

Predictors of Job Crafting Behaviors: A Mediation Analysis

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ABSTRACT – The study explored the relationship between psychological safety and job crafting behaviors, as well as the mediating role of the satisfaction of psychological needs in this relationship. The sample was composed of 1,171 Brazilian workers, who answered the Psychological Safety Scale, the Basic Needs Satisfaction General Scale and the Job Crafting Scale. The structural equations modeling showed that the perception of psychological safety contributed to the satisfaction of psychological needs which, in turn, affected the job crafting behaviors. It was concluded that the job crafting behaviors suffer from the influence of contextual work resources and motivational aspects, which contributes to the understanding of the effects of the new demands of work on organizational behavior.

KEYWORDS: job crafting behaviors, basic psychological needs, psychological safety

Preditores dos Comportamentos de Redesenho do Trabalho: Uma Análise de Mediação

RESUMO – O estudo investigou a relação da segurança psicológica com os comportamentos de redesenho, bem como o papel mediador da satisfação das necessidades psicológicas em tal relação. A amostra compôs-se de 1171 trabalhadores brasileiros, que responderam à Escala de Segurança Psicológica, à Escala Geral de Satisfação das Necessidades Básicas e à Escala de Comportamentos de Redesenho do Trabalho. A modelagem de equações estruturais indicou que a percepção de segurança psicológica contribuiu para a satisfação das necessidades psicológicas, que, por sua vez, impactaram os comportamentos de redesenho. Concluiu-se que os comportamentos de redesenho sofrem a influência de recursos contextuais do trabalho e de aspectos motivacionais, o que contribui para a compreensão dos efeitos das novas demandas do trabalho sobre o comportamento organizacional.

PALAVRAS-CHAVE: comportamentos de redesenho do trabalho, necessidades psicológicas básicas, segurança psicológica

Based on traditional theories about the work design (Hackman & Oldham, 1980), organizations have, for a long time, focused primarily on top-down interventions (from top to bottom) (Demerouti, 2014). The goal was to create inspiring work environments that would motivate employees and contribute to health and well-being at work (ten Brummelhuis et al., 2012). However, these actions did not always prove to be effective (Biron et al., 2012).

In addition, advances in information technology, as well as the resulting changes (Demerouti et al., 2015), have given rise to greater autonomy and growing interest by employees in influencing or modifying their occupational activities (Oldham & Hackman, 2010), as a way of ensuring greater organizational adaptability and proactivity (van den Heuvel et al., 2015). As a result, many of the organizational interventions turned to the bottom-up approach (Demerouti,

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2014; Demerouti & Bakker, 2014), in which individuals change their jobs design, choose and negotiate their tasks, giving them meaning (Parker & Ohly, 2008).

Thus, organizations began to recognize the importance of approaches to crafting activities initiated individually, in parallel to those initiated by the organization itself (Demerouti, 2014; Demerouti & Bakker, 2014). The activities by which employees modify and influence their work have been called job crafting behaviors and aim to align work activities with their preferences, motivations and passions (Wrzesniewski & Dutton, 2001).

Job crafting behaviors can be a strategy used by the employee to maintain involvement in work activities and have proven to be valuable for the organizations (Tims et al., 2015). Despite being a promising construct, such behaviors have not yet received due attention in the literature on organizations (Tims & Bakker, 2010). At first, studies focused mainly on theoretical discussions and qualitative studies (Bakker et al., 2012). Subsequently, the scale of job crafting behaviors was developed and validated, which led to the performance of quantitative studies aimed at understanding the antecedents and consequences of these behaviors (Tims et al., 2012). More recent investigations have been dedicated to longitudinal (Tims et al., 2015) and multilevel (Petrou et al., 2015) studies, contributing to increase the understanding about the construct.

As for the antecedents of the construct, studies have given priority to those aspects associated with the context of the task (Lyons, 2008; Petrou et al., 2012), thus neglecting resources at the organizational level (Schaufeli & Taris, 2014), as is the case with psychological safety. In order to fill this gap, one of the objectives of the present study was to identify the predictive role of psychological safety on job crafting behaviors.

