

## **Methodology for determining the relationship of university entrepreneurship potentiated by the dimension of family social climate relationships using the Tukey method in ANOVA**

## **Metodología para determinar la relación del emprendimiento universitario potencializado por la dimensión de relaciones del clima social familiar empleando el método de Tukey en ANOVA**

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### **Abstract**

Currently, the global level of students is why this topic has been studied in recent years with the public most noted for its relevance and impact that entrepreneurship has in innovation, competitiveness, job creation and economic growth. Nowadays, research is carried out on entrepreneurship, among which are traditional, social, feminine, innovative entrepreneurship and social innovation entrepreneurship. The present research work includes the idea of the entrepreneurial university, which is widely recognized, for what reason, the classic concept of university and its social contribution has evolved, that is why entrepreneurship in the university environment is one of the themes that has had dynamism and that occupies that many people, the majority of people related to the university environment; and that currently universities have a proactive role in this issue, not only are they restricted to education and research, but they have an active role in the development of university entrepreneurs, because society demands an active role of educational institutions; Many young people are putting into practice ideas that they probably did not consider before. Others focused on cognitive skills, entrepreneurial education and the characteristics of the entrepreneurial personality. University entrepreneurship, the entrepreneurial attitude, and the influence of the family social climate on entrepreneurship are subjects that attract considerable attention in research and practice. However, the overlap of these issues can still be found in this context, but the family can still be accessed in context. of university entrepreneurship.

**Entrepreneurship, Family Social Climate, Entrepreneurial Intention, University Entrepreneurship**

### **Resumen**

Actualmente, a nivel global los gobiernos están demandado un incremento en la actividad emprendedora es por ello que se ha estudiado en los últimos años este tema con mayor énfasis debido a su relevancia e impacto que tiene el emprendimiento en la innovación, competitividad, creación de empleo y el crecimiento económico. Hoy en día, se realizan investigaciones sobre emprendimiento entre los cuales se encuentran el emprendimiento tradicional, social, femenino, innovador y el emprendimiento de innovación social. El presente trabajo de investigación incluye la idea de la universidad emprendedora, la cual es ampliamente reconocida, por tal razón, ha evolucionado el concepto clásico de universidad y su contribución social, es por ello que el emprendimiento en el ámbito universitario es uno de los temas que ha tenido dinamismo y que ocupa el que hacer de muchas personas, la mayoría vinculada al entorno universitario; y que actualmente las universidades tienen un papel proactivo en este tema ya no sólo se restringen a la enseñanza e investigación, sino que han tomado un rol activo en el desarrollo de emprendedores universitarios, porque la sociedad demanda un papel activo de las instituciones educativas; muchos jóvenes están poniendo en práctica ideas que probablemente antes no consideraban. Otros se han enfocado en las habilidades cognitivas, la educación del emprendimiento y las características de la personalidad emprendedora. El emprendimiento universitario, actitud emprendedora, y la influencia del clima social familiar en el emprendimiento son temas que atraen una considerable atención en la investigación y la práctica. Sin embargo, la superposición de estos temas es todavía un campo relativamente joven, si bien se ha encontrado literatura con referencia a estos temas, pero se ha tratado de manera separada, todavía permanece la incógnita de la que tanto puede influir la familia en el contexto del emprendimiento universitario

**Emprendimiento, Clima Social Familiar, Intención Emprendedora, Emprendimiento Universitario**

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## Introduction

Globally, governments are now demanded an increase in entrepreneurial activity, for that reason has been studied in recent years with more emphasis, because of the relevance to the impact of entrepreneurship on innovation, competitiveness, job creation and economic growth (Damian 2013; Huchin and Damian 2011; Romero 2011; Cabello 2006). , Social entrepreneurship (De Pablo, 2005), female entrepreneurship (Fuentes and Sanchez, 2010) Today, research on entrepreneurship among which are the traditional venture (; Casson 1982 Veciana 1999 Kihilstrom and Laffont 1979) are made , innovative entrepreneurship (Casson, 1982), and social entrepreneurship innovation (Harrison and Leitch, 1996).

