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Who Responds Creatively to Role Conflict? Evidence for a Curvilinear Relationship Mediated by Cognitive Adjustment at Work and Moderated by Mindfulness

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## **Who Responds Creatively to Role Conflict? Evidence for a Curvilinear Relationship Mediated by Cognitive Adjustment at Work and Moderated by Mindfulness**

### **Abstract**

*Purpose* – This study aims to clarify to what extent, how and under what conditions role conflict is positively related to employee creativity. Drawing on activation theory and conservation of resources theory, we hypothesized an inverted U-shaped relationship between role conflict and creativity in which the relationship is stronger and positive at intermediate levels of role conflict. Additionally, we predicted that this curvilinear path would be mediated by cognitive adjustment at work and moderated by mindfulness.

*Design/Methodology/Approach* – To test our hypotheses, we conducted two independent studies – a cross-sectional study with 123 employees from an Italian firm and a time-lagged research with 320 employees from various U.K. firms.

*Findings* – Consistent with our predictions, polynomial regression analysis results provided evidence for an inverted U-shaped relationship between role conflict and creativity and for the mediating role of cognitive adjustment at work. Moreover, when mindfulness was high (versus low), intermediate levels of role conflict were associated with increased cognitive adjustment at work and creativity.

*Implications* – Our findings enhance current understanding of the conditions under which different levels of role conflict boost or impair creativity at work and offer new insights into how employee can maintain an optimal level of creativity despite conflicting role demands.

*Originality/Value* – This is the first study to document a non-linear and indirect relationship between role conflict and employee creativity, as well as to identify mindfulness as a boundary condition shaping the creativity-enhancing effects of role conflict.

*Keywords:* role conflict; creativity; cognitive adjustment at work; mindfulness; curvilinearity.

## Introduction

Nowadays, because the presence of flexible and unstable job boundaries represents an inevitable work condition of ever-changing workplaces (Bridges & Bridges, 1994), role conflict is likely to be increasingly frequent among employees (Coetzer & Richmond, 2009). Within this scenario, it is theoretically and practically important to understand how employees can take advantage *of*, rather than being drained *by*, opposing role demands and expectations to produce successful creative ideas – i.e., key resources for long-term organizational innovation and effectiveness (Gong, Zhou, & Chang, 2013; Liu, Gong, Zhou, & Huang, 2017). Role conflict may increase stress reactions leading to the depletion of energies needed to create novel ideas (Cooper & Dewe, 2004). However, it may also have the potential to facilitate the acquisition of wide and divergent informational resources (Li & Bagger, 2008), whose combination and integration are essential for employees' creative expression (Gardner, Gino, & Staats, 2012). Precisely, role conflict can stimulate employees to become more receptive to divergent viewpoints, think more flexibly, and expand their informational sources (Jones, 1993), which, in turn, can lead to enhanced novelty in ideas.

To date, while some studies have reported a positive direct effect of role conflict on creativity (Tang, & Chang, 2010; Usman, & Xiao, 2017), other researchers have found no significant relationship between the two constructs (Cekmecelioglu, & Günsel, 2011), or that this association was conditional on third factors (Tang, & Chang). For instance, Tang and Chang (2010) found a positive and direct effect of role conflict on employee creativity, as well as an indirect negative effect via reduced self-efficacy and job satisfaction. Byron and colleagues' (2010) meta-analysis has concluded that it is an oversimplification to assert that role conflict affects either positively or negatively creativity (Beehr, & Glazer, 2005). Instead, the level of the demand matters

in predicting creativity, suggesting that non-linear effects of role conflict on creativity can be expected.

To address these mixed findings, the present study aims to examine the non-linear relationship between role conflict and creativity as well as the mediating processes and boundary conditions associated with this relationship. Combining activation theory (Gardner, 1990) with the conservation of resources (COR) theory (Hobfoll, 1989, 2001, 2002), we specifically predict an inverted U-shaped curvilinear relationship between role conflict and creativity that is mediated by role of cognitive adjustment at work and moderated by mindfulness. At intermediate, rather than low or high levels, role conflict is likely to foster creative expression by enabling employees to acquire key creativity-facilitating informational resources. Moreover, the beneficial effects of moderate amounts of role conflict on cognitive adjustment at work and creativity are expected to be enhanced among high (versus low) mindful employees: these individuals, by disengaging from automatic response patterns to stressful situations, are better able to recognize the learning and growth-related benefits that role conflict might provide. As a result, high mindful employees are more likely to explore, access and capitalize on the informational resources that are made available to them under moderate levels of role conflict.

