

Scale of Creative Potential at Work: validity based on external criteria and reliability evaluation

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Abstract

The goal of this study was to add evidence of validity for the Creative Potential at Work Scale, by investigating the influences of variables related to the subject (sex, age, level of education) and the organizational environment (length of time in the company) on test results. The reliability of the instrument was also examined using the test and retest method. Participants in the study were 371 employees employed in small to large companies with a mean age of 33.1 years. There was no significant relationship between any of the variables and the two factors of the instrument (blocks and barriers to creativity; attributes and characteristics that promote creativity). There were only three significant interactions in the study (sex x age for Factor 1; education x age for Factor 1; age x time for Factor 2). In this study, reliability was found to be adequate ($r=.650$ for Factor 1 and $r=.729$ for Factor 2). The instrument should be investigated further to determine its other psychometric properties.

Keywords: creativity; psychometric criteria; organizations.

Escala de Potencial Criativo no Trabalho: Investigação de Evidências de Validade Baseadas em Critério Externo e Precisão

Resumo

O presente estudo visou adicionar evidências de validade à Escala de Potencial Criativo no Trabalho, por meio da investigação da influência de variáveis relacionadas ao sujeito (gênero, idade e nível de escolaridade) e ao ambiente organizacional (tempo de empresa) nos resultados do teste e investigar a precisão do instrumento por meio do método de teste e reteste. A amostra foi composta por 371 participantes, com idade média de 33,1 anos, funcionários de empresas de pequeno a grande porte. Nenhuma das variáveis se mostrou significativa nos dois fatores do instrumento (bloqueios e barreiras à criatividade; atributos e características que favorecem a criatividade). Somente três interações se mostraram significativas (sexo x idade no Fator 1; escolaridade x idade no Fator 1; idade x tempo no Fator 2). A precisão se mostrou adequada ($r = 0,650$ no Fator 1 e $r = 0,729$ no Fator 2). Estudos voltados à investigação de outras qualidades psicométricas do instrumento são recomendados.

Palavras-chave: criatividade, critérios psicométricos, organizações

Escala de Potencial Creativo en el Trabajo: investigación de evidencias de validez basadas en criterios externos y precisión

Resumen

El presente estudio tuvo como objetivo agregar evidencias de validez a la Escala de Potencial Creativo en el Trabajo, investigando la influencia de las variables relacionadas con el tema (género, edad y nivel de educación) y el entorno organizacional (tiempo en la empresa) en los resultados a través del método de test-retest. La muestra consistió en 371 participantes, con una edad media de 33.1 años, empleados de pequeñas y grandes empresas. Ninguna de las variables resultó significativa en los dos factores del instrumento (bloqueos y barreras a la creatividad; atributos y características que favorecen la creatividad). Solo tres interacciones fueron significativas (sexo x edad en el Factor 1; educación x edad en el Factor 1; edad x tiempo en el Factor 2). La precisión demostró ser adecuada ($r = 0.650$ en el Factor 1 y $r = 0.729$ en el Factor 2). Se recomienda la realización de estudios para investigar otras cualidades psicométricas del instrumento.

Palabras clave: creatividad; criterios psicométricos; organizaciones.

Creative thinking at work, typically defined as the development of new, useful, and appropriate ideas that lead to new products, services, or organizational processes (Amabile, 1988), has proven to be an essential component in organizations. It comprises conceptual or practical ruptures, which result in new processes,

concepts, services, or products for commercial application (Muzzio, 2017). This characteristic is considered a vital element for companies to thrive in environments marked by constant change and market instability, to respond to unforeseen challenges and situations, and to develop new resources (Rocha & Wechlser, 2018; Zhou

& Hoever, 2014), while a lack of creativity leads to stagnation and makes the organization incapable of making or following changes (Serrat, 2017).

