CRIATIVIDADE E RESILIÊNCIA NO ENSINO SUPERIOR: UM ESTUDO EXPLORATÓRIO NA REGIÃO AUTÓNOMA DA MADEIRA

CREATIVITY AND RESILIENCE IN HIGHER EDUCATION: A STUDY IN THE AUTONOMOUS REGION OF MADEIRA

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Criatividade e resiliência no ensino superior: um estudo exploratório na região autónoma da Madeira

Resumo

Na Psicologia Positiva, tanto a criatividade como a resiliência são consideradas utensílios cruciais para o desenvolvimento saudável dos indivíduos (Seligman & Csikszentmihalyi, 2000; Yunes, 2003). Neste estudo, pretende-se explorar as variáveis criatividade e resiliência na comunidade do ensino superior. A amostra é constituída por 326 participantes com 17 anos ou mais. No que respeita aos instrumentos utilizados, foi aplicada a Escala de Personalidade Criativa – Forma Reduzida, de Pocinho et al. (2020) e a *Measuring State Resilience*, adaptada para a população portuguesa por Martins, em 2005 (Teixeira, 2014). Os resultados indicam que existe uma associação/correlação positiva entre a criatividade e a resiliência; os indivíduos do género feminino são mais resilientes; os indivíduos mais velhos são mais resilientes e tendencialmente mais criativos; os indivíduos que possuem o ensino superior são mais criativos; os docentes são mais resilientes do que os estudantes e do que os investigadores; os docentes são mais criativos do que os estudantes. Implicações práticas são também apresentadas e discutidas.

Palavras-chave: *Criatividade, Resiliência, Bem-Estar, Ensino Superior.*

Creativity and resilience in higher education: a study in the autonomous region of Madeira

In Positive Psychology, creativity and resilience are considered crucial tools for the healthy development of individuals (Seligman & Csikszentmihalyi, 2000; Yunes, 2003). This study explores variables such as creativity and resilience in the higher education community. The sample consists of 326 participants aged 17 or over. Regarding the instruments used, the Creative Personality Scale - Reduced Form, by Pocinho et al. (2020) and the Measuring State Resilience, adapted for the Portuguese population by Martins, in 2005 (Teixeira, 2014), were applied. The results showed that there is a positive association/correlation between creativity and resilience; female individuals are more resilient; older individuals are more resilient and tend to be more creative; individuals with higher education are more creative; teachers are more resilient than students and researchers; teachers are more creative than students. Practical implications are presented and discussed.

Key Words: *Creativity, Resilience, Well-Being, Higher Education.*

Creativity and resilience are important variables in Positive Psychology and are considered two strengths of the Human Being (Seligman & Csikszentmihalyi, 2000; Yunes, 2003). Firstly, creativity can be considered a component that can promote professional, social, and personal well-being (Krentzman, 2013). However, when defining creativity, this definition is not consensual and has been challenging. Many definitions have emerged, with different meanings and focus according to different researchers (Becker et al., 2001). Therefore, creativity is a very complex concept, with more than 100 definitions already presented and identified (Meusburger et al., 2009). In an attempt to a definition, Malchiodi (1998) highlighted that creativity is the ability to bring something unique and new to existence. For Desetta and Wolin (2000), all individuals have imagination since the creative act is a *safe port* in times of crisis. Creativity is present in all sides of life, particularly in education and professional endeavors, being a crucial resource for us to deal efficiently with world problems and demands (Oliveira & Alencar, 2010).

Nonetheless, creativity can also be seen as a phenomenon where a person creates something new that has some sort of value or usefulness (Amabile, 1996; Morais, 2001). Alencar (2007) defined creativity as something healthy to individuals and as an activity that brings pleasure and satisfaction, which is essential to people's mental health and emotional well-being. For Livingston (2010), individuals use creativity to create and produce in different situations throughout their lives. On the other hand, Romo (2008) considers that the processes that involve creativity occur at an emotional, cognitive, and motivational level. According to Nogueira et al. (2015), creativity also implies personal skills.

According to Morais and Fleith (2017), creativity occurs in the interaction between processes, environment, and skills, in which something that is characterized by being useful and new in a given social context is generated. These authors argue that creativity is a continuous and dynamic process that takes place throughout the life span and that takes into account environmental, temporal, and individual aspects.

