF as an essential component of entrepreneurial behavior. The author states that CF allows the individual to change their way of thinking according to the characteristics of the situation, which helps the entrepreneur behave more effectively. The studies of Eesley, Roberts, Tian, and Yang (2014) and Turan-Ozpolat (2020) take a similar view, and Anson (2017) states that having cognitive flexibility makes a person more receptive to change, able to listen to new ideas and diversify their sources of knowledge, which is vital for entrepreneurship.

In this study, we chose to use the theoretical and practical line of Dennis and Vander Wal (2010), who understand Cognitive Flexibility as the ability to change cognitive sets to adapt to changes in environmental stimuli, which can be measured by the Cognitive Flexibility Inventory (CFI). The CFI was designed as a brief self-reporting measurement of cognitive flexibility, for use in therapeutic intervention situations with individuals characterized as having maladaptive perseverative thoughts. The CFI is composed of two subscales comprising a total of 50 Likert-type items, to which the subject must respond, giving their level of agreement on a scale from 1- strongly disagree to 7- strongly agree.

The CFI aims to measure the class of cognitive flexibility skills needed to restructure maladaptive beliefs and develop a more balanced and adaptive way of thinking. This scale measures three dimensions: ability (i) to perceive difficult situations as manageable; (ii) ability to perceive the existence of multiple explanations for life events; and (iii) ability to generate alternative solutions to difficult situations.

The IFC proves to be effective for the present study, according to the three relevant points pointed out: (a) it is objective and brief, making it suitable to measure levels of Cognitive Flexibility; (b) it was developed based on a longitudinal study that investigated the potential differences strategies used by cognitively flexible versus inflexible people in response to life event stress; (c) it has been used in studies conducted in several countries (Johnson, 2016; Yu, Yu, & Lin, 2019; Sung, Chang, Lee, & Park, 2019; Oshiro, Nagaoka, & Shimizu, 2016; Roshani, Piri, Malek, Michel, &



Vafaei, 2019; Muyan-Yilik, & Demir, 2019; Bullard, Penner, & Main, 2019; Barrett-Pink, Alison, & Maskell, 2018).

## 2.2 Entrepreneurial Self-Efficacy

Bandura presents his theory of self-efficacy as a personality trait that affects the motivation to successfully perform tasks or the degree of tolerance to face certain adverse situations. It also includes the individual perception of risk (BANDURA, 1977). According to the author, individuals with higher self-efficacy can pursue and persist in a task better than those who have less self-efficacy. Some authors have applied the theory to the study of entrepreneurial intention. These authors include Boyd and Vozikis (1994); Chen, Green, and Crick (1998); De Noble, Jung, and Ehrlich (1999) evidenced the existence of a positive relationship between these two constructs.

Other studies point out that positive self-efficacy is related to persistence, dedication, and satisfaction with the actions performed (Salanova, Grau, Llorens, & Schaufeli, 2001). Research by Zhao, Seiber, and Hills (2005) suggests that individuals who choose to become entrepreneurs have high entrepreneurial self-efficacy. Thus, the individual's belief in his or her own success, when launching a new venture is, according to McGee, Peterson, Mueller, and Sequeira (2009), an important variable, given that it is a strong predictor of entrepreneurial intentions.

Research also affirms the relationship between self-efficacy and intentionality, i.e., individuals with high self-efficacy tend to have higher entrepreneurial intentions (Chen, Grenn & Crick, 1998; De Noble & Ehrlich, 1999; Jung, Ehrlich, De Noble, Baik, 2001, Segal, Borgia, & Schoenfeld, 2002). These authors suggest that educators and educational policies can increase students' entrepreneurial intentions by stimulating students' self-confidence, encouraging them to embark on successful entrepreneurial careers.