Over the previous ten years, a series of comprehensive reviews related to creativity in organizations have been carried out, aiming to deepen the understanding of the factors that promote or inhibit creativity in this context (Spadari & Nakano, 2015; Zhou & Shalley, 2011). These studies have found that both personal characteristics and contextual factors are involved, with this perception reinforcing the importance of refining the comprehension of the contextual variables' role in creativity (Zhou & Hoever, 2014). Neither environmental nor personal factors, in isolation, can reveal the complete profile of creativity (Duan, Li, Tang, Zhang, & Cheng, 2019). Therefore, it can be stated that the environment and organizational culture may directly affect creativity, more precisely individual and team creative behaviors (Taha, Sirková, & Ferencová, 2016). As organizations must compete, increasingly, based on knowledge and innovation, personal elements, related to the creativity of employees, can become an important element in the formulation and execution of strategies and in obtaining competitive advantage (Gerhart & Fang, 2015), is considered an essential feature for potential employees (Yoo, Jang, Ho, Seo, & Yoo, 2019). Furthermore, creativity at work can transform the experience of employees regarding the importance of their work, increasing their self-esteem and the belief that they can make a difference in their organizational context by overcoming the challenges that are present in this environment and also due to the possibility of proposing changes (Tavares, 2016).

Regarding individual variables, most studies have investigated the influence of personality characteristics, such as self-perception, goal setting, leadership (Egan, 2005), autonomy, self-efficacy, self-confidence, emotional regulation, humor (James et al., 2004), risk-taking, flexibility, motivation, and well-being, among others (Mansour, Iscandar, Abdelmohsen, & Yassa, 2016). However, it is emphasized that talent management and organizational growth and competitiveness, will depend heavily on the managers' understanding of creativity and its growing importance in organizations (Ludviga, 2017). Likewise, the speed with which the changes occur should be highlighted as some ideas can become creative or stop being creative, depending on the market's resources and needs at that time (Hughes, Lee, Tian, Newman, & Legood, 2018).

Regarding the contextual variables, studies have focused on aspects such as culture and organizational climate, risk-taking, continuous learning, teamwork, company size (Araujo, Modolo, Carneiro Junior, & Vils, 2017; Mumford & Simonton, 1997), supervisor behaviors, performance assessment, rewards, evaluation system, management practices, feedback (Montag, Maertz, & Baer, 2012), motivation to innovate, resources (financial, people), and management practices (Sierra, Marchiano, Banzato, & Rabechini Junior, 2017). Physical aspects of the environment have also been investigated as factors that can foster the creativity of employees, such as adequate furniture, equipment, decorative elements, presence of windows, and space for relaxation, among others, with a pleasant environment being favorable for the creative expression (Meinel, Maier, Wagner, & Voigt, 2017).

Despite this differentiation, it is important to consider the interactions between individual, group, and organizational factors to consider the situational and contextual influences on creative behavior in the workplace (Lee, 2016; Yoo et al., 2019). While, for a long time, the work, performed routinely and repetitively, ended up hampering creative expression (Mumford & Simonton, 1997), the development of new technologies and global competition made companies turn to the importance of creativity as a tool to remain competitive and develop new products and services. Consequently, in recent decades, this skill has come to be valued in different positions, not only those related to marketing, for example, but as a skill that, present in all workers, helps the competitiveness and success of the organization (James, Brodersen, & Eisenberg, 2004).

Creativity can result from individuals or teams, occurring independently of their functional areas or positions in the organizational hierarchy (Zhou & Hoever, 2014). However, the organizational culture must be able to eliminate barriers for the manifestation of creativity in all stages and areas of the organization (Martins, Marangoni, Viana, & Bezerra, 2017). Therefore, when organizations aim to develop creativity, they need to encourage and inspire their employees to view their work as challenging, meaningful, and important (Wang, 2018). On this point, Hermida, Clem, and Guss (2019) emphasized that if organizations provide an enabling environment in which employees need not be afraid of criticism and consequences, they will possibly feel freer to express their creative potential, becoming more proactive. Likewise, an organizational

climate marked by a supportive environment, feedback, resources, and opportunities also promote workplace creativity.

It should be noted, however, that creativity cannot be applied to all functions. Some professions are more structured and require their employees to act within recommended guidelines, and, in these cases, creativity is highly discouraged (Wolniak & Grebski, 2018). As examples, the authors cite airline pilots and nurses, trained to follow certain procedures strictly. However, even in these cases, they emphasize that creative and innovative suggestions related to changing procedures are always welcome and should be considered.