By testing this curvilinear, moderated mediation model of role conflict and creativity, our study aims to bring three important contributions to the literature on stressors, creativity and mindfulness. First, scholars have consistently highlighted the importance of taking into account the curvilinear and moderated effects of stressors to shed light on the stressor-behavior relationship (Bowling, Alarcon, Bragg, & Hartman, 2015; Eatough, Chang, Miloslavica, & Johnson, 2011; Gilboa, Shirom, Fried, & Cooper, 2008). However, these effects have not been empirically examined together in relation to creativity (for an exception, see Binnewies & Wörnlein, 2011). Our study moves an important step forward in both the stress and creativity literature, as it is the

first to examine the boundary conditions associated with the curvilinear relationship between role conflict and employee creativity. As such, it would contribute to extending the limited and contradictory findings on this relationship and, thereby, to providing new insights on how employee creative expression can be enabled in the presence of conflicting role demands. Second, by investigating the mediating role of cognitive adjustment at work, this study enhances current understanding of the mechanisms that are responsible for transmitting the positive effects of moderate levels of role conflict to creativity, in addition to extending the nomological network of cognitive adjustment at work. Third, by examining the moderating effect of mindfulness, we address recent calls from the scientific community to clarify its influence as a protective factor against demanding work conditions (Glomb, Duffy, Bono, & Yang, 2011; Good et al., 2016). In doing so, our study expands the mindfulness literature by unveiling its key role in spurring individual creativity under moderate amounts of role conflict.

## **Theory and Hypotheses**

### **Role Conflict and Creativity**

Role conflict occurs when individuals experience two or more sets of incompatible demands and different expectations associated with a given role, and the compliance with any of these role pressures impedes the fulfilment of the other(s) (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Katz & Kahn, 1978). Perceiving incompatible or irreconcilable job expectations originating from multiple roles, or from a single role, makes it difficult for employees to meet contrasting job demands concurrently (Dubinsky, & Skinner, 1984) or to decide how best to accomplish cognitively demanding and complex tasks and responsibilities (Hartline, & Ferrell, 1996). Consequently, according to the COR theory (Hobfoll, 2001), role conflict may be a stressful experience because employees may feel threatened by the risk of losing valued resources, such as energies, information and knowledge, to effectively accomplish and master their work tasks. In line

with COR theory (Hobfoll, 2001), these premises postulate that role conflict, as a potentially resource-depleting demand, might inhibit employee creativity – i.e., the generation of new and useful ideas concerning products, practices, services, or processes (Amabile, 1996; Anderson, Potočnik, & Zhou, 2014; George, 2008). More precisely, role conflict may increase cognitive and work overload perceptions. In doing so, it limits employees' cognitive resources available for task engagement (Sacramento, Fay, & West, 2013) and decreases the workers' capacity to utilize their creative and domain-relevant skills by preventing them from focusing on the problem and by steering them away from creating new ideas (Shalley, Zhou, & Oldham, 2004; Wall, & Callister, 1995).

However, scholars have suggested that workers facing conflicting pressures, despite being affected by the potentially detrimental effects of role conflict, may react in a constructive way, precisely by approaching problems and tasks using imagination (Goolsby, 1992) and by engaging in creative behaviors (Tang, & Chang, 2010). Research has suggested that being involved in multiple roles, as in the case of role conflict, exposes employees to divergent viewpoints and to a wide range of information (Li & Bagger, 2008). As a result, employees might have the possibility to access, use and integrate new and divergent perspectives, information and knowledge to create novel solutions that would allow them to manage successfully additional responsibilities and complicated problems (Guilford, 1967; Jones, 1993; Seiber, 1974; Torrance, 1969). In this respect, the insights from activation theory suggest that the level of role conflict faced by employees might play a key role in affecting its beneficial and costly consequences. Activation theory (Gardner, 1990) states that a moderate level of activation in response to work stressors (e.g., role conflict) might promote task engagement, which can increase performance and sustain the optimal use of cognitive resources, prompting the generation of creative ideas and the proactive engagement in creative behaviors (e.g., Baer & Oldham, 2006; Gardner, 1986). By contrast, beyond a certain point,

this activation can result in overstimulation and cause cognitive interference that undermines performance, particularly on complex tasks such as creative tasks. Similarly, below a certain level of activation, employees are likely to experience monotony and under-stimulation (Alfredsson, Karasek, & Theorell, 1982), which prevent them from engaging in effective creative behaviors (Baer, & Oldham, 2006; Gardner, 1990).

