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Research Article

Curiosity Unlocked the Cat: The Relationship between Curiosity at Work and Worker Creativity

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ABSTRACT

Worker creativity can be considered a determining factor in the process of idea generation and innovation within a company. This behavior is determined by both worker characteristics and perceived stimuli. Therefore, in the present study, we analyzed how the worker's creativity is influenced by his or her curiosity and ability to associate ideas. We also analyzed how the relationship between curiosity and creativity is influenced by risk propensity and the organizational support perceived by the worker. The results achieved indicate that curiosity at work has a direct and indirect effect on worker creativity. The indirect effect observed depends on the association of ideas, which tend to increase the creativity of the worker. It was also found that risk propensity and perceived organizational support for creativity did not influence the indirect relationship between curiosity and creativity. These results highlight the importance of instigating worker curiosity to induce more creative and innovative behavior.

Keywords: curiosity at work; worker creativity; association of ideas; risk propensity; perceived organizational support.

JEL code: M, M1

INTRODUCTION

In the contemporary world, the use of knowledge and new information favors the exploration of new possibilities for organizations seeking to implement creative ideas in order to achieve real benefits in the work environment (Hughes et al., 2018; Shafi et al., 2020). According to Chang and Shih (2018), this environment has presented increasingly rapid changes in increasingly shorter time intervals.

Therefore, knowing the sources that determine the transformations observed in the work environment can be essential for efficient workforce management, creation of new products and services, and for developing workers' innovative capacity (Anderson et al., 2014; Darvishmotevali, et al., 2020; Li et al., 2020). Notably, organizations that encourage creative behavior for transforming ideas into new products and services are more inclined to achieve competitive advantages in the marketplace (Shafi et al., 2020).

Thus, understanding the relationship between job performance and worker innovativeness is relevant, as these are essential characteristics for firms' survival and growth (Mussel et al., 2012; Celik et al., 2016). According to the literature, workers' ability to innovate is associated with their creativity (Müceldili et al., 2020; Shafi et al., 2020; Uddin et al., 2017).

In this context, Hardy III et al. (2017) and Chang and Shih (2018) advocate that individuals' creative capacity can be increased due to a curious mind. In summary, curiosity at work tends to promote an exploratory spirit and the desire to learn and explore (Deci & Ryan, 2000; Kashdan & Fincham, 2002; Loewenstein, 1994). Given this context, idea association may be linked to an individual's willingness to pursue new mental paths to develop original ideas, even when there is uncertainty about the outcomes of these new ideas (Amabile & Pratt, 2016; Hagtvetd et al., 2019).

Notably, it is important to note that the creative process, composed of developing and measuring the association of ideas, is characterized by the transformation of ideas into tangible outcomes (Hagtvedt et al., 2019). While important, this transformation process can be influenced by the worker's willingness to take risks, given their unfamiliarity with the end result (Highhouse et al., 2017; Josef et al., 2016). For Zhang, Highhouse, and Nye (2018) a person's general willingness to take risk can be defined as an individual's tendency to engage in decisions and behaviors where outcomes have greater variability and high potential for harm.

In the work environment, although individuals' behavior suffers interference from contextual factors, individuals' interests in generating and persisting with their ideas can result in creative behavior (Scott & Bruce, 1994; Shafi et al., 2020; Zhou & George, 2001).

In summary, it is observed that studies tend to highlight the direct relationship between curiosity at work and worker creativity (Celik et al., 2016; Hardy III et al., 2017; Peljko et al., 2016). However, no studies were found that consider how worker creativity may originate from their ability to associate ideas and transform less creative ideas into creative and tangible outcomes. In this context, Shutte and Malouff (2020) highlight the need for studies that analyze other paths of

the relationship between curiosity and creativity in the workplace and the relevance of individual characteristics to this relationship.

Given the above, the aim of this paper is to analyze how worker's creativity is influenced by their curiosity and ability to associate ideas. We also analyzed how the relationship between curiosity and creativity is influenced by risk propensity and organizational support perceived by the worker.

In a practical way, it is expected that companies and managers who need to lead their teams to better results, in terms of innovation, identify and stimulate activities that make it possible to organize, combine, and generate ideas, in order to properly drive the chances that creativity will occur.

THEORETICAL BACKGROUND

Worker's creativity

For companies to survive and stand out in the market, including in the Brazilian context, they need to be innovative. Innovation, in many cases, is determined by the creativity of the jobs that are observed in the work environment (Rocha & Wechsler, 2018). Kremer, Villamor, and Aguinis (2019) argue that organizations that encourage worker creativity, with the goal of generating ideas and transforming products and services, can acquire competitive advantages from the innovation process in the work environment.

In this context, creativity is conceptualized as the generation of ideas that are new and useful (Amabile & Pratt, 2016). Historically, creativity has been addressed as one of the key elements for organizations to deal with uncertainty and implement market-oriented strategies (Darvishmotevali et al., 2020). Although there are different ideas about the origin of the creative process (Amabile & Pratt, 2016; Júlio & Tureta, 2018; Shalley et al., 2004), it is usually determined as a personal characteristic (Charyton et al., 2009).