In this sense, both the scientific community and academic are interested in analyzing and deepening knowledge of topics such as: Influential entrepreneurial skills of students in universities (Mavila et factors in 2009; Clark, 1998; Clark 2004; Korurilsky, 1995; Laukkanen, 2000; Hellman, 2007; Mayer, 2010; Manzanares, 2008;), or the influence of factors related to professional activity (Peterman & Kennedy, 2003;. Souitaris, et al, 2007; Varela et al 2011;. Morante, 2005), and processes of entrepreneurship based on family (Pecharromán, 2008; Sharma, 2011; Schwass, 2008; Quintana, 2012; Del Giudice et al, 2013; Maggioni and Del Giudice, 2011). However, these issues college students,

In relation to higher education institutions can be mentioned that began to contribute to the creation of companies from more than fifty years (Katz, 2003) does, but perhaps today, that their participation has increased, generating derived research college-students, and the factors that concern them, such as family environment context of the business relationship.

There are also studies that have been performed ventures and analysis on the relationship university-students.

However, despite the interest of academic, economic and business research to analyze training in business creation, still the unknown that has not been attached to him those aspects that must be considered combining the influence of the family environment of the university persists to be an entrepreneur, relating the differences in who is related to family businesses and who has no family in this area, besides it should also deepen research influences how and to what extent affects the undertaking of a university.

## Justificación

The project is currently distinguished based on the development and growth of a country because it brings new ideas and more companies that help you in a dynamic society, as it has been shown that regions with higher levels of business creation They have a greater economic growth; therefore the governments of various countries have shown that the entrepreneurial capacity of a country's key economic growth (Alemany, Alvarez, Planellas and Urban 2011; Olivares, Fair and Castro, 2008; Reynolds and Curtin, 2008) resides , therefore, in addition to be a growing interest of various institutions to boost entrepreneurship, you can also notice increased academic attention in the analysis of this phenomenon, because of their contribution to innovation, the generation of new jobs and economic growth mentioned above (Alvarez and Urban, 2011). It is therefore important to understand that entrepreneurship should be linked to education and should be studied in all areas.

In relation to the above it can be mentioned that educational institutions have responsibility gestation trained students to meet and compete with a competitive labor market, making use tools to make to economic and social development of a country, therefore, modern economies spend large amounts on education and according to estimates of some economists, investment of parents in the education of their children (investment in human capital) are a source of capital stock of the most important economy inheritances or the accumulation of physical capital (Bracho, 2001); it should be mentioned also that Mares et al. (2012) indicate that family income and employment status of the student, are the two main conditions for training support at the top level.

Given this reality, without the support of parents or economic guardians, it is difficult for students who do not have a paid job can enter and / or continue in college, so the expected social mobility is for those that do have with this type of support. Also, in a document published by the World Bank, it noted that "In Latin America education and income level of the parents still influence the achievements of the children to a considerable extent, appears to be higher than in other regions "(Ferreira, et al. 2013). In Mexico it is characterized by a country that retains the traditional 'family' households, according to the National Institute of Geography and Statistics (INEGI, 2017). The largest proportion of households in Mexico (90.5%) is family type; these homes are characterized by a family relationship exists among the members with the head, where family dependence on university students is high. Of these family homes, eight out of ten (77.7%) are led by men and 22.3% women of a total of 28,159,373 households (INEGI, 2017).

### **Problem Statement**

Currently there are several factors that make a company that has been undertaken by university can succeed as is a good long-term planning, family business environment, social responsibility, quality of production and be innovative and entrepreneurial. But one factor that is gaining great importance is the study of variables that overlap and that has not been studied together, which, contribute the formation of its leaders, the influence or the family environment of the university, business skills and entrepreneurship training, so that if these factors are demonstrated and carried out, is more likely to be successful entrepreneurship and develop properly.

After the foregoing, it can be mentioned that while the importance of entrepreneurship has contributed to arouse great interest among researchers and university institutions responsible for promoting entrepreneurship, has not yet been consolidated.

Therefore, it is clear that to use business skills and market opportunities, it is important to establish actions and strategies to generate, develop and establish actions to help companies develop a strategic approach, and competitive from factors that may be included as the Family

Social Climate intention of entrepreneurship and entrepreneurs training college. In this sense, this paper aims to correlate the dimension of relations variable family social climate and its influence regarding entrepreneurial intention in college students with potential entrepreneurial discipline of entrepreneurship in students level higher university of Cd. Puebla.

### **Theoretical Foundations**

The project has been studied from various areas of expertise; so that studies can be found from different fields such as economics, sociology, psychology, business organization, history and anthropology (Hébert and Link, 1988). In this sense, Veciana (1999) mentions that the entrepreneur and its importance in the economy and society has been studied individual, business, regional, globally, etc.