From an activation theory perspective, it is thus plausible to hypothesize an overall pattern of curvilinearity for the role conflict-creativity association in which the extremes of role conflict can be dysfunctional. More precisely, a low level of role conflict is associated with reduced possibilities for employees to establish relationships and interactions with people in the organizational environment (Fisher & Gitelson, 1982). As a result, employees might become less involved in information exchange and in knowledge dissemination activities, thus being less likely to acquire and use diversified informational resources and, ultimately, combine them in creative ways (Donati, Zappalà, & González-Romá, 2016; de Jong & Den Hartog, 2007). High levels of conflict can also be resource-draining because if excessively conflicting role demands are experienced in one domain (e.g., rapidity of production *vs* attention to quality procedures), then important energy resources, like attention and effort, are less available to invest in other, resource-demanding domains, such as creating novel solutions or ideas (Bamberger, Geller, & Doveh, 2017; Grandey & Cropanzano, 1999). Conversely, moderate levels of role conflict might provide employees with the possibility to both span their role across boundaries and, thereby, access varied information knowledge and perspectives, and preserve a sufficient amount of energy resources. As such, an intermediate level of role conflict is an optimal condition to elicit creative responses among employees facing such a demanding condition. Indirect support for our predictions comes from prior empirical research reporting an inverted U-shape relationship of role ambiguity (Wang, Zhang, & Martocchio, 2011) and time pressure (Binnewies, & Wornlein, 2011; Ohly et al., 2006)



– i.e., two correlates of role conflict (e.g., Sonnentag & Krueger, 2006) – with employee creativity.

Thus, we hypothesize:

*Hypothesis 1:* Role conflict has an inverted U-shaped relationship with creativity, such that creativity is highest when role conflict is moderate and lower when role conflict is either low or high.

### **The Mediating Role of Cognitive Adjustment at Work**

Cognitive adjustment at work (CAW) has been conceptualized by Malo, Tremblay and Brunet (2016) as a result of a successful adaptation process functional to better meet job demands at a cognitive level by acquiring the necessary knowledge and skills to achieve work goals. The authors conceptualized CAW as composed of three levels of adjustment: a) *task adjustment*, which corresponds to the individual perception of having the knowledge and skills needed to manage different job features; b) *work group adjustment*, which refers to the successful acquisition of knowledge concerning one's peers as well as intra-group rules and practices; c) *organizational adjustment*, which consists of acquiring key knowledge about formal and informal rules, power relationships, and values that shape organizational climate and culture. Therefore, in line with COR theory (Hobfoll, 1989, 2001), CAW represents a set of relevant informational resources since it comprises the work-related knowledge and skills described above. As role conflict represents a particular type of stressful condition that may more or less positively affect informational resource gains, it is thus pertinent to identify CAW as a mechanism accounting for role conflict's curvilinear effect on creativity.

Consistent with activation theory (Gardner, 1986), employees who experience moderate levels of role conflict may be stimulated to optimally utilize their cognitive resources by accessing diversified information, knowledge and perspectives. As a result, they may be more willing to actively invest their time and energy to gain the knowledge and skills required to cognitively adjust

at work. Conversely, when employees experience excessive role conflict, they may be at increased risk of draining their time and energy in the attempt to face conflicting demands (Ellis et al., 2015; Grandey & Cropanzano, 1999; Hobfoll, 1988; Toker, & Biron, 2012). Consequently, resource-depleted workers would scale back on investment of time and energy to reduce the risk of further resource loss and, therefore, they would be unable to acquire knowledge and abilities needed to reach a positive CAW. Likewise, if role conflict is absent or present at very low levels, individuals may not have the opportunity to confront challenges promoting their personal growth and achievement. Thus, because of experienced monotony and under-stimulation, they are likely to be less motivated to cultivate, accumulate and acquire informational resources, such as CAW. In other words, it is plausible to postulate an overall inverted U-shaped relationship between role conflict and CAW.