Creativity as a personal characteristic considers the personality and cognitive style of individuals as central factors, which can, in turn, induce greater creativity in the worker (Shalley et al., 2004). Therefore, even in the face of the uncertainties of the environment and personal interactions, these factors may influence creativity (Müceldili et al., 2020). Nevertheless, Amabile (1988) and Ryan and Deci (2000) point out that, given the dynamism required in organizations to perform tasks, intrinsic motivation and creative skills are factors that are positively associated with worker creativity. In general, creative individuals tend to take more risks, be open to new experiences, masterfully solve problems, have the will to overcome challenges, and, above all, the ability to doubt and question (Amabile, 1988; Sternberg & Lubart, 1999).

In order to better understand the importance of creativity, other studies have emerged from management — especially psychology — exploring worker creativity with the aim of boosting the stimulus in individuals to work innovatively (Khalili, 2016; Shafi et al., 2020; Uddin et al., 2017). Schutte and Malouff (2019) observed a significant association between curiosity and creativity.

However, according to this research, the results do not show a causal relationship between the variables. Furthermore, worker creativity can be related to conditions involving openness to new experiences, and especially the generation and implementation of ideas (Celik et al., 2016; Peljko et al., 2016).

Curiosity at work

As pointed out, in a scenario of deep and rapid transformations, where the individual's ability to think is being compromised by the volume of information available (Horstmeyer, 2020), curiosity at work can be seen as a factor that impacts worker creativity (Deci & Ryan, 2000; Wagstaff et al., 2020; Huang, 2021). In this regard, Mussel et al. (2012) postulated that an individual's willingness and persistence to maintain exploratory and problem-solving behavior, i.e., curiosity in the workplace, are relevant in the work environment.

Curiosity can be understood as a psychological characteristic that individuals possess that can lead them to explore new things (Litman, 2005). Thus, curiosity can be said to be the driving force behind exploratory drive and innovation in organizations, resulting from individuals' interest in learning, exploring, combining, and gathering work-related knowledge (Amabile et al., 1996; Mussel et al., 2012; Chang & Shih, 2018).

However, the literature highlights that not all individuals respond to curiosity via the drive and desire to explore, as there are individuals who consciously do not activate this desire in personal or work domains (Lauriola et al., 2015). Consequently, the absence of curiosity may mitigate the learning process and idea creation (Hardy III et al., 2017; Wang & Huang, 2018). Finally, Huang (2021) postulated that individuals with curiosity at work are concerned about the enjoyment associated with acquiring new knowledge and employee motivation.

Furthermore, curiosity at work is also seen as important for creative work (Harrison & Dossinger, 2017; Litman, 2005; Mussel et al., 2012; Wagstaff et al., 2020). Moreover, research grounded in the regulatory focus theory (TRF) has highlighted that curiosity reflects the feeling of interest when it involves the desire to acquire new knowledge, and the feeling of deprivation when it results in the inability to access information and acquire new knowledge (Chang & Shih, 2019; Loewenstein, 1994).

According to this theory, the motivational orientation to achieve a goal occurs to meet two basic needs: providing pleasure (promotion focus) and avoiding pain (prevention focus) (Higgins, 1998). In this sense, the regulatory orientations that guide individuals to achieve goals refer to an end state that may or may not be desired (Higgins & Cornwell, 2016). Furthermore, it is observed in the literature that the cognitive style of each individual can affect their sense of curiosity, and, consequently, individuals with certain cognitive characteristics may be more curious than others (Gross, Zedelius, & Shcooler, 2020; Horstmeyer, 2020; Lauriola et al., 2015; Müceldili et al., 2020).

Finally, Litman (2005) evidenced that curious individuals can solve problems from their interest in acquiring creative ideas. According to the author, the desire to explore, created by curiosity at

work, is a result of the pleasure associated with discoveries in the learning process. Moreover, individuals in response to the demands in the work environment, by not adopting a posture of openness to new experiences, may not increase the chances of manifesting creativity (Amabile & Pratt, 2016; Chang & Shih, 2018; Kashdan et al., 2020). Thus, it is suggested that:

H1: Curiosity at work is positively associated with worker creativity.

The mediating role of the association of ideas

In general, the creative process arises from the organization of new and old ideas that are acquired from exploratory behavior (Chang & Shih, 2018). Creative individuals use information gathering and combining as a precedent to idea generation (Mumford & McIntosh, 2017). In addition, curiosity at work can influence this information gathering and combining (Kashdan & Steger, 2007; Schutte & Malouff, 2020).

The individual's ability to organize this information can enhance the creative process, and, consequently, potentiate the creation of creative solutions to existing problems (Mumford & McIntosh, 2017). To understand such a phenomenon, this research used the construct idea association, which was proposed by Hagtvedt et al. (2019), conceptualized as the way individuals use less creative initial ideas to achieve more creative final ideas in a sequential manner.

The literature has postulated that idea association enables the generation of creative ideas (Hagtvedt et al., 2019). In this context, it is conceivable that curiosity at work enables the necessary impetus for the idea generation process, and, consequently, idea association (Chang & Shih, 2018; Hagtvedt et al., 2019). Such insight can lead individuals to work creatively and develop innovative ideas (Shafi et al., 2020).

Furthermore, the increase in idea association generated by a curious mind serves to expand skills and develop intellectual and creative abilities, which may lead to greater worker creativity (Kashdan et al., 2020; Mumford & McIntosh, 2017). For research purposes, it could suggest that idea association would be a common thread between curiosity at work and worker creativity. As a result, curiosity at work not only directly affects worker creativity, but also indirectly through idea association.