Moreover, over the years there have emerged new theories to explain the behavior of the entrepreneur, such as theories cognitive area of psychology and approaches based on the exploitation of opportunities, which are intended as a framework most comprehensive study of the phenomenon of entrepreneurship (Shane and Venkataraman, 2000) theoretical. About this is important to note that other researchers prefer to take a multidisciplinary approach, given the complex and multifaceted nature of this phenomenon (Audretsch and Kayalar-Erdem, 2004; Acs, Arenius, Hary and Minniti, 2004).

In this same vein, one can conclude that the influence of the family is an important factor providing background experience and motivation of students to business activities (Bagheri and Pihie, 2010). This is supported by Anderson, Jack and Drakopoulou (2005), which agrees that social relations and networks play an important role in developing good business. Regarding this study, Robson and Bennett (2000) posit that families and friends act as a preferred source of advice for owners of small and medium enterprises. In a way the new entrepreneurs of these features rely on informal sources such as family members, colleagues and social networks, as well as universities (Greene and Saridakis,

Moreover, family businesses or colleagues inspire new graduates are also known, providing a supportive environment that gives them the information and resources to start a business after graduating (Bagheri and Pihie, 2010).

For example, parents play an important role in the development of entrepreneurial self-efficacy students, encouraging them to get involved in businesses that develop their entrepreneurial intention (Bagheri and Pihie, 2010).

Definitions construct

Family Social Climate

Zimmer, Gembeck and Locke (2007) mention that "the family atmosphere consists of the perceived environment and interpreted by the member countries of the family and has been shown to exert a significant influence as much as in behavior, and social development, physical, emotional and intellectual development of the members. "

It is noteworthy that the components measuring Scale Family Social Climate comprised of three dimensions: relations, development and stability, which in turn are made up of areas, however, this study only the dimension of relations will take into account and its subdomains which are shown below:

- 1) Relations: Measures the extent of communication and free expression within the family and degree of conflict interaction that characterizes it. Comprised of the following areas:
  - a) Cohesion is the degree to which household members are attuned and support each other.
  - b) Expresividad: The degree to which it is allowed to express themselves freely family members communicating their feelings and opinions and ratings about this.
  - c) Conflict: is defined as the degree to which anger, aggression and conflict among family members openly expressed.

**Methodology**

To address this study, the methodology focused according to Hernández, Fernández & Baptista, (2010), from the point of quantitative correlational, because such studies are intended to measure the degree of relationship between two or more concepts or variables, each measured and then quantified and analyzed linkage. Such correlations are based on assumptions tested as those raised in this investigation, leaving behind also the descriptive analysis because it seeks to specify the characteristics and profiles of people, for submission to an analysis.

Sample selection

It is noteworthy that the population refers to all the elements that have the main features under analysis (Anderson, et. Al. 2008), in this sense, we proceeded to begin the research by sample selection not without first determining the unit of analysis and clearly establishing the characteristics of the population, all with the aim of defining parameters which were the sample. Analysis Unit 5 private higher education institutions or universities in the city of Puebla, Mexico, with a sample size of 185 students.

Regarding the number of private institutions of higher education in Puebla, Mexico, was determined only contemplate universities called at first as A, B, C, D, E., because they are within the ranking of the best universities of Mexico 2015.

Research tool

Regarding the first instrument of "Family Social Climate" it was based from empirical studies to give construct validity, because they have conducted serious investigations such as Alvarez, et al. (2009); Bones, Forns, & Chamarro, (2009); Hombrados-Mendieta, & Castro-trave, (2013); Valdes, et. to the. (2012); Revuelta, & Esnaola, (2011); among others, which have been treated statistically to domains and subdomains with ANOVA and Tukey, Duncan or Fisher, typically using an  $\alpha = 0.05$  and a sphericity test Bartlett significant ( $p = .000$ ), as show the work referrals.

It should also be noted that a key question in this research instruments concerning entrepreneurial intention, in which the Likert scale was used in 5 different modalities, with the following possible answers, 1. I do not care to be annexed entrepreneur have other plans; 2. It is very likely not come to start a business someday; 3. I doubt whether you ever get to start a business; 4. I am determined to create a company in the future; 5. My career goal is to become an entrepreneur in the short term; the above was for the purpose of obtaining greater variance in responses.

In this regard, it should state a normality test was performed, with the average of each item of the 3 instruments selecting the corresponding number of data such as Anderson-Darling, which had a positive result as you can see in table 1 that gave a parameter to continue the investigation, together with the foregoing which had previously been substantiated with studies theorists who have occupied these research tools, likewise, Cronbach's alpha was determined to have a value of 0.882, so indicating good reliability as can be seen in table 2 SPSS software Ver. 23.

