Linking an autonomy-supportive climate and employee creativity: the influence of intrinsic motivation and company support for creativity

Article *in* European Business Review · May 2022

DOI: 10.1108/EBR-06-2021-0146

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Linking an autonomy-supportive climate and employee creativity: The influence of intrinsic motivation and company support for creativity

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Abstract

Purpose - Employees' creativity is critical for the growth and survival of firms. Therefore, the purpose of this study is to propose a motivational model of creativity to address the effect of an autonomy-supportive climate on employee creativity. This study investigates whether this effect is mediated by intrinsic motivation in employees and depends on company support for creativity.

Design/ methodology/ approach – This study used a quantitative approach to collect data by conducting a survey in a developing country using paper-based questionnaires. From 220 questionnaires distributed, 151 usable survey responses were gathered for this study. In addition, structural equation modeling was used to test the hypothesis.

Findings - The results suggest a motivational contingent path through which employees' creativity would be promoted. The findings indicate that employees in autonomy-supportive climates are more intrinsically motivated and more creative only when the company supports creativity.

Practical implications – The findings suggest that managers should provide employees with an autonomy-supportive climate. Furthermore, rewarding, recognizing and encouraging creativity in employees should be considered by companies

Originality – This research integrates Amabile's (1996) model of creativity and basic needs theory to empirically shed light on the inconsistent findings of the mediating role of intrinsic

motivation in the relation of contextual factors to creativity. This study extends Amabile's (1988) model to include an autonomy-supportive climate and explain how and when this kind of interpersonal climate contributes to enhanced creativity in employees. This research contributes to the basic needs theory by demonstrating that satisfaction of basic needs can also enhance creativity. The findings also add to the interactionist perspective of creativity since we examine the interaction effect of company support for creativity and intrinsic motivation.

Keywords Creativity, Intrinsic motivation, Autonomy-supportive climate, Basic needs theory; Company support for creativity

Research type Research paper

Introduction

Employees' creativity, which refers to the generation of new and potentially useful ideas (Amabile, 1988; Madjar, Oldham, & Pratt, 2002), is critical for organizations (Anderson *et al.*, 2014). This is because companies are under pressure to address fast-paced, unpredictable technological changes and growing global competition (George, 2007). Employees' creativity can enhance organizational innovation, productivity and efficiency, which are necessary for better performance, growth, and survival of firms (Amabile, 1996; Gilson *et al.*, 2013; Kijkuit and van den Ende, 2007). However, finding and recruiting creative employees is costly (Dessler, 2013). As a result, companies are eager to learn about solutions that they can employ to enhance the creativity of their existing employees.

In this line, some scholars have highlighted the critical role of context (e.g., Fernet et al., 2020; Mumford et al., 2002; Zhou & Hoever, 2014) and have endeavored to better understand contextual factors that might stimulate creativity (Amabile *et al.*, 2004; Rodan and Galunic, 2004; Shalley *et al.*, 2004; Tierney and Farmer, 2002). For example, Amabile (1988) and Amabile *et al.*(1996), in the componential model of creativity, proposed two kinds of contextual factors for improving employee creativity:

1) job autonomy (having choices and options in job content); and

2) interpersonal climates that support the autonomy of employees.

However, surprisingly, researchers have only investigated and corroborated the effect of job autonomy on employee creativity (Li *et al.*, 2018; Wang and Cheng, 2010), and the impact of interpersonal climates supporting autonomy has not yet been empirically explored (Hughes *et al.*, 2018). Therefore, considering the importance of developing creativity, we examine the impact of the autonomy-supportive climate, a form of interpersonal climate (Ryan and Deci, 2000), on creativity. In an autonomy-supportive climate, managers attempt to understand and acknowledge employees' perspectives; they support employees in having choices and options

to encourage self-initiation (Ryan and Deci, 2000). They also recognize and manage others' emotions and feelings (Ryan and Deci, 2000).

Prior studies have revealed that employees should be intrinsically motivated to put a constant and considerable effort into creating novel ideas, and to challenge the status quo (Amabile, 1988; Amabile and Pratt, 2016). Intrinsic motivation refers to the degree of being interested and engaged in a task for the sake of the task itself (Donald *et al.*, 2020). While prior studies have examined the mediating role of intrinsic motivation in the relationship between other contextual factors and employee creativity (Hughes *et al.*, 2018; Liu *et al.*, 2016), its contribution to the relationship between an autonomy-supportive climate and creativity is yet to be explored. In this research, we employ the basic needs theory (Deci and Ryan, 2000) which argues that when basic psychological needs are satisfied, individuals will be intrinsically motivated to take an action, and examine whether according to this theoretical perspective, development of an autonomy-supportive climate can contribute to satisfaction of these needs and boost employees' intrinsic motivation to engage in creativity. In other words, we scrutinize the mediating role of intrinsic motivation in the relationship of an autonomy-supportive climate and creativity.

As stated by Amabile's intrinsic motivation principle of creativity, intrinsic motivation has positive impacts on employee creativity, while extrinsic motivators work in opposition to intrinsic motivation, and have detrimental effects on creativity (Amabile, 1996). However, over time, some researchers challenged the notion that extrinsic motivators have adverse effects on creativity (Gerhart and Fang, 2015; Hennessey, 2019; Hennessey and Amabile, 2010; Zhou and Hoever, 2014). Amabile and Pratt (2016), in their revised model of creativity, changed this fundamental assumption, and acknowledged that extrinsic motivators might have additive effects with intrinsic motivation in enhancing creativity. Extrinsic motivators include evaluation, reward, and recognition (Ryan and Deci, 2020).

Although the impact of intrinsic motivation on employee creativity is explored in many empirical studies (Hur *et al.*, 2018; Malik *et al.*, 2019; Siyal *et al.*, 2021; Tan *et al.*, 2019; Xia *et al.*, 2021), the effect of extrinsic motivators on creativity is controversial (Wang *et al.*, 2021), and has been less investigated empirically (Anderson *et al.*, 2014; Hennessey, 2019). In addition, there is scarce knowledge about specific external motivators that might improve creativity (Fischer *et al.*, 2019). In this research, we explore the effect of company support for creativity as a form of extrinsic motivator to examine and provide empirical support for the role of an extrinsic motivator on strengthening employee creativity.