Through these reflections, one is able to think about the way that the association of ideas can positively mediate the relationship between curiosity at work and worker creativity. It is proposed with these arguments that:

H2: Curiosity at work positively influences the association of ideas.

H3: Idea association mediates the relationship between curiosity at work and worker creativity.

The moderating role of risk propensity

The definition of risk propensity refers to an individual's tendency to take risks when faced with adverse situations with the possibility of negative consequences, such as harm, loss, or failure (Bran & Vaidis, 2019; Zhang et al., 2018).

Traditionally, risk propensity has been approached in two different ways (Bran & Vaidis, 2019; Severgnini et al.; 2019; Zhang et al., 2018). In the first approach, the risk propensity is considered as a general risk-taking characteristic, i.e., it considers the individual's tendency to take risks. Second, it consists of a specific risk-taking characteristic, i.e., it considers the individual's tendency to take risks in certain domains, such as taking risks in investment decisions (Nicholson et al., 2005; Bran & Vaidis, 2019).

Nicholson, Fenton-O'Creevy, Soane, and Willman (2002), from a sample of managers and professionals, demonstrated openness to new experiences as a source of influence on risk-taking tendency. Finally, the authors argue that the behavior of openness to new experiences, characteristic of individuals who always have new interests and are curious, demands the need to take risks.

Sternberg and Lubart (1999) evidenced that the greater the capacity to take risks, in addition to other personality traits such as tolerance for ambiguity and willingness to overcome challenges, the more positive is the effect on the worker's creativity. This view considers a deep connection of individuals' attitudes at work with risk propensity; therefore, if the individual presents aversion to risk-taking in relation to the situations in which he or she takes initiative, it is possible that the creativity of the worker tends to decrease (Amabile & Pratt, 2016; Chang & Shih, 2018; Zhang et al., 2018).

Moreover, one identifies in the literature a warning about the fundamentally subjective aspect of risk propensity. This implies saying that the notions of uncertainty, loss, damage, and failure, related to the definition of risk, may be risky for certain individuals, and not for others, depending on the context and the abilities of each individual (Xu et al., 2018). Therefore, risk propensity may be an element that is inclined to intensify the positive indirect effect of idea association on the relationship between curiosity at work and worker creativity, adding, in this possibility, openness to new experiences (Nicholson et al., 2002). In addition, strong risk propensity allows individuals to deal with more challenging activities and seek efficient solutions to problems, which, in turn, is more conducive to the generation of creative ideas (Amabile, 1988; Mussel et al., 2012).

In summary, it was observed that the positive indirect effects of work curiosity on worker creativity via idea association will be strengthened with the insertion of risk propensity as a variable that establishes a strong connection with the individual's initiative taking in the face of challenging activities (Amabile, 1988). Thus, it is proposed that:

> *H4*: Risk propensity moderates and strengthens the relationship between curiosity at work and worker creativity mediated by the association of ideas.

The moderating role of perceived organizational support

Alzghoul, Elrehail, Emeagwali, and Alshboul (2018) indicate that work environments with favorable conditions lead employees to be more uninhibited and expose ideas, even if they are not considered, which can lead to worker creativity. In this context, perceived organizational support refers to the dimension in which individuals, in the organizational context, believe that their creative contributions and well-being are encouraged, respected, and recognized by the organization (Eisenberger et al., 1986; Zhou & George, 2001).

Therefore, individuals may exhibit high levels of creativity at work when they perceive that creativity is prioritized and valued by the organization (Scott & Bruce, 1994). Furthermore, to foster worker creativity, in place of a traditional and standardized organizational culture, organizations must make way for an organizational culture that fosters curiosity, therefore, incorporating openness to questioning will avoid barriers regarding the generation of creative ideas (Müceldili et al., 2020).

Eisenberger et al. (1986) pointed out that the role of leadership and openness to new ideas are variables correlated with perceived organizational support. According to Mumford and Gustafson (1988), despite different leadership styles, the greater the support and freedom for individuals to act, the greater the positive effect on employee creativity. On the other hand, if employees do not feel that leadership is supportive, provides feedback, and shows concern, it is possible that worker creativity tends to decrease (Ryan & Deci, 2000; Zhou & George, 2003).

Horstmeyer (2020), in a conceptual study on the role of curiosity in volatile, uncertain, complex, and ambiguous (VUCA) work contexts, makes a call for corporate interests to prioritize addressing the contradiction of curiosity within organizations. According to the author, organizations that do not support individuals' exploratory behavior are perpetuating the curiosity contradiction. In this sense, even when the benefits of curiosity are extolled in the organization, individual characteristics translated into the behaviors of asking questions or suggesting new ideas may be met with resistance and discouragement, which results in the curiosity contradiction (Bickett, Schweitzer, & Mastio, 2019).

Therefore, perceived organizational support may be an element that is inclined to intensify the positive indirect effects of idea association on the relationship between curiosity at work and worker creativity, adding to this possibility the development of creative ideas (Alzghoul et al., 2018; Sternberg & Lubart, 1999).