Also taking this line of thought, Kickul et al. (2009) point out that it is necessary to understand the factors that can influence the intentions of those who may become future entrepreneurs. These factors are varied, and consist of a combination of personal attributes, traits, experience, and context. The literature identifies contextual variables and individual domains as the two dimensions responsible for shaping entrepreneurial intentions. In relation to the contextual dimensions, some studies have highlighted that environmental influences and environments support impacted entrepreneurial intentions. (Shepherd & Krueger, 2002). Research by Zhao, Seibert, and Hills (2005), which focused on individual domains, showed that characteristics such as self-efficacy and propensity to take risks, along with developed competencies and skills, influence entrepreneurial intentions.

For Miao, Qian, and Ma (2017), Entrepreneurial Self-efficacy has emerged as a "key" psychological construct in entrepreneurship research, and its influence on entrepreneurship motivation, intention, behavior, and performance has been demonstrated.

The entrepreneurial self-efficacy used the Self-reporting measurement in different people in specific domains and distinct contexts, including college students, entrepreneurs, and franchisees. The model of De Noble, Jung, and Ehrlich (1999) was chosen as the basis of this study because it has been used in empirical studies in the national context to validate the scale in Brazil. Examples include those of Lizote, Verdinelli, and Silveira (2013); Silva Filho and Lizote (2019). It has also been applied in several studies conducted in other countries (Welsh, Tullar, & Nemat, 2016; Sanchez, & Hernández-Sánchez, 2013).

The scale to measure Entrepreneurial Self-Efficacy (ESE) is composed of 23 items grouped into six dimensions: defining the main objective of the business; building an innovative environment; developing new products and market opportunities; starting relationships with investors; dealing with unexpected changes; developing "key" human resources for the business.

In light of this, we present the respective propositions:

P1 – Leaders belonging to the Own Business group have higher correlation with Entrepreneurial Self-Efficacy group than to the Family Business group;

P2 – Leaders belonging to the Cognitive Flexibility group have higher correlation with the Entrepreneurial Self-efficacy group than leaders not belonging to the Cognitive Flexibility group.

### 3 METHODOLOGICAL PROCEDURES

According to the Hernández, Collado, and Lucio (2006) classification, this research is characterized as descriptive and correlational. In terms of approach, it can be classified as qualitative and quantitative. The study population consisted of 20 young entrepreneur leaders who are members of the G20 YEA and 17 leaders who are members of the FIJE, making a total of 37 leaders.

Knowing that the number of leaders would be lower than 40, the data collection questionnaire was chosen based on the 15-minute time period allocated by the presidents in the agendas of the G20 YEA and FIJE meetings, which meant it would not be possible to use qualitative methodological instruments for the primary data acquisition.

The business associations of ten countries and the European Union were present at the G20 YEA Assembly held in the town of Balneário Camboriú on November 23 and 24, 2017. Several countries were absent due to the upcoming 2018 G20 YEA Summit in Buenos Aires, Argentina. In a period scheduled in advance with the mediator of the Assembly, two survey questionnaires were distributed to all the leaders present, one referring to the Cognitive Flexibility construct and the other to Entrepreneurial Self-Efficacy. The sample was composed of the following national representations: *Futurpreneur* (Canada); *Future Academy* (China); *JCI* (Japan); *European Confederation of Young Entrepreneurs* (European Union); *Entrepreneurs' Organization* (Indonesia); *Citizen Entrepreneurs* (France); *Wirtschaftsjunioren Deutschland aka JCI Germany* (Germany); *Young Indians* (India); *The Confindustria Young Entrepreneurs Movement* (Italy); *Came Joven* (Argentina); *Confederação Nacional de Jovens Empresários* (Brazil).