The motivation for job crafting behaviors comes from a more positive sense of self, the need to control certain aspects of the job, in order to avoid negative consequences, and the satisfaction of the need to connect with others (Wrzesniewski & Dutton, 2001). In this regard, it is worth mentioning the theory of self-determination, according to which an understanding of human motivation requires considering innate psychological needs for autonomy, competence and relatedness relationships (Deci & Ryan, 2000). However, no studies were found that related the satisfaction of basic psychological needs to job crafting behaviors (Bakker, 2015). Thus, another objective of the study was to analyze the mediating role of basic psychological needs satisfaction in the relationship between psychological safety and job crafting behaviors. In summary, the present study investigated the direct effects of psychological safety on basic psychological needs and job crafting behaviors; the direct influence of needs satisfaction on job crafting behaviors and the indirect effect of psychological safety on job crafting behaviors, through the mediation of the satisfaction of psychological needs.

This study contributes to the literature of the organizational area in several ways. The first contribution refers to the investigation of why, that is, the motivational psychological process (satisfaction of psychological needs) responsible for the influence of a job resource at the organization level (psychological safety) on the job crafting behaviors, which can increase understanding of the construct under study (Demerouti & Bakker, 2014). In addition, the investigation contributes to the stretching of the empirical findings on the job crafting behaviors to Brazilian samples, which allows the development of organizational practices applicable to national companies.

Psychological Safety, Satisfaction of Basic Psychological Needs and Job Crafting Behaviors

The job crafting behaviors were initially defined as physical changes (changes in the format, content and scope of tasks assigned to employees), cognitive (changes in the perception of tasks and work relationships) and relational (changes in the quality and quantity of interactions maintained with co-workers) (Wrzesniewski & Dutton, 2001). More recently, such behaviors are understood based on the theory of job demands-resources (JD-R) (Bakker & Demerouti, 2017).

According to this theory, the characteristics of the work environment can be categorized into job demands and resources (Demerouti et al., 2001). The demands consist of aspects of the work context that require efforts on the part of individuals, leading to tensions and costs. They can be classified as challenging and obstacle demands (Crawford et al., 2010). The first concerns aspects of the job context that, despite being stressful, contribute to the individual's personal growth to his future gains. Obstacle demands, in turn, are characterized as stressful aspects of the job environment that usually hinder personal growth, learning and achievement of goals.

Job resources concern aspects of the environment that stimulate personal growth, learning and development (Demeroutiet al., 2001). Based on these assumptions, job crafting behaviors involve increasing social (social support, training and feedback received from supervision) and structural (variety of resources, opportunities for development and autonomy) resources at work, as well as increasing challenge demands, and reducing obstacle demands (Tims et al., 2012).

Regarding the antecedents of job crafting behaviors related to the task context, empirical studies have shown that the degree of control at work (Lyons, 2008) and work autonomy (Petrou et al., 2012) are predictors of such behaviors. However, the present work investigated an antecedent concerned with the context of the organization, namely psychological safety. This variable concerns the

individuals' belief about how safe their job environment is, that is, about how much they can show up, without fear of negative consequences for their self-image, status or career (Kahn, 1990). This belief contributes to the creation of a positive relational climate, devoid of fears and inhibitions, since it encourages the expression of true identity at work (Edmondson, 1999; Kahn, 1990). Therefore, in a psychologically safe environment, the individual does not worry about being punished for speaking up; instead, he/she feels free to take risks, seek help or feedback and provide provocative ideas (Chen et al., 2014).

For this reason, psychological safety has been shown to be associated with positive organizational results, such as engagement (Kahn, 1990; May et al., 2004), learning behaviors (Edmondson, 1999) and organizational performance (Baer & Frese, 2003). It would thus be expected that employees who perceive high levels of psychological safety would be more likely to engage in changes that favor the meaning of their work (Kahn, 1990). In other words, it is expected that there is a positive relationship between psychological safety and job crafting behaviors, according to the following hypothesis (Hypothesis 1): Psychological safety is positively related to job crafting behaviors.

Psychological safety is also characterized as an aspect of the organizational environment that can be positively related to the satisfaction of psychological needs. Such a construct concerns the innate needs for autonomy (feeling of will and psychological freedom), competence (feeling of effectiveness) and relatedness (feeling loved and cared for). In this sense, the needs of people for self-determination of behavior are essential to make them intrinsically motivated to pursue their goals. In other words, such needs are essential for understanding the content (what) and the motivation process (why) of individuals (Deci & Ryan, 2000).