Due to the recognized importance of creativity, an instrument for evaluating it has been developed. This scale, named “Creative Potential at Work Scale”, has had its validity determined through the internal structure and its reliability determined through internal consistency, demonstrating favorable results (Spadari, Nakano, & Peixoto, 2017). In considering that the search for test quality must be a continuous process, the present study focused on adding evidence of validity for the scale by examining the impact of variables related to the subject (sex, age, and level of education) and organizational time (company time) on test results, and investigating its reliability.

Method

Participants

The sample consisted of 371 participants, aged between 18 and 73 years ($M=33.1$; $SD=10.1$), 171 from a database referring to previous studies conducted with the instrument (CAAE 48865115.8.0000.5481) (Spadari et al., 2017). The responses of another 157 subjects through an online database (Survey Monkey) were added to this database, as well as a further 43 face-to-face applications with employees from different branches (real estate, industrial, financial, civil, hospital, and public construction) of several small, medium and large companies.

Of the participants, 71% were female. Regarding their educational level, 46% of the participants had complete higher education, 28% were postgraduates, 15% had incomplete higher education, and 8% had completed high school. Two subjects did not respond. Concerning the length of time in the company, 54% had worked between 1 to 5 years in the current job, 20% between 6 and 11 years in the job, 8% less than 1 year, 6% between 12 and 17 years, 3% from 18 to 25

years, 2% between 26 and 30 years, and only 1% had been in the current job for more than 30 years. A total of 18 participants did not provide this information.

Part of this sample had its results considered for the estimation of reliability. This sample was composed of 92 participants, aged between 18 and 60 years ($M=28.5$; $SD=9.1$), of which 76.1% ($n=70$) were female. Regarding the level of education, 38.0% ($n=35$) of the interviewees were in higher education and/or had not completed it, 25.0% ($n=23$) had completed higher education, 19.6% ($n=18$) were postgraduate students and 15.2% ($n=14$) had attended high school. Also, 46.7% ($n=44$) had worked for 1 to 5 years in the company, 30.4% ($n=28$) for less than 1 year, 15.2% ($n=14$) between 6 and 11 years, and 4.4% ($n=4$) had worked in the company for more than 12 years, while 3.3% ($n=3$) of the participants did not respond.

Instrument

The Creative Potential at Work Scale is composed of 19 items that are answered on a five-point Likert-type scale (ranging from totally agree to totally disagree) and assess characteristics associated with creativity. It has a two-factor structure. The first factor is called “Blocks and barriers to creativity”, consisting of 11 items and involving statements inversely related to creativity. Factor 2, composed of 8 items, is called “Attributes and characteristics that favor creativity” and includes items directly related to creativity.

Procedures

After approval by the ethics committee (CAAE 02515318.5.0000.5481), the researchers contacted the selected companies to schedule the data collection. Subsequently, the consent forms were given to employees, and those who agreed to participate responded to the scale. The application was carried out collectively, for three weeks, with no response time limit. The average time taken to complete the scale was 30 minutes. The same procedure was adopted when collecting data for the researcher’s Master’s degree.

Another part of the sample ($n=72$) responded to an online questionnaire (Survey Monkey), with people that we’re currently working being invited. The invitation was shared on a social network. In these cases, the participants started the questionnaire with explanations relevant to the study. They accessed the research consent form, which had to be accepted for the data collection. Again, the average time to complete the questionnaire was 30 minutes.

The participants were also informed about the possibility of participating in a second phase of the study. This step involved responding to the applied questionnaire around 15 days after the first application. Those that agreed to participate responded to the instrument collectively in a single application session, with an estimated duration of 30 minutes.

Data analysis

After the end of data collection, all databases were combined into a single format, which was analyzed, considering the responses of 371 participants. Initially, descriptive statistics were estimated for each factor of the scale. Then, the analysis of variance was applied to identify the influence of variables related to the subject (sex, age, level of education) and the organizational environment (company time) on the measures of the creativity at work scale (factor 1 and factor 2).

The selection of variables was based on notes found in the scientific literature, where studies on creativity sought to investigate the influence of these factors on creative expression. Studies with this objective are limited, particularly in the context of the work. Therefore, in addition to data about how these variables

influence the study's focus instrument results, the results also sought to add evidence for questions about the factors that influence creative expression.