Regarding the 8th FIJE Congress, business associations from 11 countries were present. There were two reasons for the absence of the other countries: first, the Congress was originally planned to take place in Mexico, but due to the earthquake that hit that country, it was transferred to Brazil; second, the agenda was specific to the election of the new board of directors of the collegiate body. The President of the FIJE opened space in the principal meeting of the Congress, where the two questionnaires were applied. Thus, the sample was made up of the following national representations: *Confederación Española Jóvenes Empresarios* (Spain); *Associação Nacional de Jovens Empresários* (Portugal); *Confederação Nacional de Jovens Empresários* (Brazil); *Asociación de Jóvenes Empresarios* (Uruguay); *Asociación Nacional de Jóvenes Empresarios* (Dominical Republic); *Juventud Empresa* (Bolivia); *Asociación de Jóvenes Empresarios* (Costa Rica); *Asociación de Jóvenes Empresarios* (Ecuador); *Asociación de Jóvenes Empresarios* (Paraguay); *Asociación de Jóvenes Empresarios* (Peru); *Asociación de Jóvenes Empresarios* (Chile).

The research instrument was translated into three languages (English, Spanish and Portuguese) and organized into three blocks. The first block referred to Cognitive Flexibility, and used the previously-validated model of Dennis & Vander Wal (2010). It is a scale with 20 statements divided into an alternative subscale and a control subscale. The responses to the items were registered on a seven-point scale in which 1 meant strongly disagree and the 7 meant strongly agree. The second block had 23 items which were used to measure entrepreneurial self-efficacy (Noble, Jung, and Ehrlich, 1999). A 7-point Likert-type scale was also used, with responses ranging from strongly disagree (1) to strongly agree (7). The values assigned were based on six subscales: developing new products and market opportunities; building an innovative environment; starting relationships with investors; defining the main goal of the business; overcoming unexpected changes, and developing key human resources for the business. Finally, the purpose of the last block of question was to find out the respondents' sociodemographic profiles.

Having established the research constructs, the variables that reflect them and, especially, operationalize their measurement, were defined. These are contained in the measurement models applied to the respondents. According to Hair, Black, Babin, Anderson and Tatham (2009), to perform the measurement, the variables must be empirically observable and capable of being measured, i.e., they must be defined as measurable items.

Given the small population and corresponding small sample size, it was not possible to perform confirmatory statistical tests of the instrument, according to the thresholds suggested by Hair et al. (2009). For this reason, reliable measurement models were used that have already been tested by international researchers in different countries, given that the respondents in this study represented 21 different nations at the G20 YEA and FIJE.

The data collected in the survey questionnaire were organized in an Excel® spreadsheet for the preliminary analysis, following the recommendations of Hair Jr. et al. (2009). Initially, we checked for any missing data and typing errors. The missing data did not exceed 10% for any one respondent or variable. This value, therefore, was taken as the median of the variable under consideration. Replacing missing values is preferable to totally eliminating cases, especially in situations with low sample numbers. The median was chosen because it is reported to be the most suitable for ordinal



variables, such as those used in this study (Harrel, 2001). The leaders representing the business associations in India and Peru failed to answer one of the 43 statements: the seventh statement of the Entrepreneurial Self-Efficacy questionnaire and the second statement of the Cognitive Flexibility questionnaire, respectively. In addition to the data pertinent to the Likert scales, the respondents' sociodemographic data were also tabulated.

Thus, the spreadsheet with the scores resulting from the addition of the items of the Likert scales, for the levels of constructs of HR and AE, together with their dimensions, were imported into the software programs Tosmana® and SPSS®.

Due to the small number of cases in the investigated population, and the need to use a quantitative instrument, we chose the Qualitative Comparative Fuzzy Set Analysis (fsQCA) technique, seeking to preserve the complexity of the observations and the theoretical implications of the findings (Ragin, 1987). The fsQCA is reported as a suitable technique for addressing situations that require combining quantitative and qualitative aspects of analysis (Kraus, Ribeiro-Soriano & Schüssler, 2018). To this end, the analysis was conducted using the software Tosmana® (Tool for Small-N Analysis), which uses, in its algorithms, the Theory of Sets and Boolean algebra in order to evaluate the combinations of conditions or factors that are present or absent when a phenomenon of interest occurs or does not occur. However, the results of the QCA do not determine causal relations but rather, indicate them through patterns of associations between sets in terms of sufficiency and necessity, thus providing support for the existence of causality (Schneider, & Wagemann, 2010).