It is essential to think about the requirements of creativity, more specifically, to think about what makes an individual creative and how the creative process is explained (Morais & Fleith, 2017). In this sense, Rhodes, in 1961, proposed a conceptual scheme of creativity, considered as universal and that gives space for complexity: the framework called the 4 P's. In this conceptual work, the 4 P's of creativity are, namely, the product, the process, the environment, and the person, each of which characterizes a dimension of creativity. The person concerns the creative individual; the product refers to the result of creative production; the process, in turn, is the bridge between the product and the person, in which different stages can be identified, respectively, preparation, incubation, insight and verification; and, finally, the environment, which involves the essential conditions for creativity to exist

(Kaufman & Sternberg, 2010).

Other authors such as Gardner (1982, 1993), Runco (1997) and Sternberg (1988) have also made a fundamental contribution to the study of creativity. According to the perspective of Sternberg and Lubart (1999), creativity is the ability to produce something that is characterized by being original, unexpected, useful and adaptive. Creativity is defined as an important construct for the individual at various levels. It can be useful when faced with a problem at work or in everyday life. It should be noted that even at the level of society, creativity can lead to new inventions, arts, new products and movements (Sternberg & Lubart, 1999).

In turn, Hennessey and Amabile (2010) believe that a considerable part of researchers consider that creativity comprises the elaboration and construction of new products or ideas, fundamental for the subject or even for society. However, there is no agreement regarding the components that indicate beyond the value of the idea, the novelty, or even beyond the product produced.

Moving forward, resilience is assumed as a process of recovery in the face of adversity (Rutter, 2012). The concept of resilience, according to Masten (2014), emerged due to the need to understand why some people were able to achieve remarkable results after enormous adversity, while other people, in the same condition, were unable to achieve these results. Thus, in general, resilience is characterized by the ability of a person to adapt positively in the face of adversity, which would imminently have a negative impact (Rutter, 2013). Walsh (2016) refers to the concept of resilience as an ability to recover and resist disruptive life challenges. According to this author, the concept of resilience has become significant in the field of mental health and developmental science over the last few decades (Walsh, 2016).

Therefore, resilience can be understood as the positive adaptation of an individual in the face of negative experiences (Masten & Gewirtz, 2008). Thus, resilience is a complex process, which concerns the ability to adapt in or after adversity, implying the idea of skill, inner strength and successful coping (Wagnild & Collins, 2009). On the other hand, resilience is negatively associated with the perception of stress, depression and anxiety (Wagnild & Collins, 2009).

Furthermore, Angst (2009) recognizes that an individual is resilient according to the choices he/she makes in a given context and may play an active role in the search for resources in the environment that involves him/her and himself/herself, to resolve conflicts. Also, Masten and Wright (2009), define resilience as an ability that is a consequence of an evolutionary and dynamic process, with different expressions in different cultures, varying according to people's stage of life, human nature and context.

Currently, creativity and resilience have been seen as relevant constructs and have received immense attention from science (Nakano & Wechsler, 2006; Oliveira et al., 2008) and several authors have approached creativity as a factor of

crucial protection, seen as one of the many forms of resilience expression (Firestone, 2013; Lynch et al., 2013; Metzel, 2007; Metzel & Morrell, 2008; Morelato et al., 2012; Wolin & Wolin, 1993).

Creativity and resilience can be understood as reciprocal processes, since creativity, in addition to being a component of resilient behavior, also produces resilience (Prescott, et al, 2008). The involvement of individuals in creative activities helps them to improve their resilience skills (Prescott et al., 2008). However, there is a huge lack of studies that analyze creativity and resilience, simultaneously (Oliveira & Nakano, 2011). Thus, with this work we aim to develop an exploratory study to analyze creativity and resilience in higher education community.