The results of different surveys have demonstrated the importance of the environment in meeting psychological needs. Contextual resources play a significant psychological role in meeting basic psychological needs, thus contributing to an individual's active search for psychological growth (Trépanier et al., 2013). In turn, occupational activities that provide support, autonomy, positive feedback, warm and safe relationships facilitate increased motivation (Deci & Ryan, 2000). As a result, it would be expected that psychological safety, as a resource in the organizational environment, would also positively relate to basic psychological needs. In this sense, the following hypothesis was formulated (Hypothesis 2): Psychological safety is positively related to basic psychological needs.

Satisfaction of basic psychological needs has still been shown to be positively associated with several positive attitudes and behaviors at work, as is the case, for example, with job satisfaction, vigor, organizational commitment and performance (van den Broeck et al., 2010; van den Broeck et al., 2008). They thus correspond to the nutrients

that maintain the individual's growth, integrity and health. (Deci & Ryan, 2000).

In summary, the theory of self-determination seeks to explain the psychological processes that promote optimal functioning. The contribution of satisfaction of basic psychological needs to a healthy development of individuals occurs because it plays a motivational role that leads workers to invest in their tasks (Deci & Ryan, 2000). In addition, meeting the needs for autonomy, competence and relatedness contribute to well-being, creativity and proactivity (Vansteenkiste & Ryan, 2013). A positive relationship between psychological needs and job crafting behaviors would then be expected, which also constitute positive behaviors at work. In this sense, the following hypothesis was formulated (Hypothesis 3): Psychological needs are positively associated with job crafting behaviors.

The Mediating Role of Basic Psychological Needs

The satisfaction of psychological needs has also been configured as an important mediator of the relationships between the work context and work results. Thus, for example, that satisfaction has mediated the relationship between job demands (overload, task complexity, physical demands, etc.), job resources (supportive atmosphere, procedural and distributive justice) and personal resources (optimism and resilience) with psychological job health (Boudrias et al., 2011). In addition, in a multilevel study, the values of teamwork influenced positively individual engagement at work, based on the mediation of basic psychological needs (Schreurs et al., 2014).

In view of psychological safety, it is possible to assume that when the individuals feel capable of showing up and expressing themselves, without fear of negative consequences at work, they are able to satisfy their needs for autonomy, competence and relatedness. As a result, they will be more likely to invest in making changes in their job tasks in order to adjust them to their own preferences. In other words, psychological needs would act as mediators in the relationship between psychological safety and job crafting behaviors, due to the satisfaction of these psychological needs, constituting the motivational mechanism that energizes and directs individuals' behavior (Deci & Ryan, 2000). Thus, the following hypothesis was formulated (Hypothesis 4): Basic psychological needs mediate the relationship between psychological safety and job crafting behavior.

Figure 1 presents a summary of the theoretical model. The research hypotheses are indicated in the relationships between the study variables. It should be noted that the dashed line in Hypothesis 1 indicates that this is a parameter that is expected to vary from the insertion of the mediator variable.

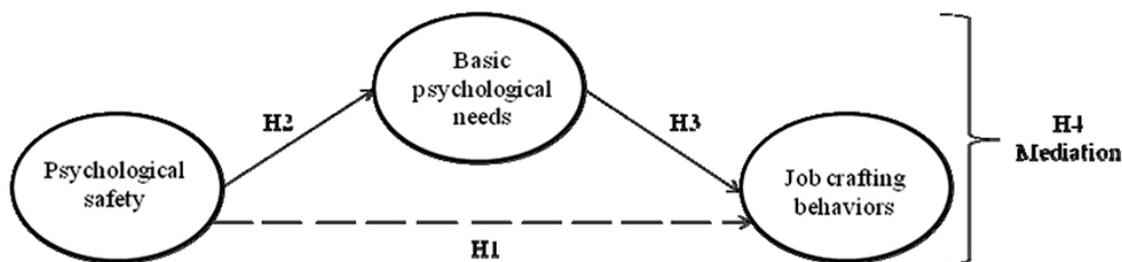


Figure 1. Theoretical Model

METHOD

Participants

Participants were included in the sample if they were working for at least one year in the organization. A total of 1171 Brazilian workers, belonging mainly to public organizations (74.8%), of both sex (57.4% female), answered the self-report questionnaire. Age ranged from 18 to 71 years, with a mean of 36.22 years ($SD = 9.71$) and education was predominantly post-graduation (68.1%), followed by 17.3% individuals with complete higher education, 7.4% with incomplete higher education, 4.3% with high school, 2.1% with technical school and .1% with elementary school. The main positions in the work were administrative and operational (74.2%).