The software SPSS® applied relevant descriptive statistical techniques to corroborate and complement the results of the QCA restricted to the sample of this research (Schneider, & Wagemann, 2010). Thus, basic descriptive statistics was applied to calculate the descriptors of each construct, including the mean, median, mode, asymmetry, and kurtosis. Hair Jr. et al. (2009) point out that the normality of data can be evaluated through asymmetry and kurtosis. According to Finney and DiStefano (2006), with values for those descriptors with the range [-2; 2] and [-7; 7], respectively, the variable distribution should be considered as quasi-normal. In addition, normality is assumed by the Histogram plots, Quantile-Quantile (Q-Q Plot), and Quantile-Quantile with envelope (Q-Q Plot envelope) charts, and finally, it is confirmed in the statistical tests for normality (Chantarangsi, Liu, Bretz, Kiatsupaibul, Hayter, & Wan, 2015).

Following the descriptive data analysis step, the technique of fuzzy set comparison qualitative analysis (fsQCA) was applied to evaluate the relationships between Cognitive Flexibility, Family-Owned, and Family-Owned Businesses, and Entrepreneurial Self-Efficacy.

## 4 RESULTS AND ANALYSES

The profile of the leaders showed a majority of men in both groups, with 86% of the respondents (19), while female leaders comprised 14% of the total participants (3). The female respondents were from the following nationalities and respective groups: Italy/G20 YEA, the Dominican Republic and Brazil/FIJE. The average age in both groups corresponded to young adults (35-40 years old). We also highlight the data on the difficulties in the management of the respondents' businesses, which consisted mainly of the financial obstacle (27%) and people management (45%).

### 4.1 Results Of Fuzzy Sets Comparative Qualitative Analysis (fsQCA)

In this subsection, the fsQCA results are demonstrated using the Tosmana® software program, which uses the Set Theory and Boolean algebra to create a Truth Table (Table 1), the main instrument of qualitative comparative data analysis (Schneider & Wagemann, 2010).

To arrive at this result, the calibration of the qualitative anchors was performed, with three being scores of belonging (0, 0.6, and 1) that relate to the levels of the constructs (low, moderate, and high) established by the percentiles of the scales (0%, 33%, 66%, and 100%) setting two boundaries between the lowest and highest value of the score generated by the individuals in the sample. Figure 1 presents the descriptive statistics of the data, including the percentiles used for the calibration of the fuzzy sets.

|                    |             | SECFC  | SEAFc  | AE      |
|--------------------|-------------|--------|--------|---------|
| N                  | Valid       | 22     | 22     | 22      |
|                    | Excluded    | 0      | 0      | 0       |
| Mean               |             | 36.32  | 71.82  | 126.86  |
| Median             |             | 38.00  | 73.00  | 129.00  |
| Standard Deviation |             | 8.392  | 9.220  | 16.562  |
| Variance           |             | 70.418 | 85.013 | 274.314 |
| Asymmetry          |             | -.363  | .368   | -.358   |
| Kurtosis           |             | -1.164 | -.327  | 1.103   |
| Minimum            |             | 21     | 56     | 85      |
| Maximum            |             | 48     | 91     | 161     |
| Percentis          | 33.33333333 | 32     | 69     | 119     |
|                    | 66.66666667 | 41     | 74     | 132     |

Figure 1. Descriptive Statistics

For the SECFC, the following thresholds were considered for the fuzzy logic of belonging (membership): low (belonging 0) with scores of between 21 and 32; moderate (belonging 0.6) with scores of between 33 and 41; and high (belonging 1) with scores of between 42 and 48.

For SEAFc, the following thresholds for the fuzzy logic of belonging were classified as: low (belonging 0) with a score of between 56 and 69; moderate (belonging 0.6) with a score of between 70 and 74; and high (belonging 1) with a score of between 75 and 91.