Reliability was investigated using the test-retest method to identify the stability of the results over time. This procedure is used to refer to how similar the results of a test applied at two different times are, in order to indicate the degree of possible generalization of the results over time (Nunes & Primi, 2010). In this way, reliability is related to the degree to which the test scores have known measurement errors (Urbina, 2007).

Results

Initially, the descriptive statistics referring to Factor 1, which corresponds to "Blocks and barriers to creativity", were estimated. The results are presented in Table 1, according to the level of education, age, sex and length of time in the company.

From the simple visualization of the mean scores presented in the Table, it was noticed that, based on the means of the groups in Factor 1, those male individuals, those with education corresponding to postgraduate studies, aged between 38 to 48 years and that had been

Table 1.
Descriptive Statistics – Factor 1

Variable	Mean	SD	Minimum	Maximum	
Education	High School (<i>n</i> =33)	35.12	6.15	17	45
	Complete Higher Education (<i>n</i> =174)	37.26	5.98	21	50
	Incomplete Higher Education (<i>n</i> =55)	35.60	4.68	20	43
	Postgraduate (<i>n</i> =107)	38.10	4.69	26	51
Age	18 to 26 years (<i>n</i> =99)	36.06	5.22	20	49
	27 to 37 years (<i>n</i> =173)	37.28	5.28	22	50
	38 to 48 years (<i>n</i> =64)	38.18	5.03	17	46
	More than 49 years (<i>n</i> =32)	37.00	7.71	21	51
Sex	Female (<i>n</i> =263)	36.77	5.56	17	51
	Male (<i>n</i> =107)	37.99	5.35	20	49
Time in the Company	Less than 1 year (<i>n</i> =31)	37.30	4.27	25	46
	1 to 5 years (<i>n</i> =202)	36.89	5.52	17	50
	6 to 11 years (<i>n</i> =74)	37.54	5.16	27	50
	12 to 17 years (<i>n</i> =21)	39.62	4.09	33	51
	18 to 25 years (<i>n</i> =12)	37.17	5.70	24	44
	26 to 30 years (<i>n</i> =10)	38.80	4.51	32	49
	More than 30 years (<i>n</i> =5)	35.00	9.55	21	44

in the company for a long time (between 26 and 30 years) presented higher mean scores concerning blocks and barriers to creativity. Subsequently, descriptive analyses referring to Factor 2, called “Attributes and characteristics that favor creativity”, were carried out, separated according to the level of education, age, sex, and time in the company. The results are presented in Table 2.

Table 2 shows that the females presented higher results in Factor 2 when compared to the males. This finding indicates that women have greater attributes and characteristics that favor creativity. With higher means in this factor, the same situation was verified for individuals with high school education, aged between 18 to 26 years, who had been in the company for 1 to 5 years. To investigate whether the differences between the groups were significant, the Analysis of Variance was applied to each of the variables, and their interactions. The results are presented in Table 3.

According to Table 3, the results show that in Factor 1, none of the variables was significant in isolation. The interaction between the sex and age variables was significant ($F=3.040$; $p=.029$). The mean scores show that this influence was present in the male subjects

aged between 38 and 48 years of age, which presented greater creative blocks. The interaction between education and age was also significant ($F=2.133$; $p=.010$), in this case, in favor of individuals aged 38 to 48 years and postgraduate students. The other variables did not influence on this factor.

According to the Table, concerning Factor 2, again, none of the variables proved to be significant in isolation. Only the interaction between age and length of time in the company was significant ($F=2.441$; $p=.015$), in favor of participants aged between 27 and 37 years and that had been in the company for between 12 and 17 years.

Next, the reliability of the instrument was estimated through the test-retest. The descriptive statistics for the two moments, and the value of the correlation found for each measure, are presented in Table 4. The results indicate that, in relation to Factor 1, the participant’s mean score was slightly higher at the time of the test, the same happening in relation to Factor 2. Subsequently, to verify the instrument’s reliability, the non-parametric statistic using Spearman’s ρ was estimated, comparing the results obtained by the participants at both moments.