Moreover, the increased CAW stemming from moderate levels of role conflict is in turn expected to stimulate creative thinking and idea generation. Precisely, seeking information and exchanging with colleagues reinforce employee adjustment (Bauer, Bodner, Erdogan, Truxillo, & Tucker 2007; Gruman, Saks, & Zweig, 2006; Saks, Uggerslev, & Fassina, 2007). CAW, in turn, may contribute to gain a more in-depth knowledge of one's own work setting and, then, facilitate the generation of novel solutions to solve contrasting demands. Indeed, cognitively adjusted employees tend to believe in their ability to successfully accomplish work-related tasks (i.e., task adjustment). As a result, they are more likely to be receptive to and access a wide range of possible solutions to problems, thus being able to express themselves creatively (Mumford, Scott, Gaddis, & Strange, 2002). Additionally, as they gain increased understanding of their group's functioning (i.e., work group adjustment), cognitively adjusted employees may engage in more effective collaborative work with their peers, which would enable them to individually develop novel ideas and solutions (Chen, Farh, Campbell-Bush, Wu, & Wu, 2013). Moreover, cognitively adjusted

employees possess the knowledge required to analyse organizational problems (i.e., organizational adjustment) in greater detail. This allows them to be focused on the conception of creative ideas that might ameliorate their organization's current situation (Baughman & Mumford, 1995; Mumford, Reiter-Palmon, & Redmond, 1994). Thus, we propose:

*Hypothesis 2:* Role conflict has an inverted U-shaped relationship with cognitive adjustment at work, such that cognitive adjustment is highest when role conflict is moderate and lower when role conflict is either low or high.

*Hypothesis 3:* CAW mediates the inverted U-shaped relationship between role conflict and creativity.

### **The Moderating Role of Mindfulness**

A potential constraint of activation theory may be noticed in its lack of focus on the role that individual features play on the relationship between stimuli and responses (Gardner, & Cummings, 1988). Indeed, although workers may share the same working conditions, some dispositional characteristics may predispose them to perceive and interpret their work setting more or less favorably. As such, personal dispositions would influence the objective nature of the workplace, how people cope with different stressors, and the subsequent outcomes (David & Suls, 1999; Folkman et al., 1986; Zeidner & Matthews, 2000). Investigating the role of individual dispositions in the curvilinear relationship between role conflict and creativity is particularly relevant because even moderate levels of role conflict can entail a risk of resource depletion if people have personal dispositions that lead them to appraise such demands as threatening or harmful, rather than positive or benign. Indeed, the varied information, knowledge and perspectives that employees encounter when facing conflicting role demands inherently entail a certain degree of discordance with their personal beliefs and role expectations (Van Sell, Brief, & Schuler, 1981). Accordingly, employees might feel threatened by the increased interactions with other people that

role conflict elicits. In this case, employees would be less motivated to acquire the informational resources to engage in creative tasks, and more likely to experience a sense of psychological discomfort deriving from the exposure to incompatible role expectations, which ultimately drains the energy resources needed to perform creatively (Cohen, 1980; LePine, Podsakoff, & LePine, 2005). However, according to the COR perspective (Hobfoll, 2001), personal characteristics can also act as resources that, by helping individuals positively (re)appraise and effectively cope with stressors, reduce their negative impact and enable individuals' effective functioning under such demanding conditions.

Drawing on COR theory (Hobfoll, 2001), mindfulness – i.e., the intentional and non-judgmental attention to present events (Brown, & Ryan, 2003; Brown, Ryan, & Creswell, 2007; Chiesa, & Serretti, 2009) – can be considered as a personal resource that enables individuals to manage more effectively job stressors (Bergin & Pakenham, 2016; Kaplan, Christopher, & Bowen, 2017; Kirk, Downar, & Montague, 2011), such as role conflict. Precisely, mindfulness can increase awareness *of* and attention *on* such stressors to find novel solutions to address them, instead of reacting impulsively. Moreover, mindful people may be better positioned for resource gains because they have more resources available to invest. Consequently, they tend to be more motivated to devote their energies to acquire work-related knowledge and skills and, then, produce creative responses to conflicting role demands.

The benefits engendered by mindfulness might be particularly relevant for creativity in the presence of moderate levels of role conflict. Indeed, in this condition, mindful employees tend to “make sense” of their work situation in a learning and emotionally functional way, thereby reaching a full understanding of their work requirements (Jaramillo et al., 2006; Rizzo, House, & Lirtzman, 1970; Tang, & Chang, 2010). Accordingly, they are more likely to perceive role conflict in more positive or benign terms (Tang, & Chang). More precisely, because mindful employees tend to

manifest a non-judgmental openness to present experiences (Baas, Nevicka, & Ten Velden, 2014; Lutz, Slagter, Dunne, & Davidson, 2008), they might more likely interpret the misfit among different role expectations as an opportunity to learn new things, develop new abilities and grow (Lee, 2012).