In summary, the positive indirect effects of work curiosity on worker creativity via idea association will be strengthened with the insertion of perceived organizational support as a variable that establishes a strong connection with openness to new and useful ideas (Scott & Bruce, 1994; Zhou & George, 2001). Thus, in the hypothesis suggested, curiosity at work strengthens idea association and promotes worker creativity, perceived organizational support signals whether the organization provides resources to support creativity, which leads to intensifying this relationship. Thus, it is proposed that:

H5: Perceived organizational support moderates and strengthens the relationship between curiosity at work and worker creativity mediated by idea association.

Presented the theoretical foundations of the study carried out, the next section highlights the methodological path followed in the research.

METHODOLOGY

In this work, descriptive quantitative research was carried out, with cross-section and primary data, in order to test the hypotheses contained in the theoretical model presented.

Data collection

Data collection was performed by providing a questionnaire via email and social networks (WhatsApp and LinkedIn), between July 7, 2020 and August 14, 2020, which was prepared in a free online platform (Google Forms). The sampling method used was non-probabilistic and by accessibility.

In order to validate the questionnaire, a pre-test was carried out with 10 individuals – university professors, *stricto sensu* graduate students, and market professionals. In order to capture the largest number of observations, a broad survey was carried out, making no differentiation of position, workload, remuneration, or nature of the employing companies, public or private.

The measurement of the latent variables that make up the model proposed in this work was defined based on existing scales in the literature. The response options were arranged on a five-point Likert scale. The complete table of constructs used can be seen in Appendix A.

Sample profile

The study sample was composed of individuals who had worked for at least two years in the labor market, since this public tends to present a higher degree of reflection about the central themes of the work: curiosity and creativity. Given the interests of the research, the following control question was used: "If you add up all the years of your professional experience, is the result greater than two years?" In cases of negative answers, the respondents were excluded from the final sample.

This sample, in turn, had the following characteristics: 728 survey respondents, and, after data analysis, 33 responses were excluded. In all, 695 valid observations were obtained.

In the study, the following control variables were collected: gender, age, education, income, region of the country, and length of service. The valid sample was characterized as shown in Table 1.

It can be seen that, by a small margin of difference, most of the respondents were female (53.96%). Regarding the age range of the respondents, most of them were between 25 and 34 years old (37.99%). The education level presented complete graduate level (48.20%) as the highest percentage of respondents in relation to other levels of education.

Table 1

Sample description

DESCRIPTION	CHARACTERIZATION	PERCENTAGE (%)
Gender	Female	53.96%
	Male	46.04%
Age in years	Up to 17	0.14%
	18 to 24	5.90%
	25 to 34	37.99%
	35 to 44	34.82%
	45 to 54	15.97%
	55 to 64	4.17%
	65 & above	1.01%
Education	Elementary School	0.72%
	High School/Technical	7.48%
	Graduated	33.24%
	MBA and Specializations	48.20%
	Master's Degree	6.47%
	Doctorate	1.01%
	Other	2.88%
Income	Up to BRL 2,000.00	4.75%
	Between BRL 2,000.00 and BRL 4,999.00	26.76%
	Between BRL 5,000.00 and BRL 9,999.00	31.80%
	Between BRL 10,000.00 and BRL 14,999.00	16.55%
	Over BRL 15,000.00	20.14%
Regions	Midwest	62.73%
	Northeast	15.54%
	North	3.74%
	Southeast	13.67%
	South	4.32%
Service Time in years	Up to 2	22.30%
	between 2 to 4	17.12%
	between 4 to 6	15.54%
	between 6 to 8	11.37%
	Over 8	33.67%

Note. Source: Research data.

In relation to the respondents' family income, based on the data presented, it was possible to conclude that the BRL 5,000.00 to BRL 9,999.00 range (31.80%) represented most of the sample. Among the respondents, most of the sample is from the Midwest Region (62.73%). Finally, regarding the length of service, based on the data presented, it was possible to conclude that the range below eight years (66.33%) represented most of the sample.

Data analysis technique

For data analysis, the structural equation modeling (SEM) methodology was applied using SmartPLS 3.0 software, given that the theoretical model presented was made up of existing relationships between latent variables. To conduct this investigation, the criteria of Hair, Risher, Sarstedt, and Ringle (2019) was followed, and the measurement model was evaluated using the indicators of convergent validity and discriminant validity.

DATA ANALYSIS

Confirmatory component analysis

The criteria of Hair et al. (2019) were followed to analyze the results. Initially, the confirmatory factor analysis (CFA) was used, obtaining the validation of the components of the structural model built. To this end, it was performed the verification of the convergent validity properties, proceeding with the loading of the factor loadings of the latent variables (Hair et al., 2019).

After performing the procedures inherent to the analysis of convergent validity, the indicators CW05, CW01, CW07, WC06, WC12, CW03, PS04, CW06, CW08, WC01, WC04, in this sequence and parsimoniously, were excluded for presenting factor loadings lower than the recommended 0.708 (Hair et al., 2019). The indicators are presented in Appendix A.

Next, the indicators of average variance extracted (AVE) were checked. All the values of the model constructs were above 0.5 (Hair et al., 2019). Composite reliability was achieved in the constructs, as all values were between 0.7 and 0.95 (Hair et al., 2019).