For the AE, the following thresholds for the diffuse logic of belonging were classified as: low (belonging 0) with a score of between 85 and 119; moderate (belonging 0.6) with a score of between 120 and 132; and high (belonging 1) with a score of between 133 and 131.

For the variable BUSINESS, indicating whether the leaders had their own business or a family business, the value 0 used for a family business and 1 for their own business.

Table 1 presents the Truth Table generated by the “Guine” algorithm, performing Boolean minimization through the Theory of Sets, by showing the belonging of each case to the causal conditions that could reflect on the result.

| <b>TOSMANA REPORT</b>                     |                                                     | <b>Settings:</b><br>- Minimization: AE<br>- Consistency Limit: 0.8<br>- Frequency Limit: 1 |                           |                |              |             |
|-------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------|----------------|--------------|-------------|
| Line                                      | LEADER SET                                          | SECFC                                                                                      | SEAFc                     | BUSINESS       | AE (outcome) | Consistency |
| 1                                         | Germany, Brazil_G20, Brazil_FIJE, Chile, Uruguay    | 1                                                                                          | 1                         | 1              | 1            | 0.9523      |
| 2                                         | Argentina, Paraguay, Peru, Dominican Republic       | 0                                                                                          | 1                         | 1              | 1            | 0.8554      |
| 3                                         | Bolivia, China                                      | 0                                                                                          | 0                         | 1              | 0            | 0.6621      |
| 4                                         | Canada, Portugal                                    | 1                                                                                          | 0                         | 1              | 0            | 0.6579      |
| 5                                         | Costa Rica, Ecuador, Spain, Indonesia, Italy, Japan | 0                                                                                          | 0                         | 0              | 0            | 0.1622      |
| 6                                         | France, India                                       | 1                                                                                          | 0                         | 0              | 0            | 0.0000      |
| # Implications:<br>SEAFc*EMPRESA          |                                                     |                                                                                            |                           |                |              |             |
| <b># Results:</b><br><b>SEAFc*EMPRESA</b> |                                                     | Consistency<br><b>0.8199</b>                                                               | Coverage<br><b>0.7717</b> | Single Charge. |              |             |

Table 1. Truth Table

Table 1 presents a report showing all the relevant information for the analysis of the results, which will be detailed here. The program configuration included the presence of the construct Entrepreneurial Self-Efficacy (EA) as a result of the Boolean minimization, which reduces the primitive expressions (combinations or individual causal conditions) into logical simplifications when identifying the repeated combinations or individual conditions sufficient to generate the result (EA). Thus, the effect of the minimization on the Results can be seen.

Next, a value of 0.8 of was attributed for the limit of consistency of the combinations of causal conditions. In other words, for all configured logical possibilities, their consistency in generating the AE result is calculated. The established limit is in accordance with that suggested and used in studies, i.e.  $>0.8$  (Ragin, 2000; 2006) and is found in the rows of the Truth Table next to the case sets (leaders).

Consistency and coverage of conditions, or combinations thereof, are measures of fit of the outcome. For consistency, this measure assesses the degree to which the cases associated with one or more conditions satisfy the propriety of sufficiency or need, for example, when more than 80% ( $>0.8$ ) have belongingness scores for the condition or combination equal to or less than the belongingness scores in the outcome, then the condition is considered sufficient for the result (Ragin, 2006).

Just below the configurations is the Truth Table. Each set of cases is linked to a combination of causal conditions that can be significant for the occurrence of the outcome or not (Thiem, 2010). We see that in lines 1 and 2, the consistency values are higher than the limit of 0.8, therefore, with the combinations of causal conditions are significant for the occurrence of the AE.

The first row represents the set of cases with five leaders from the following nations: Germany, Brazil\_G20, Brazil\_FIJE, Chile, and Uruguay; which is associated with the combination of the conditions SECFC\*SEAFc\*EMPRESA, obtaining sufficiently high consistency (0.9523) for the presence of the AE result. In other words, the presence of the Alternatives and Control subscales and the Own Business subscale results in the occupation of Entrepreneurial Self-efficacy. Similar to the previous combination of conditions, the combination covers part of the AE result, i.e., only 51% is covered by this combination, a percentage that is slightly higher than the combination of the presence of the SEAFc and absence of the SECFC.