Table 2.
Descriptive Statistics – Factor 2

Variable	Mean	SD	Minimum	Maximum	
Education	High School ($n=33$)	18.12	4.17	11	32
	Complete Higher Education ($n=174$)	16.85	3.42	8	25
	Incomplete Higher Education ($n=55$)	17.87	4.11	10	28
	Postgraduate ($n=107$)	15.69	3.42	8	24
Age	18 to 26 years ($n=100$)	17.27	3.78	8	28
	27 to 37 years ($n=173$)	16.64	3.64	9	32
	38 to 48 years ($n=64$)	16.46	3.54	8	25
	More than 49 years ($n=32$)	16.55	3.38	10	23
Sex	Female ($n=262$)	16.99	3.71	8	32
	Male ($n=107$)	16.18	3.45	8	26
Time in the Company	Less than 1 year ($n=33$)	16.67	3.40	10	24
	1 to 5 years ($n=204$)	16.98	3.69	9	32
	6 to 11 years ($n=76$)	16.30	3.64	8	25
	12 to 17 years ($n=23$)	15.71	4.36	8	22
	18 to 25 years ($n=14$)	15.92	2.53	11	19
	26 to 30 years ($n=12$)	16.90	2.64	13	21
	More than 30 years ($n=7$)	16.67	4.45	11	22

The results indicated that, about to Factor 1, the correlation between the test-retest was $r=.650$ ($p\leq.001$). For Factor 2, the correlation was also significant ($r=.729$; $p\leq.001$). For both factors, the correlations proved to be significant, verifying the investigated reliability, consistent with the values determined as satisfactory for this type of study (.600 or greater), according to Resolution No.9 of the Federal Council of Psychology (2018).

The negative correlation between Factor 1 and Factor 2 in the test ($r=-.448$; $p\leq.001$) and retest ($r=-.437$; $p\leq.001$) should also be highlighted, confirming

the interpretation of the factors, with one being favorable for creativity while the other is characterized by the barriers that hinder creative expression.

Discussion

The present study aimed to investigate the influence of variables related to the individual and the context on the creative potential at work. In general, the results demonstrated that none of the variables investigated (sex, age, education level and length of time in

Table 3.

ANOVA for the Variables Sex, Education, Age, Time in the Company and their Interactions

Variable	Factor 1			Factor 2		
	df	F	Signif.	df	F	Signif.
Sex	1	1.140	.287	1	1.855	.174
Education	5	2.085	.068	5	1.898	.095
Age	3	1.096	.351	3	0.670	.571
Time in the Company	6	0.980	.439	6	1.139	.340
Sex * Education	3	1.130	.337	3	1.028	.381
Sex * Age	3	3.040	.029*	3	2.357	.072
Sex * Time in the company	5	0.677	.641	5	1.549	.175
Education * Age	9	2.133	.027*	9	0.704	.705
Education * Time in the company	14	0.795	.674	14	0.790	.680
Age * Time in the company	8	1.386	.202	8	2.441	.015*
Sex * Education * Age	3	0.420	.738	3	0.646	.586
Sex * Education * Time in the company	4	1.700	.150	4	0.773	.543
Sex * Age * Time in the company	4	1.845	.120	4	1.688	.153
Education * Age * Time in the company	8	1.325	.231	8	1.748	.088
Sex * Education * Age * Time in the company	1	0.087	.768	1	0.009	.925

Legend: *df* = degrees of freedom; Signif. = statistical significance; * $p\leq.05$.

Table 4.

Descriptive Statistics and Spearman Correlation between Scale Measures

Measure	Mean	Standard Deviation	Factor 1 test	Factor 1 retest	Factor 2 test	Factor 2 retest
Factor 1 test	36.60	4.41	1.000	.650*	-.448*	-.434*
Factor 1 retest	36.22	4.44	.650*	1.000	-.528*	-.437*
Factor 2 test	17.07	3.56	-.448*	-.528*	1.000	.729*
Factor 2 retest	16.91	3.63	-.434*	-.437*	.729*	1.000

* $p\leq.001$

the company) were significant, so that, in the analyzed instrument, these variables in isolation did not influence the results of the participants.