In addition, Cronbach's alpha served to analyze the internal consistency of the model constructs. The results suggested good internal consistency with values above 0.7 (Hair et al., 2019). Discriminant validity was checked using the square root of the mean variance extracted. In Table 2, the AVE, composite reliability, Cronbach's alpha, Sperarman correlation, and discriminant validity calculated from Fornell and Larcker's criterion (Fornell & Larcker, 1981) were presented.

Table 2

Convergent and discriminant validity by Fornell and Larcker (1981)

	1	2	3	4	5
1 — CW	**0.767**				
2 — WC	0.752	**0.795**			
3 — AI	0.561	0.666	**0.854**		
4 — PR	0.440	0.501	0.430	**0.835**	
5 — PS	0.213	0.335	0.285	0.204	**0.882**
AVE	0.588	0.632	0.729	0.698	0.778
CR	0.851	0.939	0.890	0.949	0.913
AC	0.767	0.927	0.814	0.938	0.859
Rho_A	0.771	0.928	0.818	0.941	0.904

Note. Source: Survey data. Note: CW (curiosity at work); WC (worker's creativity); AI (association of ideas); PR (propensity to risk); PS (perceived organizational support); AVE (average extracted variance); CR (composite reliability); AC (Cronbach's alpha); Rho_A (Spearman correlation).

Discriminant validity was confirmed using the criteria proposed by Henseler, Ringle, and Sarstedt (2015) by measuring the heterotrait-monotrait ratio (HTMT). This indicator calculates the geometric mean of the correlations between items that measure the same constructs. Values above 0.85 suggest that there is no discriminant validity. For constructs with similar concepts, the threshold value would be up to 0.9 (Henseler et al., 2015). The results found met the literature as shown in Table 3.

Table 3

Discriminant validity — heterotrait-monnotrait ratio (HTMT)

	1	2	3	4	5
1 — CW					
2 — WC	0.884				
3 — AI	0.709	0.765			
4 — PR	0.513	0.533	0.486		
5 — PS	0.243	0.360	0.327	0.222	

Note. Source: Survey data. Note. CW (curiosity at work); WC (worker's creativity); AI (association of ideas); PR (propensity to risk); PS (perceived organizational support).

From the above, it was concluded that the results presented meet all the validity criteria of the measurement model. Both convergent validity and discriminant validity showed adequate results for hypothesis testing in the proposed model.

Measurement model analysis

The hypotheses of this research were tested, with and without control variables, using the structural equation modeling technique with partial least squares (PLS) estimation. The results are presented in Figure 1.

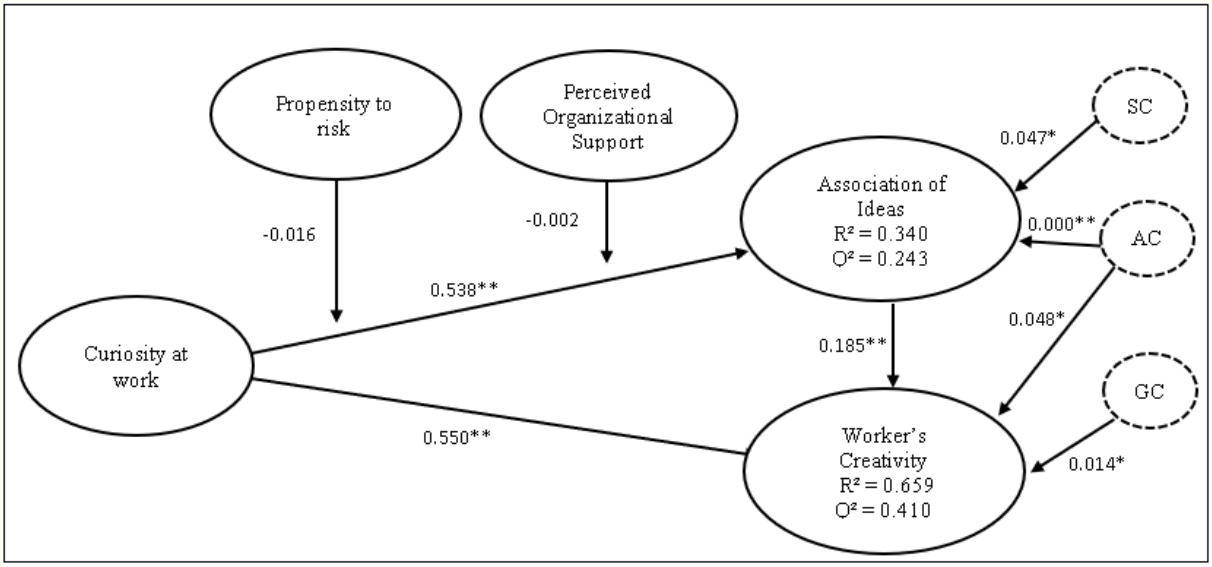

Figure 1. Structural model.

**** p-value < 0.01; * p-value < 0.05; R² (explanatory power); Q² (predictive validity); SC (school control variable); AC (age control variable); GC (gender control variable). Source: Survey data.

As shown in Table 4, it was observed that the results of significance of the relationships tested were not altered by the presence of significant control variables in the model. Furthermore, the control variables education and age influenced the construct association of ideas, while the variables age and gender influenced the construct creativity of the worker. The other control variables, income, and length of service, did not obtain any significance in any of the relations with the endogenous constructs.