It should be mentioned that workplace creativity literature suggests two general approaches to studying employee creativity, namely actor-centered and context-centered approaches. The actor-centered approach explains that creativity can be fostered by factors pertaining to an actor, like motivation in employees (Grant and Berry, 2011). A context-centered approach explains that creativity is influenced by factors related to context, like the social environment (Amabile *et al.*, 2018). However, Zhou and Hoever (2014) contend that by utilizing an interactionist perspective, it is possible to reach a more comprehensive understanding of how and when employees show a higher level of creativity. They called for more research on the joint impact of actor factors (e.g., motivation) and contextual factors (e.g., company support for creativity) on employee creativity, and focused on an actor-context interactive effect on creativity, which we utilized in this paper.

In addition, prior studies (e.g., Liu, Jiang, Shalley, Keem, & Zhou, 2016; George, 2007; Shalley, Zhou, & Oldham, 2004) have revealed mixed results about the mediating role of intrinsic motivation in the relationship between contextual factors and employee creativity (Grant and Berry, 2011; Shalley *et al.*, 2004). For example, Zhang and Bartol (2010) found that intrinsic motivation is a full mediator of the relation between empowering leadership and employee creativity. Feng *et al.*, (2016) reported that intrinsic motivation only partially

mediates the link between ethical leadership and employee creativity, while Shalley and Perry-Smith (2001) found that intrinsic motivation does not mediate the effect of expected evaluation on creativity. These inconsistent findings have led to the quest for more empirical investigation to deepen our knowledge of the mediating effect of intrinsic motivation on the relationship between contextual factors and creativity (George, 2007). Shalley et al. (2004) explain that a potential reason for these mixed findings might be the existence of potential moderators, and call for studies that explore the conditions under which intrinsic motivation mediates the relationship of contextual factors and creativity. Therefore, in this research, we also explore the moderating effect of company support for creativity on the relation between an autonomy-supportive climate, intrinsic motivation, and creativity. By investigating when company support for creativity moderates the mediating effect of intrinsic motivation on employee creativity, we argue that it is unlikely that an autonomy-supportive climate fosters employee creativity through intrinsic motivation in different companies equally because of different levels of support for creativity in different organizations.

To examine the objectives of this research, a survey has been conducted in a developing country, Iran, and data has been collected from 151 employees of knowledge-based companies.

This paper offers several valuable contributions to the knowledge of employee creativity and motivation in the workplace. First, we contribute to Amabile's (1988, 1996) componential model for creativity by highlighting and empirically testing the role of autonomy-supportive climates in driving employees' creativity. Second, we contribute to Amabile and Pratt's (2016) revised model of creativity by explaining the positive role of company support for creativity, as an extrinsic motivator, in enhancing creativity. Third, our research sheds light on the prior contradictory findings about the mediating role of intrinsic motivation in the relationship between contextual factors and employee creativity. Our research thus responds to the call for more investigation of the potential moderators of the relationship

between contextual factors and employee creativity (George, 2007; Shalley *et al.*, 2004; Zhou and Hoever, 2014). Fourth, we integrate basic needs theory (Deci and Ryan, 2000) and the componential model of creativity (Amabile, 1988) by including both moderating and mediating mechanisms in a single model, in order to explain how and under which conditions autonomy-supportive climates improve creativity. In this manner, we show that the impact of an autonomy-supportive climate on employee creativity via intrinsic motivation depends on the level of company support for creativity. Finally, this research has been conducted in a developing country, Iran, which has been less studied. Our findings can provide new insights about this context and examine the applicability of theoretical perspectives in this context. Figure 1 presents our conceptual model:

Insert Figure 1 about here

Theoretical background

Basic needs theory

In this research, we build our argument upon the basic needs theory (Deci and Ryan, 2000) which is grounded on self-determination theory (Vansteenkiste *et al.*, 2020). According to this theoretical perspective, when three basic psychological needs are satisfied, individuals are intrinsically motivated to take action, resulting in better performance (Bidee *et al.*, 2016). Before explaining these three basic needs, we further explain the concept of intrinsic motivation. 'Intrinsic motivation' refers to a kind of motivation that makes people engage in an activity which is inherently satisfying and interesting for them (Gagné *et al.*, 2015; Gange and Deci, 2005). People with intrinsic motivation perform an activity because they find it interesting; they would even do it in the absence of external rewards. Intrinsically motivated

people tend to engage in curiosity-based activities, discover new perspectives, and pursue optimal challenges (Vansteenkiste *et al.*, 2010).

The three basic psychological needs that, according to the basic needs theory, encourage intrinsic motivation are need for autonomy, need for competence, and need for relatedness. *Need for autonomy* refers to individuals' need to self-regulate their actions (Charms, 2013). In other words, people need to experience self-endorsement and ownership of their actions. They need to feel willingness, volition, and psychological freedom while acting (Ryan and Deci, 2020). Autonomy is associated with the feeling of choice in behavior, which is congruent with people's abiding interests and values, while without autonomy, people feel external pressure to perform tasks and experience conflict for doing what is incompatible with their volition (Gange and Deci, 2005).

The second basic need that should be satisfied to intrinsically motivate a person is the need for competency. *Need for competency* refers to the need for a feeling of mastery and effectance. People need to experience opportunity and support for expressing and improving their skills and capacities, and feel that they are able to act effectively (Ryan and Moller, 2016). If the social environment prevents individuals from developing their skills – for example, when challenges are unmanageable or too hard, or when negative feedback is predominant – need for competency is unmet (Ryan and Deci, 2017).

Finally, *need for relatedness* refers to the need to establish a sense of mutual association with others, to be socially connected to and involved with others, and to feel others are caring for, responsive, and sensitive to them (Bowlby, 2005). By being a significant member of a group or by experiencing a sense of belonging, relatedness is satisfied (Deci and Ryan, 2014). It is also argued that the need for relatedness can be satisfied with valuable interpersonal relationships, for example, when people form close relationships with others and exchange their intimate thoughts and feelings (Gange and Deci, 2005).