In line with the assumptions found in the scientific literature (Binnewies, Ohly, & Nielsen, 2008; Kogan, 1974; Rocha & Wechsler, 2019), the influence of the sex variable was absent, both about blocks and to factors that stimulate creativity, indicating that men and women are equally creative. These results can be related to the psychological androgyny that creative individuals present regarding the preconception of roles associated with sex, simultaneously demonstrating opposite characteristics such as aggression, protection, sensitivity, rigidity, dominance, and submission (Nakano, 2012).

This result can also be explained by the increasingly common presence of women at all organizational levels, representing an important part of the labor market (Oliveira, Gaio, & Bonacim, 2009). When engaging in the professional field, these women begin to value intellectuality, aiming to seek equality with the male sex (Wechsler, 2008). It is therefore understood that the social context has a direct influence on the social role played by women, which may indicate a female advance and empowerment concerning to creative potential (Rocha & Wechsler, 2019), although certain prejudices can be found (Prado, Alencar, & Fleith, 2016; Sabharwal, 2015; Vecchio, 2002).

The second variable investigated, education, was also not shown to influence the participant's creativity, in either of the factors of the instrument, reinforcing the studies by Nakano, Campos, Silva, and Pereira (2011). These results contradict most studies that have investigated the influence of education on creativity (Nakano & Wechsler, 2006; Pannels, Pannels, & Rhoads, 2005; Wu, Cheng, Ip, & McBride-Chang, 2005), with them indicating better performance in creativity tests by university students when compared with high school and elementary students. In the present study, this fact was not confirmed, neither in relation to factor 1 nor factor 2.

A possible explanatory hypothesis is that, as only working adults were investigated, the differences due to the level of education were not noticed. Many times, having to adapt to the work environment causes creativity to be discouraged due to the need to follow established orders and procedures. The lack of space for creative expression may have caused the equality in the results, both about the perception of impeding factors and favorable factors in the work environment

of the participants, given the valorization of logical thinking and conformity to the rules that still prevails in many organizations (Nakano, 2009).

Another important observation to comprehend these results is based on the fact that the educational levels were grouped, regardless of the area of training. It should be noted. However, that previous studies did not identify differences between areas (Nakano, Santos, Zavarize, Wechsler, & Martins, 2010). Accordingly, it is suggested that longitudinal studies are conducted, accompanying the subjects throughout their education process and, consequently, checking for possible changes in their creativity levels.

Likewise, there were also no significant differences regarding the influence of age and creativity among the groups analyzed, in line with the studies by Amabile et al. (2005) and Binnewies et al. (2008). Conversely, among the few studies in this regard, Binnewies et al. (2008) emphasized that age is positively related to creativity, corroborating Wechsler's findings (2009). Lubart (2007) stated that generally, creative production tends to decrease with age, greater in the first years of life. These difficulties may be related to the developmental issue since the literature suggests that everyone is born with creative potential. However, the subject's relationship in the environment can inhibit this potential (Sternberg & Lubart, 1995).

The final variable analyzed was the length of time in the company. Again, no significant influence was found for this variable on either of the factors. Part of this situation can be comprehended given the finding that companies tend to be contradictory, aiming for creative employees, however, showing resistance to change limiting the ideas they propagate (Alencar, 1996; Wechsler, 2001). This situation can lead to an inhibition of this potential. According to Sternberg and Lubart (1995), hostile environments are directly related to the repression of creative potential, so that medium- and long-term permanence in companies inhibits creativity.

Considering that the variables investigated (sex, age, education level and length of time in the company) were not significant, in isolation, it is essential to comprehend the influence of the context for the creative potential at work. The work of an individual alone is not enough to generate organizational creativity. Although it can generate individual insights, it is not enough to ensure innovation if the organizational environment is not conducive to creative expression. The promotion of a favorable context that encourages freedom,

proactivity, and recognizes creativity as a fundamental value supports transforming individual insight into collective innovation (Muzzio, 2017).

Bruno-Faria and Veiga (2015) reinforce that there are conditions that can facilitate the creative expression of professionals in their daily work activities and in the generation of innovations, such as support from the immediate manager in the face of encouraging experimentation, suggestions, and incentives to generate new ideas, perception regarding the stimulating nature of the activities carried out, organizational strategies and actions to encourage the generation of new ideas, a pleasant atmosphere among coworkers, freedom of expression and different forms of action, and characteristics of the physical environment that facilitate creativity, such as furniture, physical space, materials, technological resources, and silence.