It was verified that hypotheses H1, H2, and H3 were supported. Hypotheses H4 and H5 were not significant in the model tested. In this sense, it is reported that, for these results, the quality of the model fit was performed using as evaluation the indicators R^2 (explanatory power), Q^2 (predictive validity), and the effect size f^2 according to the Cohen's classification (1988). Regarding the R^2, the values 0.02 – small, 0.15 – medium, and 0.26 – large are considered. For Q^2, they are acceptable when greater than zero. Regarding the f^2, the effects are considered as 0.02 – weak, 0.15 – moderate, and 0.35 – medium (Cohen, 1988).

Table 4

Direct and indirect effects without and with control variables

Effects		Hypotheses	Results without control		Results with control	
			Coef.	p-value	Coef.	p-value
Direct	CW → WC	H1	0.554	0.000**	0.550	0.000**
CW → AI		H2	0.562	0.000**	0.538	0.000**
Indirect	CW → AI → WC	H3	0.199	0.000**	0.185	0.000**
Control variables						
Education → Association of ideas					0.062	0.047*
Gender →Association of ideas					0.127	0.000**
Gender → Worker's creativity					0.044	0.048*
Region → Association of ideas					0.043	0.165
Region → Worker's creativity					0.003	0.931
Gender → Worker's creativity					0.055	0.014*

Note. ** p-value < 0.01; * p-value < 0.05; CW (curiosity at work); WC (worker's creativity); AI (association of ideas); PR (propensity to risk); PS (perceived organizational support). Source: Research data.

It was observed that the construct association of ideas presented $R^2 = 0.340$, $Q^2 = 0.243$, while the creativity of the worker showed $R^2 = 0.659$, $Q^2 = 0.410$. The construct association of ideas and worker creativity presented values higher than those recommended in the literature.

Table 5

Tests of moderating effects — Results with control variables

Structural relationship	Gardner et al. (2017, p.614)		f^2	Coef.	p-value
PR → AI (mediator) CW → AI → WC PR → AI	H4	XZ X Z	0.001	-0.016	0.370
PS → AI (mediator) CW → AI → WC PS → AI	H5	XZ X Z	0.000	-0.002	0.931

Note. ** p-value < 0.01; * p-value < 0.05; CW (curiosity at work); WC (worker's creativity); AI (association of ideas); PR (propensity to risk); PS (perceived organizational support). Source: Research data.

Finally, the variance inflation factor (VIF) was observed to demonstrate the presence of model collinearity. In this research, all VIF values of the model indicators were less than three, ranging between 1.000 and 2.990, considered acceptable in the literature (Hair et al., 2019). Regarding

the effect size (f^2) of the moderator variables, both showed effects below 0.02, considered weak by the literature (Cohen, 1988).

DISCUSSION OF RESULTS

Hypothesis H1, which assessed the relationship between curiosity at work and worker creativity, was supported ($\Gamma = 0.550$; $f^2 = 0.601$; $p < 0.00$). This result corroborates the works of Celik et al. (2016) and Hardy III et al. (2017), confirming that curiosity at work is positively associated with worker creativity, and can be understood by observing that worker creativity is enabled by the exploratory spirit of a creative mind (Chang & Shih, 2018). In this sense, being curious in the work environment can be seen as an essential condition that drives worker creativity (Kashdan et al., 2020). Additionally, the results corroborate the work of Gross et al. (2020), which highlights the importance of considering the different aspects of the constructs curiosity and creativity as related; that is, understanding which mechanisms influence the association between curiosity and creativity.

Thus, regarding the curiosity practiced in the workplace, it is possible to consider that, if this ability to learn and explore work-related knowledge is useful, it can impact the exploratory and problem-solving behavior, possibly generating positive reflections on the worker's creativity. Thus, it is understood that curiosity in the workplace can stimulate the ability to explore new methods to perform tasks in the workplace, which in turn tends to generate positive attitudes in the individual toward challenges, problem solving, and creative work. From the organization's point of view, it is important to stimulate an environment that is conducive to worker creativity, since workers start to have creative behavior that generates new ideas — which can enable the achievement of competitive advantages in the market (Shafi et al., 2020)

Hypothesis H2 proposed that curiosity at work positively influences idea association, a hypothesis that was supported ($\Gamma = 0.538$; $f^2 = 0.426$; $p < 0.00$). It corroborates findings in the literature that have examined the influence of curiosity at work on how an individual collects and combines information (Kashdan & Steger, 2007; Schutte & Malouff, 2020). Furthermore, these results suggest that being curious is necessary in order to use aspects of initial ideas as a springboard for subsequent ideas, specifically in transforming less creative initial ideas into more creative final ideas, aligning with what was found in the results of Hagtvedt et al. (2019).

Thus, it is identified that by exhibiting exploratory and problem-solving behavior in the work environment, the individual can facilitate the process of generating and associating new information and ideas. This can occur especially when there is a set of different ideas and information and may be an antecedent for the intensification of idea association (Shafi et al., 2020). Thus, the results indicate that curiosity at work, when encouraged, can improve the effectiveness of information generation and combination and likely increase idea association.