Hypothesis Development

Mediating role of intrinsic motivation

In this section, we first explain how intrinsic motivation can enhance creativity and then elaborate on the mediating role of intrinsic motivation in the relation of an autonomy-supportive climate to employee creativity. First, based on Amabile's (1996) componential model of creativity, we argue that intrinsic motivation drives creativity in employees. This is because intrinsic motivation "makes the difference between what an individual can do and what an individual will do" (Amabile, 1988, p. 133). Moreover, intrinsically motivated individuals process new information more efficiently, take risks, and are more focused on creative behaviors (Hammond *et al.*, 2011; Hennessey, 2019). Simon (1967) and Carver and Scheier (2012) contended that intrinsic motivation increases the control of attention, persistence and effort in people. When employees find intrinsic motivation in their work, they are more likely to devote considerable attention to the problem concerned (Zhang and Bartol, 2010), which involves actively recognizing the problem from different perspectives, gathering various pieces of information, and creating and evaluating different alternatives so that they can generate creative solutions (Vansteenkiste *et al.*, 2010).

Other studies have shed light on various aspects of how intrinsic motivation can enhance creativity. For example, some researchers have shown that employees' intrinsic motivation improves 'positive affect' (Davis, 2009; Grant and Berry, 2011; Silvia, 2008). The positive affect then increases the scope of cognitive information available, and enhances cognitive flexibility for identifying associations between ideas (Fredrickson, 2001), which leads to the development of more creative solutions (Amabile *et al.*, 2005; Hennessey, 2019; Levasseur *et al.*, 2020; Rego *et al.*, 2012).

To explain how an autonomy-supportive climate can enhance intrinsic motivation, we employ the basic needs theory (Deci and Ryan, 2000). According to this theoretical

perspective, we should thus explain how an autonomy-supportive climate in an organization can satisfy the basic needs of employees (i.e. need for autonomy, competency, and relatedness) which can then improve their creativity.

First, we argue that an autonomy-supportive climate enhances the need for autonomy which then leads to higher creativity among employees. In an autonomy-supportive climate, the nature of creativity, which involves novel and non-obvious solutions to complicated and unclear problems, is addressed (Reiter-Palmon and Illies, 2004). In such a climate, the manager gives employees choices and options (Ryan and Deci, 2000), so they experience some degrees of freedom and autonomy in carrying out their tasks, and feel that they can shape their behavior and outcomes based on their discretion. As a result, they feel free to pursue their interests, and they enjoy creating novel solutions within the given latitude (Deci et al., 2017).

Autonomy-supportive climates also encourage employees to feel competent, which can strengthen creativity. In an autonomy-supportive climate, managers also acknowledge employees' ideas, beliefs, and points of view (Ryan and Deci, 2000). Therefore, employees feel that their novel, helpful suggestions are not ignored. Rather, their suggestions are utilized to improve tasks and decisions as might be needed. In such a climate, managers also give confidence to employees (Ryan and Deci, 2017). Accordingly, employees feel that they have the necessary knowledge, ability, and competence to suggest new ways of doing things (Gange & Deci, 2005; Xiaomeng, Zhang & Zhou, 2014), which intrinsically motivates them to focus on problems more persistently and to be creative (Deci and Ryan, 2000). Expressing confidence in employees' abilities improves their self-efficacy, which motivates them to be creative and search for novel solutions to complicated problems (Gong *et al.*, 2009).

An autonomy-supportive climate can also contribute to the development of creativity by enhancing the need for relatedness. In an autonomy-supportive climate, managers are responsive and sensitive to employees, and can handle employees' emotions. As a result,

employees feel that they are cared for and feel valued (Ryan and Deci, 2000), which improves their sense of connectedness (Bidee *et al.*, 2016). Enhancement of this feeling then contributes to employees' satisfaction of the need for relatedness (Deci *et al.*, 2001), boosts intrinsic motivation and fosters the development of new and creative ideas. Satisfaction of the need for relatedness plays a critical role in the internalization of motivation for creativity (Gange and Deci, 2005). In other words, the autonomy-supportive climate contributes to the satisfaction of the need for relatedness, which helps employees to actively absorb creativity values into their own values, and thus to be more self-determined (Deci and Ryan, 2000). When employees' need for relatedness is satisfied, they feel supported by others and are more comfortable in taking risks and expressing their novel and creative ideas (Kirk-Brown and Van Dijk, 2016). Satisfaction of the need for relatedness can also increase the meaningfulness of the work (Amabile and Pratt, 2016), which contributes to intrinsic motivation for engaging in creativity (Gilson, 2021).

It is noteworthy that intrinsic motivation and creativity would not improve by satisfying only one or two basic needs defined in the basic needs theory (Gange and Deci, 2005; Ryan and Deci, 2017). Baard, Deci and Ryan (2004), in their study, show that an autonomy-supportive climate contributes to the satisfaction of not just the need for autonomy but also the need for competence and relatedness. An autonomy-supportive climate, as explained above, has features contributing to the fulfilment of all these three needs, so such a climate is of fundamental importance for strengthening intrinsic motivation and improving creativity in employees.

To summarize, we can argue that since in an autonomy-supportive climate, basic psychological needs are satisfied, employees would be more intrinsically motivated, which can increase their creativity. We thus suggest:

Hypothesis 1: Intrinsic motivation mediates the relationship between an autonomy-supportive climate and employee creativity.

The moderating role of company support for creativity on the mediated relationship

In this research, we also argue that the indirect impact of an autonomy-supportive climate on creativity through intrinsic motivation is not the same across different organizations. In fact, it will be higher when a company supports creativity. In other words, we explore the moderating effect of company support for creativity on the mediated effect of intrinsic motivation. Organizational support for creativity can be defined as the level of encouragement, reward, and recognition of an organization regarding creativity (Ng and Feldman, 2012; Zhou and George, 2001).

Researchers in the field of creativity have increasingly used an interactionist approach in their studies of creativity (George, 2007; Leung *et al.*, 2014). Amabile (1983) and Woodman and Schoenfeldt (1989, 1990) proposed that employee creativity is a product of both individual and contextual factors. In fact, an individual's motivation and the work environment interact to form creative behaviors in employees. We thus argue that in addition to intrinsic motivation in employees, company support for creativity plays a prominent role in facilitating creative accomplishments.