Moreover, mindfulness, through decentering, increases employees' ability to flexibly adapt to novel and non-habitual task requirements as well as to shift to different modes of thinking or mental sets (Good et al., 2016; Shapiro, Carlson, Astin, & Freedman, 2006). These cognitive capacities provide employees with a larger "psychological space" (i.e., increased sensitivity) for accessing new perspectives with openness and curiosity (Garland et al., 2015). As a result, mindful people might be more motivated to proactively scout and access the information, knowledge and perspectives that are made available by the possibility of spanning multiple roles and tasks (Li & Bagger, 2008). Consequently, they are more likely to use and integrate such informational resources to effectively generate novel ideas and solutions. Thus, mindfulness, by promoting such a positive reappraisal of moderate role conflict, prevents employees from experiencing psychological discomfort that would otherwise drain their energies needed to engage in creative endeavors (Lazarus & Folkman, 1984).

Accordingly, when mindfulness is high, employees who are exposed to moderate levels of role conflict are expected to have greater odds of both acquiring creativity-supportive informational resources and of being protected against the loss of energy resources, thus responding creatively to such demanding conditions. Conversely, at low levels of mindfulness, employees might be less able to decenter from automatic response patterns and, thereby, to see the context in which appraisals of role conflict are made with greater clarity and objectivity. Rather, low mindful employees would be "victims" of a biased appraisal of role conflict, which prevents them from seizing the potential informational benefits that incompatible role requirements entail. In line with

our predictions, the stress literature has found mindfulness to protect employees from stressful job conditions that are linked to role conflict, such as emotional and quantitative demands (Grover, Teo, Pick, & Roche, 2017; Haun, Nübold, & Bauer, 2018). Taking into account these empirical findings and the above theoretical reasoning, mindfulness could thus be considered as a personal resource that enables creativity in the face of a moderate exposure to conflicting role demands. Thus, we propose:

*Hypothesis 4:* Mindfulness moderates the inverted U-shaped relationship between role conflict and creativity, such that this relationship is more pronounced when mindfulness is high (vs. low).

### **The Overall Curvilinear Moderated Mediation Model**

Drawing on COR theory (Hobfoll, 1989, 2001), individuals with more resources are better positioned for resource gains because they have more resources available to invest. Mindful employees, as they tend to have control over their environment and cope with stressors proactively (Shapiro, Brown, & Biegel, 2007; Weinstein, Brown, & Ryan, 2009), should be more willing to invest their energies to seek the necessary information on the task, on their group and on their organizations. As a result, when they are exposed to conflicting role demands, they would build the work-related knowledge and skills that are needed to achieve a better CAW and, ultimately, display higher creativity. More precisely, since CAW requires active cognitive-behavioral flexibility and a non-reliance on automatic response patterns and emotional reactivity, mindfulness may promote CAW by enabling individuals to be more aware of and tolerant of the distressful emotions caused by role conflict (Baer, 2003; Schaubroeck, Cotton & Jennings, 1989).

Additionally, mindful employees possess decentering and re-perceiving skills that allow them to appraise stressful conditions, such as role conflict, objectively and without activating automatic dysfunctional tendencies (e.g., rumination; Long & Christian, 2015). Consequently, they

are more likely to appraise the moderate misfit among role expectations as an opportunity to gain more in-depth work-related knowledge and develop new skills (Lee, 2012), which facilitate an optimal utilization of their cognitive resources. Mindful employees would thus tend to access key work-related knowledge and skills and, ultimately, use such informational resources to generate new ideas in response to moderate levels of role conflict. Conversely, according to the COR theory (Hobfoll, 1989, 2001), employees low in mindfulness may be less likely to seize the opportunity to grow when confronted with moderate levels of role conflict because they tend to interpret them as threatening conditions. As a result, they would react in impulsive ways that prevent them from gaining work-related knowledge and skills (i.e., CWA) and, thereby, from responding creatively to moderate levels of role conflict. Overall, the above reasoning suggests that mindfulness, by facilitating the acquisition and exploitation of the knowledge and skills provided by moderate amounts of role conflict, would enable employees to achieve higher levels of CAW and, ultimately, creativity. Thus, the following hypotheses are proposed:

*Hypothesis 5:* Mindfulness moderates the inverted U-shaped relationship between role conflict and CAW, such that this relationship is more pronounced when mindfulness is high (vs low).

*Hypothesis 6:* Mindfulness moderates the inverted U-shaped relationship between role conflict and creativity through CAW, such that this relationship is more pronounced when mindfulness is high (vs low).