METHOD

Participants

This study is composed of a sample of 326 individuals (N=326), of which 221 are female (68%), 104 are male (32%) and one was not identified. Regarding age, 39.6% of individuals are between 17 and 25 years old; 26.4% are between 26 and 38 years old, 21.5% are between 39 and 51 years old; 11.7% are between 52 and 64 years old; and 0.9% of individuals are more than 65 years old. With regard to educational qualifications, it is observed that 37.7% (123) do not have higher education, while 62.3% (203) have higher education. Considering this variable, a deeper descriptive analysis showed that 42.8% of those who do not have higher education are students, and 59.4% are non-teaching staff. Of those who affirmed having a higher education degree, 36.5% have a bachelor's degree and 20.7% a master degree. All researchers and teaching staff have higher education. Regarding the sample as a whole, it is also verified that 44.8% of the sample belongs to students; 29.3% to the teaching class; 19.8% to public workers (of the academy); and 6.2% to researchers. With regard to the training area, 31.4% belong to social sciences; commerce and law; 16.6% belongs to education; 12.3% belongs to science; mathematics, and information technology; 11.7% belongs to engineering, transport and construction industries; 10.8% belongs to arts and humanities; 7.4% belongs to health and social protection; 2.8% belongs to services; and 7.1% belongs to other areas of training or these were not identified.

Instruments

Creative Personality Scale. The Creative Personality Scale – Reduced Form was used, constructed and validated by Pocinho et al. (2020), which refers to the reduced version of the Creative Personality Scale (CPE) built and validated by Garcês et al. (2015). This is an instrument used to measure creative personality characteristics. It has 30 items, distributed on a five-point Likert scale, ranging between "strongly disagree" and "strongly agree". Items of the scale are, for example: "I appreciate new ideas" – item 1 – and "I appreciate activities that allow me to have many ideas" – item 7. The full scale presented an adequate *goodness-of-fit* for exploratory factor analysis (KMO = .95)

and obtained an explained variance of 31.18 %. It also demonstrates robust reliability, with a *Cronbach's alpha* of .92 (Garcês et al., 2015). In turn, the Creative Personality Scale – Reduced Form is composed of nine items, distributed on a five-point Likert scale, situated between "totally disagree" and "totally agree". It has good reliability, with a *Cronbach's alpha* equal to .86 and an explained variance of 48.08% (Pocinho et al., 2020).

Measuring State Resilience. The Measuring State Resilience is one of the scales of the Measuring State and Child Resilience Inventory, built by Chok C. Hiew (1998). The adapted version of the Measuring State and Child Resilience Inventory for Portugal followed the structure of the original inventory, presenting an acceptable internal consistency coefficient (*Cronbach's alpha* value is .743). This inventory ir regarded as a referential to the Resilience Checklist by Grotberg (1995). This Grotberg model assumes the existence of three sources of resilience, listed as personal and social abilities and as competences (I can factor); internal or personal strengths (I am factor); and the roles and relations that the person plays (I have factor). Thus, the inventory is used to assess the intensity of resilience in subjects (Fonseca & Queirós, 2010).

The Measuring State Resilience was adapted and validated for the Portuguese population by Martins (2005; Teixeira, 2014). This scale consists of 14 items, distributed on a five-point Likert scale, situated between "strongly disagree" and "strongly agree". This Portuguese version is composed by two factors: the factor (I am/I can), consisting of ten items and the factor (I have), consisting of four items. The first factor has a *Cronbach's alpha* of .72 and the second factor has a *Cronbach's alpha* of .65 (Fonseca & Queirós, 2010). Overall, the scale presented a good adaptability for exploratory factor analysis (KMO = .85) and obtained an explained variance of 40.27%. It has good validity and reliability characteristics, with a *Cronbach's alpha* of .735 (Fonseca & Queirós, 2010).

Procedure and Data Analysis

The current study regards a part of a master's thesis (Agrela, 2020) included in the Project "The Psychological Well-being in Madeiran Society", inserted in the Research Center in Regional and Local Studies (CIERL) of the University of Madeira.

At first, the authorization request was sent, by written email, to the University of Madeira Rector, in order to authorize the application of the scales to teachers, students and employees. After authorization was granted, data collection was made available to the entire educational community in a period between January and June of the 2019/2020 school year. The study was promoted through electronic platforms, in google forms format. In particular, dissemination of the study was made through e-mail and social media (for example, Facebook). Confidentiality and anonymity were guarantee to all participants, and the participation on the study was completely voluntary.

After data collection, statistical software SPSS 26.0 was used, and, consequently, the statistical analysis was carried out. It should be noted that new variables were built following the retrieved data. For example, the training area was a built variable based on the National Classification of Education and Training Areas. Also, the educational qualifications variable was built considering participants' responses to the item regarding their own qualifications. Therefore, the group identified as not having higher education was composed of individuals who affirmed that they did not have a complete degree in higher education (below a bachelor's or undergraduate degree, including technicians, students who had not finished yet any degree, etc). The group with higher education was composed of individuals who identified themselves as having already a higher education degree (bachelor, master or Ph.D.).