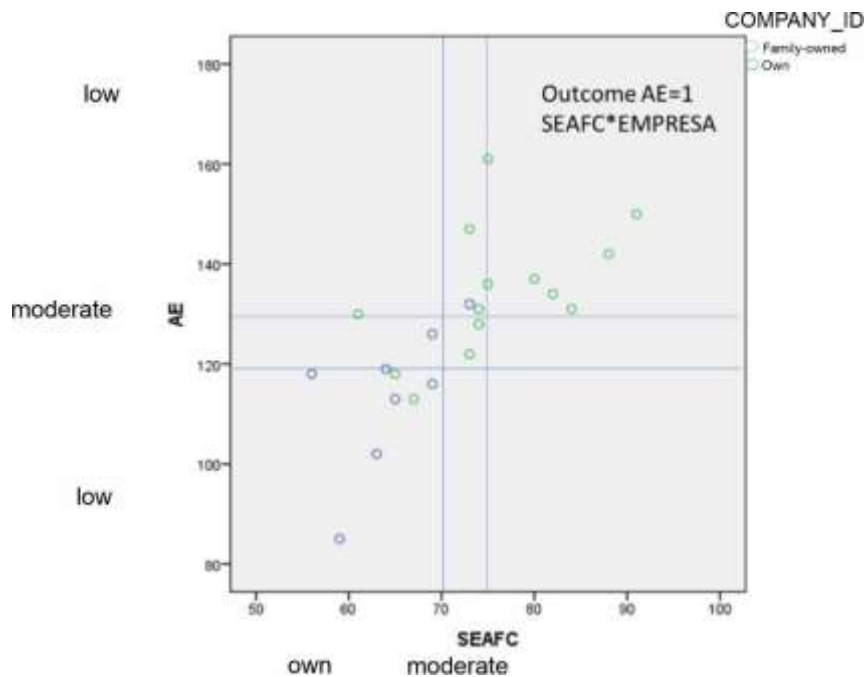
Cases in the second row were comprised of younger leader entrepreneurs from Argentina, Paraguay, Peru, and the Dominican Republic. They had their own businesses, and moderate and high scores on SEAFc, low scores on the SECFC, and were coded by Boolean algebra with SECFC = 0 SEAFc = 1 and BUSINESS = 1. Thus, we demonstrated an absence of SECFC, a presence of SEAFc, and BUSINESS results had an AE, considering that all cases of three combinations and conditions are sufficient to achieve this result. This situation generated a consistency of 0.8554.

Notwithstanding the consistency greater than the threshold of 0.8 of the condition combinations ( $\sim$ SECFC\*SEAFc\*EMPRESA), its coverage value is 0.5138, demonstrating that just over half of the cases that are present in the AE result are covered by the said logical combination. It should be mentioned that the combination of conditions explains 51% of the result, similar to the coefficient of determination (Thiem, & Dusa, 2012).

In short, two consistently sufficient combinations of conditions generate the result AE ( $(\sim$ SECFC\*SEAFc\*EMPRESA + SECFC\*SEAFc\*EMPRESA). However, they are not part of the final solution (prime implicants) of the Truth Table because Boolean minimization simplifies the primitive structures of conjunctions (fundamental intersections) into simple solutions. The Boolean minimization rule states that if two fundamental intersections (combination of causal conditions) for the same outcome differ in the valence of a single condition, then that condition can be eliminated in order to achieve in a simpler term as a result (Thiem & Dusa, 2012). Thus, the combination of the Alternatives Subscale of Cognitive Flexibility (SEAFc) and the presence of Own Business (ENTERPRISE) were the only combination of causal conditions sufficient for the occurrence of the AE result.