Instruments

Psychological safety was measured using three adapted items (Burriss et al., 2008) from the Team's Psychological Safety Scale (Edmondson, 1999). The items were answered on seven-point Likert-type agreement scales, ranging from one (*strongly disagree*) to seven (*strongly agree*). An example of an item is "*Employees feel safe to give their own opinions*". In the current study, the internal consistency of the scale, calculated by Cronbach's Alpha coefficient, was equal to .92.

To assess the satisfaction of basic needs, a reduced version of the General Scale for Satisfaction of Basic Needs was used, adapted to Portuguese (Sousa et al., 2012), based on the studies by Deci and Ryan (2000). The questionnaire consists of nine items, to be answered on seven-point Likert-type agreement scale, ranging from one (*strongly disagree*) to seven (*strongly agree*). Example of an item: "*I felt free to decide for myself how to do my job*". The scale was adapted and reduced, as well as submitted to confirmatory factor analysis, before being used in the research model test ($\chi^2(df) = 303, 130 (27)$; TLI = .86; CFI

= .89; RMSEA = .10 (.087-.106). The internal consistency of the scale, calculated by the Cronbach's Alpha coefficient, was .88 in the current study.

In order to measure the job crafting behaviors, the Brazilian version of the Job Crafting Behavior Scale (Chinelato et al., 2015) developed by Tims et al. (2012) was used. The scale consists of 14 items and three dimensions (increasing structural job resources, increasing social job resources, increasing challenging job demands), to be answered in a seven-point Likert-type frequency scale, ranging from one (*never*) to seven (*always*). Example of an item: "*I try to develop my skills*". In the present study, however, the scale was treated as a single factor. In the current study, the scale internal consistency, calculated by the Cronbach's Alpha coefficient, was equal to .90.

Procedures

Approximately 350 organizations were contacted by the investigators (around twenty thousand individuals), requesting their participation in the survey, which could take place through electronic mail (through internal communication channels) and/or individually meetings. In the online application, a brief explanation of the investigation objectives was initially given, followed by a link that led directly to the initial research screen. Nine hundred and thirty-six participants answered the questionnaire electronically, and nine hundred and nineteen workers answered the survey through the link forwarded. The questionnaire in a Word file was also forwarded to participants who expressed their willingness to answer it in electronic format. Seventeen individuals responded in this way and returned the file to the investigators by e-mail, only with the form in Word, without any identification. In the face-to-face application, in turn, the workers initially read the instructions, filled out the questionnaire and returned it afterwards to the investigators. Two hundred and thirty-five

individuals answered personally the questionnaire. In all situations, respondents were informed about the anonymity of their responses.

Data Analysis

Structural equation modeling was used to evaluate the research model and implemented in Mplus software, version 7.11. All study variables were configured as latent. The parameters of the structural equation models were estimated using the Robust Maximum Likelihood (MLR) estimation method, robust to the violation of the assumption of normal distribution. The indirect effect was tested using the bootstrap (1000 resamples). The research hypotheses were

tested in two steps. In the first stage, the direct relationships between psychological safety, basic psychological needs and job crafting behaviors were tested. The second step consisted of inserting psychological needs as a mediating variable in the relationship between psychological safety and job crafting behaviors.

Ethical Considerations

The research project was approved by the Human Research Ethics Committee of the authors' institution (Protocol No. 465548). The ethical principles of voluntary participation and anonymity of responses were complied with.

RESULTS

Measure model

To assess the internal structure of the model, a confirmatory factor analysis was performed with the three latent variables (psychological safety, basic psychological needs and job crafting behavior). The model indicated an adequate fit with the data, with values of $\chi^2(df) = 199,290 (24)$; TLI = .94; CFI = .96; RMSEA = .08 (.071-.092).

To estimate the models, parcel of items for the scales basic psychological and job crafting behavior needs were created (Table 1). The dimensions of the construct were considered to compose the parcels, followed by the correlations between the items, as well as the option to keep items with different intercepts in each section (to

ensure the variability of the endorsement in each parcel). The use of parcel items is justified according to the number of parameters to be estimated in a latent mediation model.