Prior research has corroborated that creative behavior in employees requires work contexts which encourage and support creativity (Anderson *et al.*, 2014). Some theories of creativity have focused on company support for creativity as a primary factor affecting creativity (DiLiello *et al.*, 2011). For example, in the componential model of creativity in organizations (Amabile, 1988), in addition to organizational resources and supportive management practices, support for creativity throughout the organization is a specific organizational factor that affects creativity in employees. In addition, it is found that specific qualities of the environment can promote creativity in employees (Amabile and Gryskiewicz,

1987; van Esch, Wei, & Chiang , 2018). Based on their studies, when employees have a general sense that creative work will receive appropriate feedback, recognition, and reward, they will be more inclined to engage in creative behavior. They also argue that creativity in employees would be promoted in the context in which creativity is prized and where failure is not fatal (Collins, 2008). These qualities define the characteristics of organizational support for creativity (Ng and Feldman, 2012; Zhou and George, 2001).

Creativity, and developing new and useful ideas, involves risk (Ivcevic and Hoffmann, 2019), and creative employees have a tendency to try new ways, regardless of the possibility of failure (Shalley and Gilson, 2004). Creativity involves a risk-taking process of trial-and-error which might lead to failure or success, so that some employees might avoid risk and prefer routine approaches (Bazerman and Moore, 2013). Therefore, it is of paramount importance to build a work environment which encourages employees to take risks, and to break routines and safe ways of doing things, so that creativity can occur (Shalley and Gilson, 2004).

Shalley and Gilson (2004) contend that if there is no contextual support of creativity, managers' supportive behavior towards trying new things and being creative, such as providing choices and encouraging questions, would not be adequate. That is, employees who want to use their options and choices, but who are not recognized and rewarded for being creative, receive a mixed message, so that these creative behaviors may not continue. Accordingly, we posit that the mediating effect of intrinsic motivation on an autonomy-supportive climate and creativity is affected by company support for creativity.

Hypothesis 2: Company support for creativity moderates the mediated relationship between an autonomy-supportive climate and employee creativity.

Creativity in Iran

Iran is a developing country (WorldData, 2022) with a population of approximately 85.7 million. The country's gross domestic product (GDP) per capita was $4802.05 in 2020 (Worldometers, 2022). The country is ranked 127 among 190 countries in the ease of doing business (Trading Economics, 2019). In the past few decades, the country has also been experiencing uncertain and difficult environmental conditions, including revolution in 1979, the Iran-Iraq war in 1980, and several ongoing economic, scientific, and military sanctions since 1995 (BBC, 2020). The continued sanctions have had repercussions for the country's GDP and currency, which has led to significant uncertainty for companies (Tasavori *et al.*, 2021). As a result, the importance of enhancing employees' creativity is crucial for Iranian companies as creativity can support the country to overcome these challenges and improve their economic success (Lee, 2013).

Some statistics also corroborate that, in recent years, Iranian organizations have paid much more attention to improving the creativity of employees. For instance, Iran's ranking in the Global Innovation Index, which provides a perspective on the level of creativity in organizations, has been enhanced significantly over the last ten years (from a world ranking of 104 in 2012 to 60 in 2021) (Global Innovation Index, 2021). In addition, the number of knowledge-based companies in Iran has increased significantly (from nearly 55 in 2014 to nearly 6500 in 2021) (The Iranian Vice-Presidency for Science and Technology, 2021).

There is very limited research about factors influencing employees' creativity in Iranian organizations. Ramezan and Zolfaghari (2020), for example, illustrate that professional commitment of employees has positive effects on employee creativity. The research of Khalili (2016) on employees working in Iranian companies revealed that there is a positive and significant relationship between transformational leadership and employee creativity, and that this relationship is moderated by employees' perceptions of a supportive climate. Mohammadi

and Razeghi (2018), through their study on employees of an Iranian bank, found that job autonomy, trust, and manager's support have the highest effect on employee creativity.

Methodology

Sample and data collection

In this research, we employed a quantitative approach and collected data in 2019 by conducting a survey in Iran using paper-based questionnaires. In line with other researchers (Dyne *et al.*, 2002; Valentine *et al.*, 2011) who have collected data about employee creativity and in developing countries, we employed convenience sampling and invited five companies to participate in our research. Out of these five companies, the top management of three of them agreed to collaborate with us. Two of the participating companies are research institutions and one is a research laboratory. Following prior studies, we ensured that invited companies have employees that are new product developers, research scientists, and software developers (Hemlin *et al.*, 2004), who are required to come up with novel and creative ideas to be effective in their work (Shalley and Gilson, 2004). As an incentive for these organizations, we promised the CEOs we would present the main findings of the study, and provide some practical recommendations for improving their employee creativity (Eisenbeiß and Boerner, 2013).

We translated questionnaires from English into Persian and then two bilingual individuals back-translated them into English to ensure equivalency of both versions (Brislin, 1986). With the support of the human resource managers of the three companies, we distributed and collected the questionnaires. To reduce the concern of common method bias, we ensured employees that their responses would be treated as anonymous and confidential (Podsakoff *et al.*, 2003). We also emphasized that there are no right or wrong responses (Podsakoff *et al.*, 2003). We asked the managers of the organizations to give approval and support to the survey in an email to employees, to encourage a high response rate (Dillman, 2000). Finally, from 220

questionnaires distributed, we gathered 151 usable survey responses, which is equal to an acceptable 68% response rate (Baruch, 1999). Among these responses, there were also occasional missing data that we replaced with the related mean of other participants (Little and Rubin, 2019). The mean substitution method is widely employed for imputation of missing data (e.g. Dreu *et al.*, 2006), as it can be the best single replacement value (Hair *et al.*, 2010). Researchers have also corroborated that when less than 10 percent of the data is missing, which is the case in our study, replacement with the mean can be an acceptable approach (Hair *et al.*, 2010). We also examined non-response bias and compared early and late responses, and did not find any significant differences (Armstrong and Overton, 1977; Ben Sedrine *et al.*, 2020).