Additionally, the authors relate unfavorable conditions such as managerial attitudes that hinder or prevent the expression of creativity in the work environment, communication difficulties, rigid norms and rules in the organization, overwork, and shortage of time. When professionals realize that knowledge is not widely shared in the workgroup and that support is insufficient for the manifestation of creativity and innovation, creative behavior is not expressed (Teng, Hu, & Chang, 2019).

Accordingly, both the organizational climate and culture can facilitate or hinder the emergence of a creative environment. Culture is understood as the set of values, ideological assumptions, symbols and rituals (Ferreira & Assmar, 2008; Puente-Palacios, 2002), encompassing a range of behaviors developed in its history which have the power to influence its individuals (Puente-Palacios, 2002). This acts as a form of organizational control and even informal rules (Rocha, Pelogio, & Añez, 2013). The climate comprises the perceptions shared by individuals in the work context. The way culture is experienced is one of the constructs of great centrality, directly influencing organizational processes, problem solving, decision-making, and operations (Crespo & Wechsler, 2000; Martins, 2008).

According to Figueiredo (2017), a positive culture of creativity encompasses humor and mutual help, combined with an environment of trust and relaxation. The construction of opportunities for creative learning and involvement in challenging tasks favor a dynamic and motivating environment, which, together with the freedom to create and the proper management of conflicts, complement aspects favorable to the development of

the creative potential. In line with this view, Crespo, and Wechsler (2008) and Crespo (2004, 2005) add the valorization of ideas by managers, highlighting that constructs such as the challenge and motivation are propellants of a creative climate.

Messias and Pessotto (2019) corroborate the view that the manager plays an important role developing a culture that encourages and supports the generation of new ideas. The authors emphasize that excessive control does not favor creative potential. By fostering a shared vision, creating a favorable climate, providing adequate resources and structures for the promotion of creativity, the leadership articulates conditions promoting creativity and innovation (Muzzio, 2017).

Creativity is a necessary condition for innovation to generate a competitive advantage (Gerhart & Fang, 2015; Muzzio, 2017). However, generating ideas and implementing ideas are overlapping processes that cannot be easily separated. While the generation of ideas emphasizes exploration and divergent thinking, the implementation process advocates the opposite, emphasizing exploration and convergent thinking (Revilla & Rodríguez-Prado, 2018). In this way, ambidexterity, defined by the authors as the ability to overcome conflicts and maintain a balance between convergent and divergent thinking, is considered a crucial factor for the success of innovation.

Revilla (2019) considers that converting new ideas into innovation encompasses all levels of an organization and requires a culture of ambidexterity, highlighting the diversity of teams and brainstorming techniques as tools that facilitate the promotion of collective creativity. Messias and Pessotto (2019) corroborate this view and add innovative modeling and heuristic redefinition as a way to mobilize creative potentials. Collaborative workspaces, which facilitate informal interactions, continuous information flow, learning, and interaction with multidisciplinary teams, can also be highlighted as forces for generating ideas, innovation, and entrepreneurship (Wijngaarden, Hitters, & Bhansing, 2020). In summary, we can conclude that individual work is not enough to generate organizational creativity and ensure innovation due to the complex and multifaceted nature of the individual-group-organizational context relationship.

Final Considerations

Results confirmed the instrument's reliability, constituting an important source of information about

psychological tests. According to the results, none of the variables analyzed influence any of the factors that form the scale, which indicates the importance of the environment in stimulating or blocking creativity, which should be of concern to companies that need to remain competitive on the market.

Based on Muzzio's (2017) findings, it was possible to draw the conclusion that organizational creativity is a collective capacity resulting from a combination of individual processes, leadership and culture. Keeping in mind that the environment of the organization encompasses the performance of a number of actors, relationship between individual-group-context is inseparable. Promoting organizational creativity requires intervention in all of these dimensions, as it is a vital condition for innovation.

In future studies, it is recommended to further investigate the invariance of the parameters between the different groups and to expand the variables that may be relevant to understanding the roles and influences of the three factors: individual - group - organizational environment.

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