The values of the average variance extracted (AVE) of the variables under study were calculated to expand the analysis of the measurement model (Table 1). This indicator corresponds to the average variance of the items that can be explained by the latent dimension. The AVE indicator is calculated from factor loads (Valentini & Damásio, 2016). In this context, it is expected that most of the variance and covariance between the items is explained by the factorial loads instead of the correlations between the latent dimensions. For the scales, all AVEs were equal to or greater than .57 and, therefore, higher than all coefficients

Table 1
Factor Loadings of Items and Item Parcels, AVE and correlations between variables

		Factor Loadings			
Psychological safety	Item 1		.81		
	Item 2		.92		
	Item 3		.96		
Basic psychological needs	Portion 1		.73		
	Portion 2		.78		
	Portion 3		.96		
Job crafting behavior	Portion 1		.79		
	Portion 2		.55		
	Portion 3		.89		
		AVE	1	2	3
1. Job crafting behavior		.57		.06	.27
2. Psychological safety		.81	.24		.29
3. Basic psychological needs		.69	.52	.54	

Note. The lower diagonal shows the correlations between the latent variables, estimated using structural equations. On the upper diagonal, the determination coefficients (i.e., the square of the correlation) are shown. All correlations were statistically significant (i.e., $p \leq .05$).

of determination (i.e. squared correlations), which points to evidence of discrimination between the different measures adopted in the study.

Models of Relationships between Latent Variables

In the test of the first model, there was a direct, positive and statistically significant effect between psychological safety and job crafting behaviors ($b = .15, p < .01$), making it possible to confirm hypothesis 1. In the second model, when inserting basic psychological needs as a mediating variable, a positive and significant relationship was observed between psychological safety and the satisfaction of psychological

needs ($b = .34, p < .01$), as well as between the satisfaction of psychological needs and job crafting behaviors ($b = .56, p < .01$), which allowed hypotheses 2 and 3 to be confirmed. For the test of hypothesis 4, the mediating variable was inserted in the model, which reduced the direct effect between psychological safety and job crafting behaviors to a non-significative value, as shown in Table 2. In addition, the indirect effect of psychological safety on job crafting behaviors, mediated by the psychological needs was positive and statistically significant ($b = .19, p < .01$). These last two results indicate the total mediation of psychological needs in the relationship between psychological safety and job crafting behaviors, which confirms hypothesis 4. The final model with standardized parameters is presented in Figure 2.



Figure 2. Final model for explaining job crafting behaviors through mediation

Table 2

Mediation test of satisfaction of basic psychological needs in the relationship between psychological safety and job crafting behaviors

	Model 1	Model 2	
	Direct effect without mediator	Direct effect with mediator	Indirect effect
Psychological safety → Job crafting behavior	.15 (.00)*	-.04 (.13) ns	.19 (.00)*

Note. * = significant ($p \leq .05$); ns = non-significant ($p \geq .05$).

DISCUSSION

The present study investigated the direct effects of psychological safety on basic psychological needs and job crafting behaviors, the direct influence of the satisfaction of needs on job crafting behavior and the indirect effect of psychological safety on job crafting behavior, through the mediation of psychological needs. First, the direct influences between the constructs were tested. The results obtained allowed the confirmation of the effects of psychological safety on job crafting behaviors (Hypothesis 1). Such findings corroborate those presented in the literature, according to which the individuals' safety perception about their work environment contributes to positive results in the organizational context (Chen et al., 2014; Edmondson, 1999; Kahn, 1990; May et al., 2004). It was thus found that, when employees perceive higher levels of psychological safety

in their job context, they are also more likely to engage in changes in their tasks, in order to make them more adjusted to their preferences and interests (Wrzesniewski & Dutton, 2001).

Hypothesis 2, which predicted a direct effect of psychological safety on the satisfaction of basic psychological needs, was also confirmed, which is in line with previous studies in which it was observed that contextual resources contribute to the satisfaction of basic psychological needs (Trépanier et al., 2013). According to the JD-R theory, job resources or working conditions are functional for achieving work goals, which is why they stimulate personal growth, learning and development (Demeroutiet al., 2001). In line with this theory, the present study showed that positive perceptions about the organization contribute to motivate

employees and drive them towards their growth. In other words, the individual's positive perceptions about his/her work environment can foster the emergence of feelings of autonomy, competence and relatedness (Trépanieret al., 2013).