The average age of the 151 respondents was 36.6 years (standard deviation= 6.72). 63.6% were male, and 36.4% were female. About 30.5% and 55.6% had bachelor's and master's degrees respectively, and 13.1% had PhD and post-doctoral degrees.

Variables and Measures

All variables, except control variables, were measured using a Likert scale ranging from 1(strongly disagree) to 7(strongly agree).

Creativity-We measured employee creativity via ten items used by Eisenbeiß and Boerner (2013) and adapted from Zhou and George's (2001) scale of employee creativity (Cronbach's alpha= 0.91, see Appendix 1). The original scale developed by Zhou and George (2001) was used by supervisors for measuring the creativity of their followers, but similar to Mutonyi *et al.* (2020) and Eisenbeiß and Boerner's (2013) work, we reworded items to make them first-person statements. Although self-rated measures are subject to bias, it has been found that self-rated measures of creativity have a high positive correlation (0.62) with supervisor-rated ones (Axtell *et al.*, 2000). Ng and Feldman (2012) argued that the advantage of self-reported creativity is the much higher awareness of employees about their creative behaviors whereas

when others rate the creativity of employees, it is more likely that subtle things which make their work creative are ignored (Shalley *et al.*, 2009).

Intrinsic motivation for creativity- Employees' intrinsic motivation for creativity was measured with three items utilized by Zhang and Bartol (2010). The scale measures the degree to which an employee enjoys their creativity-relevant tasks. The items are "I enjoy finding solutions to complex problems," "I enjoy coming up with new ideas for procedures," and "I enjoy creating new procedures for work tasks." Cronbach's alpha of this scale was 0.76.

Autonomy-supportive climate- Deci, Connell and Ryan (1989) developed a Work Climate Questionnaire which contains items that are related to an employee's experience with their most immediate supervisor. The questionnaire has a long (15 items) and a short (7 items) version; the latter one was used in this research. Sample items include "My manager encourages me to ask questions" and " I feel that my manager provides me with choices and options." Cronbach's alpha of this scale was 0.92.

Company support for creativity-We used four items developed by J. Zhou and J. George (2001) to measure the extent to which creativity is supported in the company. Sample items include "Creativity is encouraged at the company" and "The company publicly recognizes those who are innovative." Cronbach's alpha of this scale was 0.85.

Control variables

We controlled for employee age, gender and education, as previous research has shown these variables are likely to be related to creativity (Chen *et al.*, 2011; Shin and Zhou, 2003, 2007; Wang *et al.*, 2020; Zhang and Bartol, 2010). We controlled for employees' age as prior research found significant relationships between age and creativity. For example, Frosch (2011) found that older employees are more creative than younger ones. The findings reporting on the effect of gender on employees' creativity were inconsistent (Baer and Kaufman, 2008). However,

Baer & Kaufman (2008) in their review, reported that more studies found an outperformance of women in creative behavior than of men. As in previous studies on creativity (Frare and Beuren, 2021), we controlled for education since it might affect creativity via task-related expertise and knowledge (Amabile, 1988; Liu, 2013; Mumford and Gustafson, 1988). We also controlled for organizational tenure, meaning number of years working in the current organization. Prior research has indicated that organizational tenure can negatively affect an employee's creativity (Chusmir and Koberg, 1986): With more years of working experience, the employee would acquire more knowledge about the firm-specific norms, procedures, and practices (Gilson *et al.*, 2013); as a result, he/she would become more accustomed to the current practices and would be less likely to think 'outside the box' and be creative (Eisenbeiß and Boerner, 2013).

We also measured tenure with leaders - years of working with the current manager - as a control variable (Scott and Bruce, 1994). A longer duration of an employee-manager relationship might affect the quality of their relationship, which might encourage employees to engage in creative processes more (Gu *et al.*, 2013).

Analysis

Reliability and validity of constructs

We adopted Byrne's (2016) procedure to analyze the measurement model. Using AMOS version 24, the results of confirmatory factor analysis (CFA) was as follows: comparative fit index (CFI), 0.929, Tucker-Lewis index (TLI) , 0.920, and root mean square error of approximation (RMSEA) and χ^2/d_f were 0.066 and 1.654, respectively, which demonstrates a good fit (Hair, Black, Babin, & Anderson, 2010).

We also examined the convergent and discriminant validity. For high convergent validity, the items of each construct should have a high proportion of variance in common (Hair *et al.*, 2010). We used several approaches suggested by Hair et al. (2010) to test convergent

validity among item measures. First, we tested the significance of all factor loadings, which is the minimum requirement for convergent validity, and the result of our analysis showed statistically significant factor loadings for all items. Since significant factor loadings may be fairly weak in strength, we also checked the standardized loading estimates, the majority of which were above 0.5, indicating convergent validity (Hair et al., 2010) (see Appendix 1). Second, we checked average variance extracted (AVE), all of which were above 0.5 (see Table 1), supporting convergent validity for all constructs in our model (Hair *et al.*, 2010). Finally, we calculated construct reliability (CR) values, all of which were above 0.7, providing evidence for convergent validity (Hair et al., 2010) (See Table 1).

We also examined the discriminant validity which shows the distinction of each construct from other constructs. Our analysis corroborated the discriminant validity, as the AVE of each construct was greater than the squared correlation between this construct and all other constructs in the model (Hair *et al.*, 2010). In addition, we found in our model that maximum shared variance (MSV) for all constructs was lower than AVE, demonstrating discriminant validity (Hair et al., 2010) (see Table 1).

Assessment of common method bias

To prevent common method bias, we employed several strategies. First, as mentioned before, to prevent respondents feeling they had to answer questions in a socially desirable manner, we indicated that there are no right or wrong answers; we also highlighted that the anonymity and confidentiality of respondents would be respected (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Second, we used a proximal separation approach and put items of independent and dependent variables in different sections of the questionnaire by using different cover stories (Podsakoff *et al.*, 2003). Moreover, because of utilizing the same raters (i.e., employees) (Shao et al., 2017), we used some statistical techniques to detect and correct common method bias. Similar to previous research (Castillo-Apraiz *et al.*, 2021; Teeroovengadum *et al.*, 2019), we

conducted Harman's single-factor test (Podsakoff and Organ, 1986) to address the issue of common method bias. The results of an unrotated principal axis factoring analysis showed that the highest single variance extracted was 28.05%, below the threshold of 50%, indicating that common method bias is not a concern (Podsakoff, MacKenzie, Lee, & Podsakoff , 2003). Harman's single-factor test does nothing to control method effects. Rather, it is a diagnostic test for assessing the problem of common method variance (Podsakoff *et al.*, 2003). Accordingly, we used another technique by loading all items in the model on a common latent factor (Podsakoff *et al.*, 2003). The results revealed a poor data fit (χ^2/d_f= 3.19, TLI= 0.60, CFI=0.62, RMSEA=0.115), suggesting common method bias is not an issue in our data (Podsakoff *et al.*, 2003).