RESULTS

Descriptive Statistics

As can be seen in Table 1, the sample presented creativity levels between 10 and 45 values, with an average of 37.24 and a standard deviation of 5.07 (*M*=37.24, *SD*=5.07). About the global results of resilience, the values of individuals range from 13 to 75, with a mean of 60.32 and a standard deviation of 8.93 (*M*=60.32, *SD*=8.93). Regarding resilience factors, the subjects in the sample presented levels for the first factor I am/I can between 10 and 50, with an average of 39.97 and a standard deviation of 6.22 (*M*=39.97, *SD*=6.22); and for the second factor I have, levels between 5 and 25 were achieved, with a mean of 20.46 and a standard deviation of 3.31 (*M*=20.46, *SD*=3.31).

Table 1
Descriptive statistics

Statistics				
	Creativity	Resilience	Resilience	
			Factor *I am/I can*	Factor *I have*
Mean	37.24	60.32	39.97	20.46
Standard deviation	5.07	8.93	6.22	3.31
Minimum	10.00	13.00	10.00	5.00
Maximum	45.00	75.00	50.00	25.00

Correlational and Inferential Statistics

Regarding the sample under study, it was possible to assume normality, since according to the central limit theorem for large samples (n>30), they tend to be normal (Burdenski, 2000; Pestana & Gajeiro , 2008). In this sense, the larger the sample size, the closer the distribution to the mean or the sum of its values will be to a

normal distribution (Reis, 2016). Thus, it was decided to use parametric statistics to perform the correlational and inferential analysis. In this sense, Pearson's correlations, the *t*-student test for the comparison of means, and the two-way ANOVA were used. MANOVA test was applied to look for interaction effects between the main variables, however assumption for homogeneity of covariances was not met for the I have factor (p<.05); thus, this analysis could not be carried out.

Intergroup Differences

Gender. Regarding gender, it was found that there is a statistical significance for the resilience factor I have, meaning that there are significant differences between females and males, t(323) = 3,787, p < .01, where women are shown as more resilient (M=20.91; SD=3.24), compared to men (M=19.45; SD=3.23). For the creativity variable, no significant differences were found regarding gender.

Educational Qualifications. Individuals who have higher education differ significantly from individuals who do not have higher education, in terms of creativity, with t(324) = -4,246, p < .01. From this perspective, it is possible to observe that individuals who have higher education are more creative (M=38.15; SD=4.08), compared to individuals who do not have higher education (M=35.75; SD=6.12). Regarding the resilience variable and its factors, no significant differences were found in relation to educational qualifications.

Age. It was possible to verify that the resilience factor I am/I can influence age, with a p-value of .028, with F(4) = 2.760, p < .05. In the resilience factor I am/I can, individuals aged between 17 and 25 years and individuals aged between 52 and 64 years differ significantly from each other (3.37 points favorable to ages between 52 and 64 years, p = .035). It was observed that for the creativity variable, there are no significant differences regarding age.

Training Area. Regarding training area, it was possible to observe that this variable influences global resilience since its p-value is .001, with $F(7) = 3.772$, p < .05. Considering resilience, individuals from the education area (M = 62.70; SD = 9.58) differ significantly from individuals from the services area (M = 50.00; SD = 19.07), with 12.70 points in favor of the education area, p = .002; those in the area of social sciences, commerce and law (M = 60.31; SD = 8.74) differ from those in the area of services (M = 50.00; SD = 19.07), with 10.31 points in favor of the area of social sciences, commerce and law, p = .020; those in the area of health and social protection (M = 63.29; SD = 5.61) differ from those in the area of services (M = 50.00; SD = 19.07), with 13.29 favorable points for the area of health and social protection, p = .003 ; and those from other training areas or from unidentified areas (M = 63.22; SD = 9.61) differ from those in the service area (M = 50.00; SD = 19.07), with 13.22 points favorable to other areas or not identified, p = .004. It was also possible to observe that the training area influences the resilience factor I am/I can, with a