It was also found that basic psychological needs were positively associated with job crafting behaviors (Hypothesis 3), which is consistent with previous studies on the positive relationship between psychological needs and positive attitudes and behaviors at work (van den Broeck et al., 2010; van den Broeck et al., 2008). Psychological needs are, therefore, nutrients for the individual's psychological growth (Trépanieret al., 2013). Hence, when the individual is satisfied with these basic psychological needs, he/she becomes able to invest more effort in his activities and work tasks (Deci & Ryan, 2000). In this way, workers tend to be more creative and proactive, to modify and influence their work activities, thus crafting their job (Vansteenkiste & Ryan, 2013; Wrzesniewski & Dutton, 2001).

Furthermore, we sought to investigate a more robust research model, which involved the mediation test. The aforementioned model showed that basic psychological needs mediated the relationship between psychological safety and job crafting behaviors (confirmation of Hypothesis 4). This result is in line with the theory of self-determination, by understanding the satisfaction of basic psychological needs as a motivational construct that contributes to optimal functioning (Deci & Ryan, 2000). Thus, it was found that in an environment in which individuals feel free to express their ideas (Kahn, 1990), the needs for autonomy and freedom, as well as feelings of effectiveness and good relationships at work can be satisfied, which leads them to initiate changes in their job activities, with the aim of adapting them to their preferences and motivations (Wrzesniewski & Dutton, 2001).

The results showed, therefore, that the effect of the individuals' perception of safety to express their opinions contributed to the satisfaction of their psychological needs and these, in turn, led to changing behaviors and optimal functioning on the job. These findings, therefore, enhance the motivational qualities of job resources, as assumed by the JD-R theory (Bakker & Demerouti, 2018). In this sense, they play an intrinsic motivational role, in meeting the basic human needs of individuals. However, they also act as extrinsic motivators, by promoting the willingness of employees to dedicate their efforts and skills in implementing changes in their work environments.

The results now obtained also represent evidence about the diversity of variables that influence the job crafting behaviors (contextual resources of work and motivational aspects). In view of the new demands of labor and organizations, as well as the understanding that job crafting behaviors are characterized as an important organizational behavior (Hakanen, et al., 2018), interest in bottom-up approaches has grown (Demerouti, 2014; Demerouti & Bakker, 2014). In this context, job crafting behaviors have

proven to be a promising construct (Tims & Bakker, 2010), since all the strategies used by employees to stay involved with their activities have proven to be valuable for the organizations (Tims et al., 2015).

The study therefore provides theoretical contributions on job crafting behaviors, by expanding the nomological network of the construct. In addition, we sought to study variables little investigated in the organization literature in connection to job crafting behaviors. The present investigation also contributed empirically to the literature of the organizational area, by performing robust analyses in the prediction model.

Like other studies, however, this investigation has also some limitations. The first limitation concerns the fact that the JD-R model encompasses job resources and demands, as well as personal resources, and the present investigation only approached the role of a single job resource (psychological safety) at the organization level. Another limitation was that the data was all obtained from the same source, i.e., working individuals, and at a single time. Therefore the results obtained may have been influenced by the common variance of the method. Finally, the study does not allow conclusions about the causal order of relationships, as it is a cross-sectional study.

Future studies should, therefore, include in the research model other variables that make up the JD-R model, such as job demands, in addition to personal resources. Contextual variables can also be studied as moderators. Other investigations involving the studied constructs, in their relationship with other phenomena, such as, for example, work engagement and the role performance, are also necessary. New research should also use experimental or longitudinal research designs to substantiate the causality of the hypotheses.

The study also offers practical implications. Work organizations must seek a safety climate in which individuals feel free to sustain their opinions, as this contributes to the development of a positive environment that satisfies their needs for autonomy, competence and relatedness, and consequently, promotes optimal performance of the individual, through job crafting behaviors. Therefore, in addition to the actions promoted by the organization itself, through managers and the Personnel Management department, individuals should be discerning about their beliefs in relation to the organizations with which they identify. In this connection, it is understandable that the more positive actions the organizations implement with their employees, the bigger and healthier will be their response towards the organization.

It can be concluded, therefore, that the relationship between psychological safety and job crafting behaviors is mediated by the satisfaction of basic psychological needs. Contextual and individual variables thus have a strong influence on the relationship that the individuals establish with their work activities.

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