Results

We tested the hypotheses with structural equation modelling (SEM). We utilized SEM to test all hypotheses in the model simultaneously (Babin and Svensson, 2012). Table 1 shows descriptive statistics, correlations, and Cronbach's alpha of the variables.

Insert Table 1 about here

The goodness-of-fit indices for the SEM model are all satisfactory (Hu & Bentler, 1999; CFI= 0.972, TLI= 0.950, RMSEA = 0.049, χ^2/d_f = 1.365). The results of SEM for testing hypotheses are presented in Figure 2.

Insert Figure 2 about here

To test the mediation hypothesis, instead of using Baron and Kenny's (1986) method of mediation, we employed the method of bootstrapping, because it is more advantageous (Kenny and Judd, 2014; Preacher and Hayes, 2008; Scheepers and Storm, 2019; Zhao *et al.*, 2010). This method enables the simultaneous calculation of direct, indirect and total effect with level of significance (confidence intervals (CI))(Zhao *et al.*, 2010).

Hypothesis 1 states that the relationship between an autonomy-supportive climate and creativity in employees is mediated by intrinsic motivation for creativity in employees. The bootstrap method supports the significance of the indirect relationship between an autonomy-supportive climate and creativity (β=0.26, 0.95% CI= [0.184, 0.344]), as the resulting CI excludes zero (Hair *et al.*, 2010). However, the direct effect of an autonomy-supportive climate on creativity is non-significant (β=-0.071, 95% CI= [-0.155, 0.028]). Therefore, there is a full mediation between an autonomy-supportive climate and creativity in employees, supporting hypothesis 1.

The argument of hypothesis 2 is that the indirect effect of an autonomy-supportive climate on creativity in employees, through intrinsic motivation, is moderated by company support for creativity. We used Hayes' (2013) method to test this moderated mediation hypothesis at one standard deviation above and one standard deviation below the mean of the moderator (i.e., company support for creativity). At one standard deviation below the mean of company support for creativity (= -1.519), the mediation effect was not significant (β=0.093, 95% CI= [-0.058, 0.255]). Conversely, at one standard deviation above the mean (= +1.519), the mediation effect was significant (β=0.448, 95% CI= [0.308, 0.625]). To sum up, we can argue that an autonomy-supportive climate can positively influence creativity, via intrinsic motivation, when creativity is more supported in the company.

Our findings also illustrate that the impacts of control variables (employee age, employee gender, employee education, years of working experience, and years of working with manager) on the dependent variable were not significant (see Figure 2).

Discussion and Conclusion

Our research tries to resolve the debate about the mediating effect of intrinsic motivation in the relation of contextual factors to employee creativity. No research has yet empirically examined the mediating role of intrinsic motivation in the relation of an autonomy-supportive climate to creativity. Therefore, it is not clear whether intrinsic motivation explains the effect of an autonomy-supportive climate on creativity or not. In this study, we extend Amabile's (1988) model to include an autonomy-supportive climate, and explain how and when this kind of interpersonal climate between employees and their direct manager leads to enhanced creativity in employees. Our findings reveal that in order to get the benefits of an autonomy-supportive climate in improving creativity in employees, it is necessary to develop intrinsic motivation. Intrinsic motivation acts as an internal, sustaining force, ensuring that an employee will be self-motivated in the face of challenges.

Our research also contributes to the basic needs theory (Ryan and Deci, 2017). While this theoretical perspective points to the performance as an outcome of strengthened intrinsic motivation, we highlight creativity as a potential outcome. We also test our model based on data from Iranian organizations, and corroborate the applicability of this theoretical perspective in the context of a developing country.

In addition, in this research, we revealed that intrinsic motivation mediates the effect of an autonomy-supportive climate on employee creativity with particularly greater positive effects for employees working in companies where creativity is more supported. In other words, we found that employees in autonomy-supportive climates have more creative output

only when they are surrounded by an organizational context that encourages, rewards, and recognizes creativity. Our research also contributes to Amabile and Pratt's (2016) creativity model by providing empirical evidence about the role of company support for creativity, as a form of extrinsic motivator, and corroborates that extrinsic and intrinsic motivations are not antagonists. Rather, they have synergistic effects on strengthening creativity. Our findings also support Saether's (2020) results about the positive effect of extrinsic rewards on intrinsic motivation and creativity. The findings of this research are also consistent with the proposition of Hennessey and Amabile (2010), arguing that extrinsic rewards affect employee creativity in a positive manner. Nevertheless, the result of our study does not support the argument of Ryan and Deci (2000) about the undermining effect of extrinsic rewards on intrinsic motivation. We have also made a contribution towards the interactionist perspective of creativity (George, 2007), because we examine the interaction effect of company support for creativity and intrinsic motivation as individual and contextual factors influencing employee creativity. By examining both moderating and mediating effects, our study explains how an autonomy-supportive climate improves creativity, and in which organizational context the employee's intrinsic motivation and creativity will gain more benefit from an autonomy-supportive climate.

Our main contribution is that we integrate Amabile's (1996) model of creativity and basic needs theory (Deci and Ryan, 2000), explaining how and in what conditions an autonomy-supportive climate influences employee creativity. The purpose of this integration is to shed light on the inconsistent findings about the mediating role of intrinsic motivation in the relation of contextual factors to creativity, as Shalley, Zhou, and Oldham (2004) call for further examination of this relationship. Our research also endeavors to extend empirical evidence for the mediation effect of intrinsic motivation in the relation of contextual factors to employee creativity, which is proposed in Amabile's (1988) model of creativity.