Hypothesis H3, which assessed the mediating effect of idea association on the relationship between curiosity at work and worker creativity, was supported ($\Gamma = 0.185$; $p < 0.00$). This result may indicate that idea association positively mediates the positive relationship between job

curiosity and worker creativity, revealing results that corroborate the perception of idea association as an effective creative idea generation strategy (Hagtvedt et al., 2019). Such evidence further implies thoughts regarding the impact of having more creative and innovative individuals in the workplace, such as by providing a work environment that encourages greater idea association among individuals (Hagtvedt et al., 2019). Furthermore, Schutte and Malouff (2020) point out in their study the various pathways that connect curiosity to creativity. Therefore, in line with this work, idea association presents itself as a possible pathway.

The results indicated that part of the effect of worker's curiosity on their creativity, or ability to generate new ideas and innovate in the work environment, depends on their ability to associate ideas. Put another way, the greater the cognitive and intellectual capacity of the job in terms of associating different information and ideas, the greater the effect of curiosity on creativity. Therefore, companies that seek to improve their workers' ability to transform ideas into innovation (creativity) must pay attention to the worker's ability to associate ideas. It is also possible to point out that, in order to improve the creative process within the company, they must invest in the critical and information assimilation capacity of their workers.

Hypotheses H4 and H5 contemplated the moderating effects on the mediation relationship proposed in hypothesis H3, as evidenced in Table 5. The results indicate that in hypothesis H4 the positive mediating effect of idea association on the relationship between curiosity at work and worker creativity was not moderated by risk propensity (Γ = -0.016; f^2 = 0.01; p < 0.370). Hypothesis H5 also did not show significance in the moderating effect of perceived organizational support that would tend to intensify positive mediation via idea association in the relationship between curiosity at work and worker creativity (Γ = -0.002; f^2 = 0.000; p < 0.931).

The explanation for these results is based on the view that not all individuals in an organization are open to new experiences and want to do their job well, which are factors strongly correlated with curiosity (Hassan et al., 2015; Mussel et al., 2012). Furthermore, there is the influence of paradoxical tensions in the work environment, where supporting risk mitigation is weighted against creating productive solutions to problems, more specifically, supporting curiosity and creative behaviors (Bickett et al., 2019; Smith & Lewis, 2011).

Supported by this analysis, one can clarify the understanding that merely taking risks and realizing the extent to which organizations encourage, respect, and recognize those who demonstrate creativity are insufficient to intensify worker creativity, and in this scenario the tendency is for the individual's overall disposition to remain unchanged, having no reflection on worker creativity.

The results observed from hypotheses H4 and H5 may have been influenced by the distribution of the sample, since approximately 81% of the sample was composed of individuals with a college degree, who may in turn be more naturally prone to risk. Thus, it was not possible to identify a moderation effect in the relationship between curiosity and creativity mediated by the association of ideas.

Finally, the length of service of the individuals resulting from the sample, 11.37% between six and eight years, and 33.67 above eight years, may indicate a greater ability to interpret the processes and the work context where they are inserted, and thus favor the creation, exchange, and dissemination of new ideas within the work context.

CONCLUSION

This study sought to analyze the effect of curiosity at work on worker creativity. Considering that this relationship has different mechanisms, the indirect effect of this relationship, determined by the idea association, and the impact of the perceived environment on the worker's behavior in this indirect relationship were also analyzed. The results highlighted the importance of curiosity at work as a factor inducing worker creativity. Moreover, it was found that this worker's ability to associate ideas creatively is an important mechanism to explain the relationship between curiosity and creativity at work. Finally, although it was considered in the analysis, risk propensity and perceived organizational support had no influence on the indirect relationship of curiosity and creativity.

In view of the results found, it was concluded that the workers' curiosity in their work environment and their ability to associate ideas are important to induce greater creativity in workers. Therefore, developing activities and a work environment that stimulate and enable a greater association of ideas among individuals may favor the worker's creativity. Therefore, it is emphasized that the association of ideas and the ability to explore ideas and new methods to perform tasks in the work environment can positively impact the worker's creativity. Furthermore, it is emphasized that factors based on workers' perception (perceived organizational support) and on the individual's disposition (risk propensity) may not be sufficient to, by means of the association of ideas, transform the worker's curiosity into creativity.

Notably, based on the observed results, it was possible to highlight the theoretical importance of the mediating role of the association of ideas construct, that is, the role of the association of ideas as mechanisms capable of explaining the relationship between curiosity at work and worker creativity. Thus, it was possible to corroborate the work of Schutte and Malouff (2020) by highlighting this importance and extend the studies of Chang and Shih (2018) and Kashdan et al. (2020) that did not consider this relationship.

Finally, regarding the practical applicability of the results, it was possible to highlight the relevance of developing activities and a work environment that identify and foster the worker's ability to associate ideas of different levels to induce greater creativity. Notably, stimulating this cognitive capacity of workers can be fundamental to intensify the innovation process within companies and, thus, enable the development of a greater competitive capacity of the company. Finally, organizational programs designed to enhance creativity can build on these results and collect insights to unlock curiosity, and consequently stimulate the association of ideas or creativity.

Finally, despite the observed results, it was not possible to conduct a targeted study capable of identifying the behavior of different groups of workers inserted in different organizational

contexts and sectors. Therefore, for future research, it is suggested the inclusion of these sample cuttings, as well as the inclusion of the antecedents of curiosity, creativity, and the association of ideas to deepen the knowledge of the determinants of these behavioral variables. In addition, it is suggested to evaluate other variables as mediators in the relationship between curiosity and creativity, for example, mood, intrinsic motivation, and resilience, since these are variables that impact the performance of individuals in the work environment.