This result corroborates the theory and the hypotheses formulated, as the SEAFc refers to the generative aspect of Cognitive Flexibility and the Own Business is a condition of perception of Entrepreneurial Self-efficacy.

Figure 2 shows the grouping of cases more clearly, and helps explain the logic of the comparative analysis.



**Figure 2.** Comparative Analysis

The results of the comparative analysis indicated a condition related to the trajectory of the businesses managed by the leaders interviewed. Owning one's own business emerged as a condition associated with high entrepreneurial ability. Thus, it was decided to explore possible differences in SEAFc and AE scores between these two groups, family business managers ( $n=8$ ) and own business managers ( $n=14$ ). A significant difference for SEAFc was found between the means for owned ( $M=75.86$ ,  $SD=8.50$ ) and family-owned ( $M=64.75$ ,  $SD=5.57$ ) businesses, with  $p=0.004$ . A difference of AE was also found in the averages for own businesses ( $M=134.29$ ,  $SD=12.83$ ) and family-owned businesses ( $M=113.88$ ,  $SD=14.63$ ), with  $p=0.003$ . Therefore, leaders who owned their own businesses had significantly higher mean SEAFc and AE when compared to those who had taken over family businesses.

## 5 CONCLUSIONS

This research analyzes the influence of Cognitive Flexibility and Entrepreneurial Self-Efficacy on international entrepreneurial behavior representing young entrepreneurs of the G20 YEA and FIJE to confirm or reject the proposed theoretical model. These leaders are also entrepreneurs; men and women who live with the mishaps and turbulences of the market and, for these reasons, have the experience of entrepreneurial life. All of them had a suitable personality for entrepreneurship, as measured by the appropriate research instruments.

Based on the results, it is inferred that leaders with Cognitive Flexibility, due to the generative aspect of the construct (SEAFc), are apprehensive, anguished, and feel a loss of control due to the numerous variables that make the market so volatile and fickle (absence of SECFC). Nevertheless, they are able identify and generate many explanations and alternatives solutions to uncertain, difficult, and new occurrences, which has a positive influence on the belief that they have the skills needed to set up a new business, develop the business, or solve problems arising from unexpected changes (P2 - Leaders belonging to the Cognitive Flexibility group have higher levels of belonging to the Entrepreneurial Self-Efficacy group than leaders not belonging to the Cognitive Flexibility group).

The results also suggest that leaders who have set up their own businesses and have not taken over family businesses have a higher level of Entrepreneurial Self-efficacy (P1 - Leaders belonging to the Own Business group have

higher belonging to the Entrepreneurial Self-efficacy). This can be explained by their different perspectives of entrepreneurial engagement, as leaders who have taken over as partners of family businesses may have had little or no participation when it comes to strategic decision-making on new process, products or services in the business. On the other hand, leaders with their own businesses have probably gone through all the stages of creating a business, from ideation and planning to opening, and therefore demonstrate higher levels of Cognitive Flexibility and Entrepreneurial Self-Efficacy.

It should be emphasized that the conclusions drawn from the results are not statistical inferences, since there were few observations ( $n = 22$ ) of inestimable significance. The respondents are individuals who represent youth entrepreneurship in their countries, i.e., in Latin America, the Iberian Peninsula (FIJE), and the World (G20 YEA). Therefore, the results of this sample population cannot be generalized, and the use of the configurational and conventional statistical techniques, for so few observations, requires caution when drawing conclusions (Reis, 1997; Ragin, 2006; Hair Jr. et al. 2009).

Cognitive Flexibility is an important skill for solving problems or dealing with new situations. Therefore, its study in future research, as an antecedent of cognitive skills related to entrepreneurship, such as Self-efficacy and Entrepreneurial Intention, is necessary for understanding the characteristics, motivations, attitudes, and strategies that entrepreneurs share because the usefulness of this knowledge provides tools for entrepreneurial training of those already active in the market, or future entrepreneurs.

Finally, the finding that people who start their own businesses exhibit greater entrepreneurial behavior than those who take over family businesses is a topic that can be further explored in future research.

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