From practical perspectives, our research suggests a motivational contingent path through which employee creativity would be promoted. For jobs in which creativity is more critical, human resource managers can focus on the recruitment phase (Dessler, 2013). However, because of the costly process of recruiting (Dessler, 2013; Howitt and McAfee, 1987), companies need to focus on contextual factors leading their current employees to be more creative. The results of our study recognized autonomy-supportive climates and company support for creativity as contextual factors contributing to employee creativity.

According to our findings, managers should be encouraged to strengthen the intrinsic motivation of employees in order to affect their creativity. Managers should recognize employees' feelings, provide employees with choices and options, give them informational feedback and provide rational explanations for tasks so employees attach meaning to them.

Encouraging, recognizing, and rewarding creativity by the company is another suggestion of this study for promoting creativity in employees. Companies should consider creative contributions in compensation systems as well as recognize creative employees publicly. Also, employees who have the ability to function creatively should be respected by the company.

What is noteworthy is that our findings show that it is not enough that direct managers provide employees with autonomy-supportive climates. These managers' approaches will not lead to employee creative behavior unless creativity is supported in the company. Employees will get mixed messages if they are allowed by managers to use their initiative, but their creativity is not acknowledged by the company.

Limitations

Like any study, there are some limitations to our research. First, this study had a cross-sectional design. Although structural equation modelling enabled us to test the entire model simultaneously (Byrne, 2016), the causal interpretation of results needs to be approached with caution. Future research should utilize experimental or longitudinal designs to address this limitation. Second, the sample size of this research has been relatively small, and data has been collected from a single industry and country. To enhance the generalizability of our findings, future researchers can test our model in other industries and countries with larger size samples (Lee et al., 2020). Third, this research was conducted in a single industry and country. To enhance the generalizability of our findings, future researchers can test our model in other industries and countries (Lee *et al.*, 2020). Finally, we only examined the moderating effect of company support for creativity, and found that the mediating effect of intrinsic motivation on the relation of an autonomy-supportive climate to employee creativity is stronger when company support for creativity is high. Future researchers can investigate the moderating effect of other contextual and personal factors, such as creative role identity (Wang and Cheng, 2010), creative self-efficacy (Wang *et al.*, 2014), and so on.

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Appendices 1. Measurement Model

Variables	Standardized Estimate	SE	CR	P-value
Creativity:				
1. I suggest new ways to increase quality.	0.671	0.092	8.645	***
2. I'm a good source of creative ideas.	0.694	0.109	8.997	***
3. I'm not afraid to take risks	0.669	0.123	8.613	***
4. I promote and champion ideas to others.	0.659	0.107	8.463	***
5. I exhibit creativity on the job when given the opportunity to.	0.651	0.085	8.33	***
6. I develop adequate plans and schedules for the implementation of new ideas.	0.646	0.1	8.26	***
7. I often have new and innovative ideas.	0.800	0.093	10.723	***
8. I come up with creative solutions to problems.	0.830	0.096	11.247	***
9. I often have a fresh approach to problems.	0.827	0.102	11.191	***
10. I suggest new ways of performing work tasks.	0.785			***
Autonomy-supportive climate:				
1. I feel that my manager provides me with choices and options.	0.657	0.107	7.723	***
2. I feel understood by my manager	0.834	0.125	9.846	***
3. My manager conveys confidence in my ability to do well at my job.	0.788	0.111	9.308	***
4. My manager encourages me to ask questions.	0.857	0.137	10.11	***
5. My manager listens to how I would like to do things.	0.859	0.118	10.135	***
6. My manager handles people's emotions very well.	0.817	0.123	9.64	***
7. My manager tries to understand how I see things before suggesting a new way to do things.	0.713			***
Intrinsic motivation for creativity				
1. I enjoy finding solutions to complex problems	0.748			***
2. I enjoy coming up with new ideas for products.	0.900	0.131	9.342	***
3. I enjoy creating new procedures for work tasks	0.562	0.157	6.54	***
Company support for creativity				
1. Creativity is encouraged at the company	0.932			***
2. Our ability to function creatively is respected by the leadership.	0.972	0.053	20.4	***
3. The reward system encourages innovation.	0.455	0.099	6.005	***
4. The company publicly recognizes those who are innovative.	0.713	0.066	11.277	***