Summary normality test:	
Variable \ Test	Anderson-Darling
(Average Family Social Climate)	.1396
(Average entrepreneurial attitude)	.2546
(Entrepreneurial Intent)	.0416

Table 1 Analysis of normality, processed with results generated XLSTAT Ver. 19.4

Reliability

Summary case processing			
		N	%
cases	Valid	179	96.8
	excluding de	6	3.2
Total		185	100.0

Reliability statistics		
Cronbach	Cronbach's alpha based on standardized elements	N elements
.869	.882	136

table 2 Cronbach's own calculations from SPSS V. 23

According to the foundation of theoretical and previous statistical analyzes, it can be noted that given guideline to construct validity to continue the study and perform ANOVA variables "Family Social Climate" and "Enterprising Intent" in students careers related to business college in the city of Puebla.

Results

Before mentioning the results of this research, it is necessary to refer to test HSD (Honestly-significant-difference) Tukey, in this sense, it is important to consider that when an ANOVA, a value significantly F is done indicates that not all conditions produce the same effect on the independent variable. Therefore, the aim is to have more elements for making decisions knowing where to find such significant differences and if it continues a trend that enable better decision-making, ie, the Tukey test is to evaluate such differentiation such that measures the difference in the mean values of two groups in terms of intragroup variance (Garcia et al. 2001).

It is also necessary that multiple correlation reference; It is the measure of the degree of relationship between two or more variables.

That said, it can be mentioned that the statistical analysis within the dimension of the "Relationship", shows that cohesion is taken into account significantly ( $p \leq 0.001$ ) of its impact on family social climate, which reflects, an average of 3.4396 therefore classified as "a" according to the grouping Tukey confidence intervals (95%) of (3.3755, 3.5038); Comparison Tukey disintegrates into three statistically distinguishable groups together, where subdimension cohesion have the highest average while subdimension conflict has the lowest average with 2.3387 and a standard deviation of 1.3371, classified this subdimension as category "C" as reflected in figure 1.

**way ANOVA: Cohesion, Expressiveness, Conflict**

S R-sq. (Adjusted) R-sq. (pred)  
1.33463 10.59% 10.55% 10.48%

Socks

Factor N Media Desv.Est. 95% CI  
1665 3.4396 1.3261 cohesion (3.3755, 3.5038)  
Expressivity 1.3407 1665 3.0889 (3.0248, 3.1530)  
1665 2.3387 1.3371 conflict (2.2746, 2.4029)

Desv.Est. = 1.33463 grouped

**Tukey comparisons in pairs**

Group information using the Tukey method and 95% confidence

Factor N Media Group  
1665 3.4396 cohesion A  
Expressivity 1665 3.0889 B  
Conflict 1665 2.3387 C

Stockings do not share a letter are significantly different.

**Figure 1** Comparison of variables Relations, Development and Stability Prepared by Minitab V.17

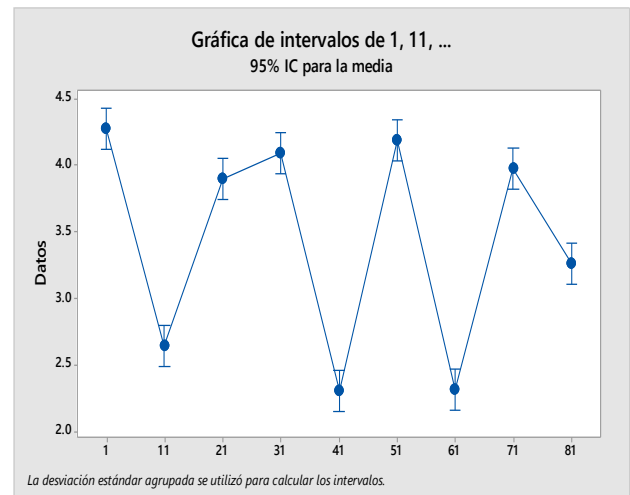
As regards the sub-dimensions, it is possible to specifically quantify the level of impact of different items that make up each sub-dimension, therefore, it is necessary to statistically distinguish each based on its impact on family social climate, in this sense, then table 3 is presented, which disaggregates each dimension and subdimension with items that compose and results enunciate in that order.