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APPENDIX A

Table A1

Constructs and Variables

Constructors	Factorial charge	Item — Original	Item — Adapted
Curiosity at work (CW)			
	CW1 = excluded	1. I am interested in how my contribution impacts the company.	I am interested in how my contributions impact the company I work for (or if unemployed, "the last company I worked for").
	CW2 = 0.786	2. I enjoy developing new strategies.	I like to develop new strategies.
	CW3 = excluded	3. Regarding practical problems, I'm also interested in the underlying theory.	As for practical problems, I am not only interested in knowing them, but also in understanding why they happened.
	CW4 = 0.771	4. When confronted with complex problems, I like to look for new solutions.	When faced with complex problems, I like to look for new solutions.
	CW5 = excluded	5. I enjoy pondering and thinking.	I like to think before I act.
Mussel et al. (2012)			
	CW6 = excluded	6. I am eager to learn.	I am a person who loves to learn.
	CW7 = excluded	7. I keep thinking about a problem until I've solved it.	I keep thinking about a problem until I solve it.
	CW8 = excluded	8. I challenge already existing theories critically.	I tend to ask myself if the explanations that are given for certain problems really apply to what I am observing.
	CW9 = 0.725	9. I carry on seeking information until I am able to understand complex issues.	I keep looking for information until I understand complex issues.
	CW10 = 0.784	10. I try to improve work processes by making innovative suggestions.	I try to improve work processes by making innovative suggestions.
Worker's creativity (WC)			
	WC1 = excluded	1. Suggests new ways to achieve goals or objectives.	I suggest new ways to achieve goals or objectives.
	WC2 = 0.794	2. Comes up with new and practical ideas to improve performance.	I have new and practical ideas for improving performance.
Zhou and George (2001); Scott and Bruce (1994)	WC3 = 0.739	3. Searches out new technologies, processes, techniques, and/or product ideas.	I look for new technologies, processes, techniques and/or ideas for new products/services.
	WC4 = excluded	4. I suggest new ways to increase quality.	I suggest new ways to increase quality.
	WC5 = 0.812	5. I am a good source of creative ideas.	I'm a good source of creative ideas.
	WC6 = excluded	6. I am not afraid to take risks.	I'm not afraid to take risks.
	WC7 = 0.752	7. Promotes and champions ideas to others.	I promote and share new ideas.
	WC8 = 0.806	8. Exhibits creativity on the job when given the opportunity to.	I demonstrate creativity at work when the opportunity to do so arises.

(Continues)

Table A1 (continued)

Constructors	Factorial charge	Item — Original	Item — Adapted
	WC9 = 0.738	9. Develops adequate plans and schedules for the implementation of new ideas.	I develop suitable plans to implement new ideas.
	WC10 = 0.845	10. Often has new and innovative ideas.	I often have new and innovative ideas.
	WC11 = 0.842	11. Comes with creative solutions to problems.	I find creative solutions to problems.
	WC12 = excluded	12. Often has a fresh approach to problems.	I often deal with the problems I face in a natural way.
	WC13 = 0.820	13. Suggests new ways of performing work tasks.	I suggest new ways of performing work tasks.
Association of ideas (AI)	AI1 = 0.827	1. I develop early ideas knowing that I'll use them mainly as a stepping stone to a final idea.	I think of things in advance knowing that I will use them as an intermediate step toward a final idea.
Hagtvedt et al. (2019)	AI2 = 0.876	2. I use one idea as a springboard to the next.	I use one idea as a springboard to the next one.
	AI3 = 0.858	3. Initial ideas often point me toward additional possibilities.	In general, initial ideas make me see other possibilities later.
Propensity to risk (PR)	PR1 = 0.790	1. Taking risks makes life more fun.	Taking risks makes my life more fun.
	PR2 = 0.856	2. My friends would say that I'm a risk taker.	My friends would say I like to take risks.
Zhang et al. (2018)	PR3 = 0.874	3. I enjoy taking risks in most aspects of my life.	I like to take risks in most aspects of my life.
	PR4 = 0.820	4. I would take a risk even if it meant I might get hurt.	I tend to take risks, even if it might affect me negatively.
	PR5 = 0.844	5. Taking risks in an important part of my life.	I consider taking risks to be an important part of my life.
	PR6 = 0.841	6. I commonly make risky decisions.	I tend to make risky decisions.
	PR7 = 0.822	7. I am a believer of talking chances.	I believe it's worth taking risks.
	PR8 = 0.831	8. I am attracted, rather than scared, by risk.	I am attracted, rather than scared, by risk.
Perceived organizational support (PS)	PS1 = 0.900	1. Creativity is encouraged at [company].	Creativity is encouraged in the company I work for.
	PS2 = 0.916	2. Our ability to function creatively is respected by the leadership.	My ability to act creatively is respected by the leadership in the company I work for.
Zhou and George (2001); Scott and Bruce (1994)	PS3 = 0.827	3. The reward system here encourages innovation.	The reward system at the company I work for encourages innovation.
	PS4 = excluded	4. [Company] publicly recognizes those who are innovative.	The company I work for publicly recognizes those who are innovators.