*** P<0.001; SE: Standard Error; CR: Critical Ratio=Standardized Estimate/SE

Figure 1. Conceptual Model

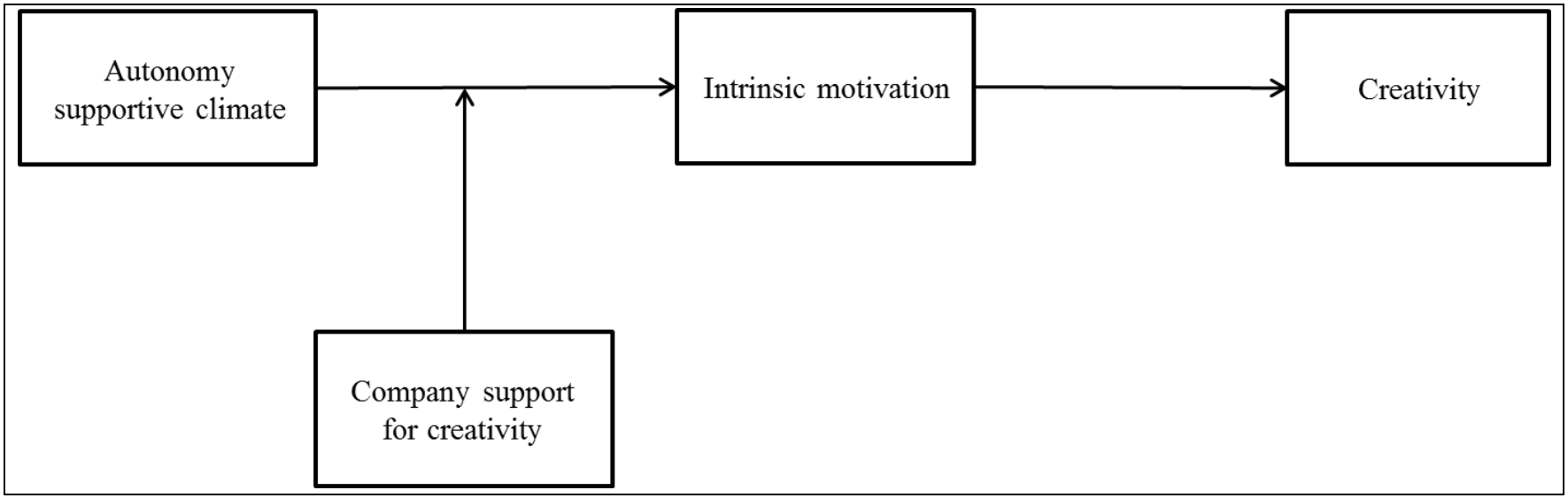

Figure 2. Structural Equation Mode

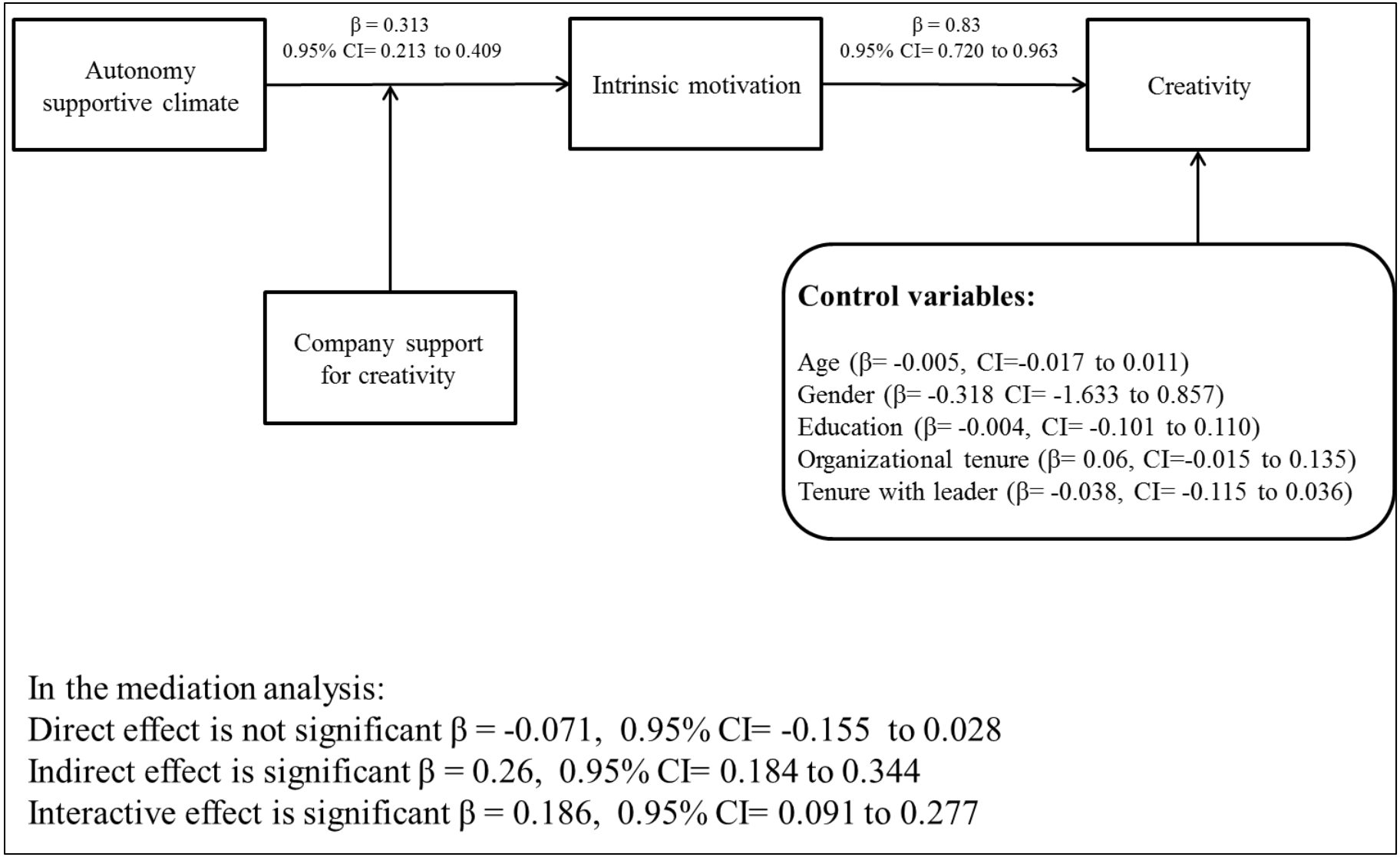

Table 1. Descriptive statistics, Correlations, and Reliabilities

Variables	M	SD	CR	AVE	MSV	1	2	3	4	5	6	7	8	9
1.Gender	1.36	0.48	-	-	-									
2.Age	36.67	6.72	-	-	-	-0.08								
3.Education	3.85	0.69	-	-	-	-0.16	-0.05							
4.Work experience	3.65	2.27	-	-	-	-0.06	.68**	-0.23						
5.Years of working with current manager	2.27	1.05	-	-	-	0.00	.21**	-0.05	.40**					
6. Autonomy-supportive climate	4.28	0.90	0.92	0.62	0.08	-0.02	0.09	0.08	0.01	-0.02	(0.92)			
7. Company support for creativity	3.59	1.51	0.86	0.63	0.60	0.14	-0.11	-0.02	-.24**	0.00	.27**	(0.85)		
8. Intrinsic motivation	4.69	0.71	0.78	0.56	0.47	-.20*	.23**	0.12	0.15	-0.05	.32**	0.08	(0.76)	
9. Creativity	5.17	0.80	0.91	0.52	0.47	-.29**	.20*	0.09	.181*	-0.05	.16*	-0.01	.75**	(0.91)

M: mean; SD: standard deviation; CR: Construct Reliability; AVE: Average Variance Extracted; MSV: Maximum Shared Variance

** Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Internal reliabilities (alpha coefficients) for the overall constructs are given in parentheses on the diagonal.