Variable Ratio of Family Social Climate	
Subdimensions	Ítems
Cohesion	1,11,21,31,41,51,61,71,81
expressivity	2,12,22,32,42,52,62,72,82
Conflict	3,13,23,33,43,53,63,73,83

**Table 3** Subdimensions Relations.

a) First analyzed to subdimension Cohesion, which belongs to the dimension of relationships that integrate items 1, 11, 21, 31, 41, 51, 61, 71, 81, it is clear according to ANOVA and the Tukey test in item No. 1, concerning "in my family we help and really support each other," it has the greatest effect on the family social climate with an average of 4.2757, so it is classified as "a" according to the grouping Tukey confidence intervals (95%) of (4.1205, 4.4309)

Where, was segregated based treatments Tukey test, however, items 11, 61 and 41, corresponding to "often gives the impression that at home we are just hanging out; In my family there is little team spirit; When you have to do something at home, it is rare that a volunteer is offered "respectively; It was those who had less impact on the family social climate with mean 2.6378; 2.3027 2.3081 and, which were classified in the category "D" can be illustrated in Figure 2 of data processed by Minitab.



**Figure 2** Chart intervals subdimension cohesion own development of Minitab V.17

b) Second, the items making up the integrated Expresividad subdimension of the 2,12,22,32,42,52,62,72,82, which are part of the dimension relations show significant evidence ( $p \leq 0.001$ ) items number 62, and 12 according to the ANOVA and Tukey test it to have the highest specific gravity of the family social climate with a mean (3.6919 and 3.6703), so is classified as "a" according to the grouping Tukey confidence intervals (95%) of (3.5149, 3.8688); and (3.4933, 3.8472), which refer to "My family issues and money payments are not openly discussed; At home we speak openly about what we think or want, "instead item 22 which refers to" in my family is difficult to "let off steam without disturbing everyone"

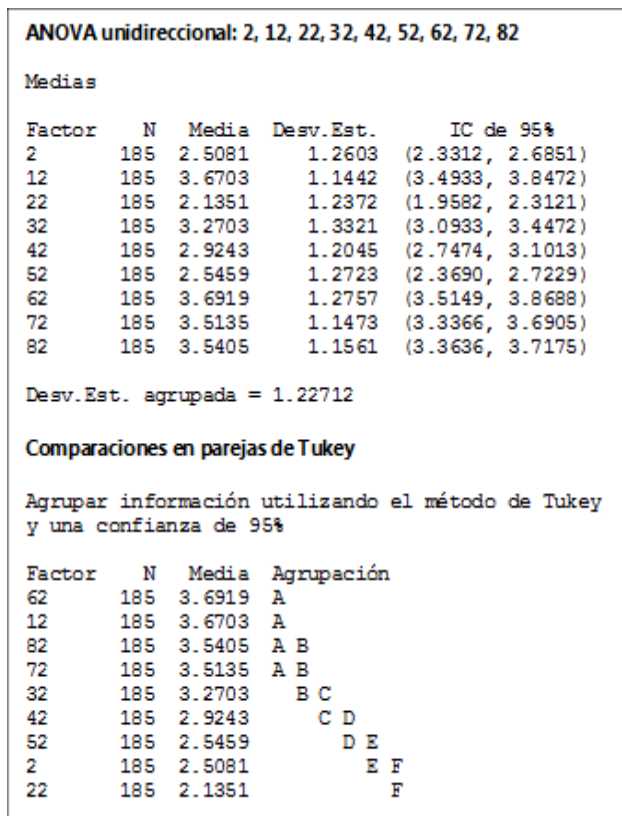


Figure 3 Comparison of the items in the sub-dimension of expressiveness, own development of Minitab V.17

c) As regards the third sub-dimension which corresponds to the conflict dimension of relations it can prove that the item 63, which corresponds to "If there is disagreement in my family, we all strive to smooth things and hold peace" was the factor that had a significant impact ( $p \leq 0.001$ ) in the family social climate with an average of 3.8162, so it is classified as a category "a" according to the grouping of Tukey intervals confidence (95%) of (1.444, 2.177), the factor 23 who had the lowest specific weight having an average of 1.50

Entrepreneurial intention in a survey was conducted which consisted of determining whether college students have in their plans in the short, medium and long-term entrepreneurship perform actions or rule out this activity in respondents. Therefore, an item number 91 annexed "You have in your goals to be an entrepreneur," and for quantifying this response Likert scale was used by 5 points with the following possible answers, "1. I do not want to be an entrepreneur I have other plans; 2. It is very likely not come to start a business someday; 3. I doubt whether you ever get to start a business; 4. I am determined to create a company in the future; 5.

My career goal is to become an entrepreneur in the short term "; the above was for the purpose of obtaining greater variance in responses.