significance of .000, with $F(7) = 3.936$, $p < .05$. In this sense, there are statistically significant differences between individuals in the area of education ($M = 42.25$; $SD = 5.13$) and individuals in the area of services ($M = 33.22$; $SD = 13.75$), with 9.02 points in favor of the area of education, $p = .001$; between those in the area of health and social protection ($M = 41.83$; $SD = 4.21$) and those in the area of services ($M = 33.22$; $SD = 13.75$), with 8.61 favorable points for the area of health and social protection, $p = .008$; and, among those from other training areas or from unidentified training areas ($M = 41.91$; $SD = 6.84$), and those from the service area ($M = 33.22$; $SD = 13.75$), with 8.69 favorable points for the other areas or not identified, $p = .008$. From this analysis it was also possible to see that training area influences significantly the I have resilience factor, with a p-value of .001, with $F(7) = 3.640$, $p < .05$. There are statistically significant differences between individuals in the area of education ($M = 21.24$; $SD = 3.07$) and individuals in the area of services ($M = 16.78$; $SD = 6.36$), with 4.46 points in favor of the area of education, $p = .004$; between those in the area of social sciences, commerce and law ($M = 20.72$; $SD = 3.17$) and those in the area of services ($M = 16.78$; $SD = 6.36$), with 3.94 points in favor of the area of social sciences, commerce and law, $p = .014$; between those in the area of health and social protection ($M = 21.46$; $SD = 2.59$) and those in the area of services ($M = 16.78$; $SD = 6.36$), with 4.68 favorable points for the area of social sciences, commerce and law, $p = .007$; and, other training areas or unidentified training areas ($M = 21.30$; $SD = 3.31$) and those in the service area ($M = 16.78$; $SD = 6.36$), with 4.53 favorable points for other or unidentified areas, $p = .011$. With regard to the creativity variable, no statistically significant differences were found regarding the variable in the analysis, $F(7) = 1.316$, $p = .242$.

Profession. It was possible to see that profession influences the I am/I can resilience factor, with a significance of .001, with $F(3) = 5.816$, $p < .05$. In the I am/I can resilience factor, teachers ($M = 41.74$; $SD = 4.99$) differ from students ($M = 39.03$; $SD = 6.42$) (2.72 favorable points for teachers, $p = .005$) and teachers ($M = 41.74$; $SD = 4.99$) differ from researchers ($M = 36.75$; $SD = 4.93$) (4.99 favorable points for teachers, $p = .006$). It was also found that profession influences creativity, with a significance of .015, with $F(3) = 3.522$, $p < .05$. In creativity, teachers ($M = 38.51$; $SD = 3.73$) differ from students ($M = 36.37$; $SD = 5.38$) (2.14 favorable points for teachers, $p = .008$).

Correlations

One of the main goals of this study is to investigate and explore the relationship between creativity and resilience. In this sense, we opted for the analysis of Pearson's correlation and the results of this can be found in Table 2.

Table 2
Correlation between creativity and resilience

Correlations					
		Creativity	Resilience	Resilience	
				Factor *1 am/I can*	Factor *I have*
Creativity	*r*	1	.607**	.648**	.427**
	Sig.		.000	.000	.000
Resilience	*r*		1	.949**	.800**
	Sig.			.000	.000
Factor *I am/I can*	*r*			1	.577**
	Sig.				.000
Factor *I have*	*r*				1
	Sig.				

Note: **$p < .01$.

By observing Table 2, it can be seen that, for the variables creativity and global resilience, Pearson's correlation coefficient has a value of .607 (60.7%), and the level of significance is .000. The correlation is positive and significant, with $r = .607$, $p < .001$. Thus, we can say that variables creativity and resilience are positively related (Table 2). It is also observed that, for the creativity variable and the resilience factor I am/I can, it is possible to see a positive and significant correlation, since, $r = .648$, $p < .001$. For the creativity variable and the resilience factor I have, we found that there is a positive and significant correlation, with $r = .427$, $p < .001$. Thus, we can say that the creativity variable and resilience factors are positively related (Table 2).

DISCUSSION

Regarding the association between creativity and resilience, in the current study we found that these variables are positively correlated, that is, the most creative individuals are simultaneously more resilient, and the most resilient individuals are simultaneously more creative. The same happens with the two resilience factors (I am/I can factor, and I have factor). These factors are positively related to creativity. In a study by Jovanovic and Brdaric (2012) it was found that the most curious individuals express high levels of life satisfaction and psychological adaptation.