For college students with career profile companies and businesses of Puebla response it had an average 3.897 with a standard deviation 0.900; in this case it is necessary to mention that these results were to be expected in the entrepreneurial intention of college students, due to the profile of the careers that were analyzed and the type of selected universities in this regard to, there is some ideas, beliefs, perceptions, values and attitudes that can be cemented by college students through entrepreneurship education programs (Pittaway & Cope, 2007; Varela Martinez & Peña, 2011; Ekpoh & Edet, 2011 and Linan & Fayolle, 2015) or at least can contribute to young people perceive entrepreneurship as more feasible (Urban & Toledano, 2008).

It has been found, in that regard, that the environmental stimulus university affects entrepreneurial intention of students, because apparently there are differences in context between higher education institutions (Ruiz, Rojas & Suárez, 2008 and Kantis et al, 2014).

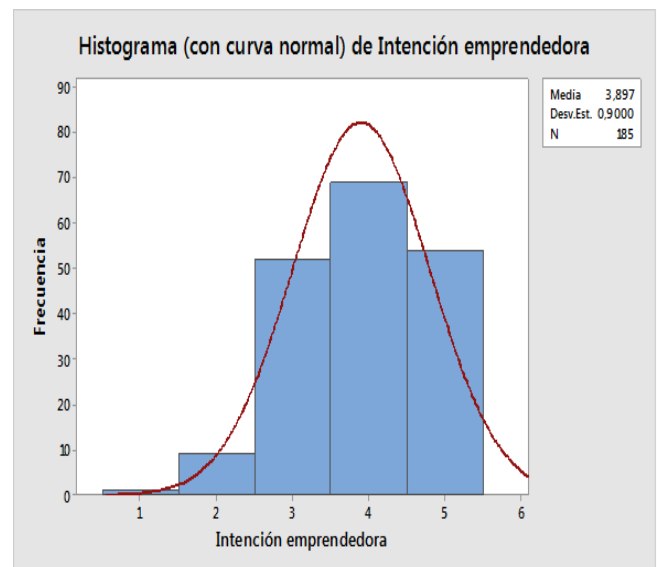


Figure 4 Chart histogram with normal curve variable Emprendedora Intent

The correlation shown in the tables of the matrix, cannot be contrasted with some other research completely so it was already mentioned with advance according to the literature review, however may correspond in any way with the work of García (2005 )

Who applied to students from two universities: private Universidad San Martín de Porres and Universidad Nacional Mayor de San Marcos list of social skills Golstein and scale of the social climate in the family Moos, Moos and Trickett whose results arrived at a positive and significant correlation between social skills and social climate in the family. Similarly, in the present investigation it is a significant positive correlation between family social climate and social skills,

### Discussion

Based on tests performed correlation and regression, the following is derived on the characteristic of the Family Social Climate:

Test correlation = 0.3515 indicates that there is a correlation between family background and university entrepreneur, however, is not as expected because on a scale correlation can be interpreted as weak positive (Levin et al., 2011) however, in the multiple correlation, considering the variable entrepreneurialism it can be mentioned that increases 76% to 0.6187, which indicates a moderate strong positive correlation.

Based on the results it can be inferred that family and careers of business-oriented programs infers in entrepreneurial intention. In this sense we can also substantiate the theoretical framework in which researchers found in environmental stimulus university affects entrepreneurial intention of students, because apparently there are differences in context between higher education institutions (Ruiz, red & Suárez, 2008 and Kantis et al, 2014).

In the area of study of college career, some research found that this variable does influence entrepreneurial intention, although there is no general agreement on what kind of areas promote it more (Birdthistle, 2006; Osorio, Vine & Tarapuez, 2014), as this also depends on other aspects such as the type of college,

Family variables also have an important place in the study of entrepreneurial intention different studies find that the role of family business is one aspect that is associated with the hope of developing an entrepreneurial career.

(Wang & Wong, 2004. Veciana, Aponte & urban, 2005, Hundley, 2006; Ruiz et al, 2008; Olomi & Sinyamule, 2009; Bulut & Sayin, 2010; Ahmed Nawaz, Ahmad, Shaukat Usman, Wasim-ul-Rehman & Ahmed, 2010; Kantis et al, 2014; Solimano, 2014 and Dehghanpour, 2015), although other research not one family effect on the purpose of creating a business note, it is possible that there is some influence (Urban, 2006; Espí, Arana, Heras & Diaz, 2007 and Franco, Haase & Lautenschlager, 2010). Whereby,

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