Considering the influence of gender on creativity and resilience, in this study it was possible to observe that there were statistically significant differences between females and males for the resilience factor I have, meaning that in this study females showed more resilience when compared to males. For the other resilience factor, I am/I can, although no statistically significant differences were found between genders, it was observed that female individuals exhibit higher means of resilience when compared to males. These results are in agree with the literature, since, in a study developed by Sun and Stewart (2007), a superior and more positive emotional and

social development has been seen in females. This positive and superior emotional and social development in females contributes to a more positive and higher quality adaptation of women to adversities in adult life (Werner, 2013). Regarding creativity, no statistically significant differences were found between genders, which is in line with what is found in the literature. According to Kemmelmeier and Walton (2016), studying creativity gender differences it is assumed to be a complex topic, in which there is a lot of controversy, not allowing the literature to reach consistent conclusions on the topic. From this perspective, several studies do not find significant differences between creativity and gender (Ayyıldız-Potur & Barkul, 2009; Baer & Kaufman, 2008; Sayed & Mohamed, 2013).

With regard to the influence of age on creativity and resilience, in this investigation it was found that older individuals are more resilient than younger individuals, regarding the resilience factor I am/I can. In studies that aim to assess resilience in older adults, it was possible to conclude that resilience has the potential to increase in adulthood, based on the effect of previous attempts to deal with adversities (Bauman et al., 2001; Wagnild & Collins, 2009). In the studies by Byun and Jung (2016), it was possible to observe that healthy or "successful" aging has a positive correlation or relationship with the resilience variable. Regarding creativity, although in this study no statistically significant differences were found regarding age, it was found that it tends to increase slightly with age that is, older individuals have higher means than younger individuals. In this line of thought, according to Goleman et al. (1992), creativity can become more pronounced and stronger with increasing age if the individual continues to focus on his/her goals. Thus, although creativity is often considered to reach its potential before the age of 40, it is possible to create exceptional results in all age groups (Seabra, 2007).

Regarding the influence of educational qualifications on creativity and resilience, we observe significant differences for creativity. Thus, individuals who have higher education are more creative than individuals who do not have higher education. This result is in line with the literature, since, according to Kimberly and Evanisko (1981), the educational qualifications are positively associated with innovation and creativity. In a study carried out by Mostafa (2005), it was possible to also see that innovative and creative potential increases as literacy levels increase.

With this exploratory study, we can observe that, overall, there is a positive association/correlation between creativity and resilience; that female individuals are more resilient; that older individuals are more resilient and tend to be more creative; individuals with higher education are more creative; that teachers are more resilient than students and researchers; and, that teachers are more creative than students.

However, the study has also had some limitations, namely, the non-random convenience sampling method, a condition

that limits the generalization of the results to the population; the collection of data in time during the "COVID-19 pandemic"; the fact that the sample has a small number of few researchers. In this sense, it would be important to carry out future studies with this population to analyze more in-depth the results obtained in the current study. Thus, we consider important for future studies to explore other variables that may explain resilience, in addition to creativity and gender. It would also be crucial to extend this study to the general population, as well as to other regions of the country, to better explore the relationship between this study variables, since there are few studies that analyze the relationship between creativity and resilience, we consider an asset to the field of psychology to carry out more studies on this topic.

It is important to point out that the relationship that can be established between resilience and creativity is of immense value, since it allows professionals from different areas to obtain and consolidate a series of useful knowledge for the development of both programs and directed projects for the recovery of individuals who experience adverse situations (Oliveira & Nakano, 2014). In this way, the relationship between these variables presents itself as a resource capable of offering the opportunity to discover adaptive solutions and obtain more efficient responses in an environment that is assumed to be unfavorable (Lubart, 2007), as well as contributing to a more suitable adaptation to the situations (Luthar, 2006), and would act as a crucial protective factor (Firestone, 2013; Lynch et al., 2013; Metzel, 2007; Metzel & Morrell, 2008; Morelatto et al., 2012; ; Wolin & Wolin, 1993). In a time where creativity and resilience seem to be so important to promote well-being in different environments, the current study brings small but important insights about the relationship between them and how individual/social variables can also be of great importance for the development of creativity and resilience in higher education.

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