### **Overview of the Present Research**

Hochwarter, Ferris, and Hanes (2011) contented that research involving multiple studies makes relevant contributions through replication and extension. Likewise, Cortina, Aguinis, and DeShon (2017) recommended to test theoretical models, or a portion of them, via improved, or at least different, independent empirical attempts. We followed the replication – and – extension

approach recommended by these methodologists by conducting two studies to test the direct, indirect, and moderated curvilinear relationship between role conflict and creativity and, thereby, expand our understanding of the extent to which, how and when employees can react creatively to conflicting role demands. Study 1 used a cross-sectional design to test the curvilinear relationship between role conflict and creativity (Hypothesis 1) and the moderating effect of mindfulness on this association (Hypothesis 5). Study 2 aimed to replicate Study 1's findings and test the mediating role of CAW in the role conflict–creativity curvilinear relationship (Hypotheses 2 and 3) as well as the overall curvilinear moderated mediation model (Hypothesis 6). Moreover, since the cross-sectional nature of Study 1's design might increase the likelihood of common method bias (Podsakoff, MacKenzie, & Podsakoff, 2012), Study 2 adopted a time-lagged design – with a one-month time lag between measurements – in which role conflict and mindfulness were measured at Time 1, and CAW and creativity were examined at Time 2.

## **Study 1**

### **Method**

#### ***Sample and procedure***

We conducted this study on employees affiliated to an Italian enterprise in the fashion design industry. Since our study was focused on creativity, we decided to survey employees that were primarily involved in creativity-oriented work tasks. To this end, we specifically targeted those employees whose core job requirements were to conceive innovative stylistic ideas for outfits that help combine the quality of the traditional craftsmanship of the firm with the more modern looks required by the market. We distributed separate questionnaires to 186 employees, receiving responses from a total of 132 employees. After removing 9 invalid questionnaires with incomplete information, we finally obtained a total of 123 usable surveys, for a final response rate of 66.12%. Among the 123 participants, 81% were female, and 45.8% reported more than 8 years of



organizational tenure. Due to privacy-related restrictions of the organization, we were unable to gather any information about respondents' age nor their education level.

### **Measures**

*Role conflict.* Role conflict was measured using Rizzo et al.'s (1970) 8-item scale. Participants were asked to indicate the extent to which each question corresponded to their opinion about their work context on a 5-point scale (1. *Totally disagree* to 5. *Totally agree*). A sample item is "I receive incompatible requests from two or more people" ( $\alpha = .78$ ).

*Mindfulness.* We measured mindfulness with Brown and Ryan's (2003) Mindful Attention and Awareness Scale (MAAS), which captures the individual's dispositional tendency to be attentive to and aware of present-moment experiences. Respondents were asked to indicate the extent to which each of the 15 statements reflected their personal experience on a 5-point scale (1. *Almost always* to 5. *Almost never*). A sample item is "I rush through activities without being really attentive to them" ( $\alpha = .77$ ).

*Creativity.* We assessed creativity using the 3-item idea generation subscale from Janssen's (2000) Innovative Work Behavior measure. This subscale captures the frequency with which employees report being involved in the generation of creative ideas on a 5-point scale (1. *Never* to 5. *Always*). A sample item is "Generating original solutions for problems" ( $\alpha = .82$ ).

*Control variables.* We controlled for gender and organizational tenure, since they have been found to be related to creativity (e.g., Baer & Kaufman, 2008; Ng & Feldman, 2013).

## **Results**

### ***Confirmatory Factor Analysis***

Using Mplus (Version 7.4; Muthén and Muthén, 1998-2015), we conducted a series of confirmatory factor analyses (CFA) to assess the dimensionality of the substantive variables (role

conflict, mindfulness, and creativity). Moreover, considering the relatively limited sample size (123) compared to the large number of items (26), we adopted the parceling technique to preserve an optimal indicator-to-sample-size ratio (Little, Cunningham, Shahar, & Widaman, 2002). Indeed, model fit indices can be problematic when the subject-to-item ratio is below the recommended 10:1 ratio (e.g., Jackson, 2003; Kline, 2011), as in the case of our study. As Little and colleagues have demonstrated (Little et al., 2002; Little, Rhemtulla, Gibson, & Schoemann, 2013), item parcels improve the sample size-to-parameters ratio, diminishing the likelihood that parcels will be influenced by the method effects associated with individual items. Additionally, item parcels are more reliable because they capture a larger proportion of true-score variance. Accordingly, for models whose indicator-to-sample-size ratio is unfavorable, like ours, parceling technique improves model convergence and stability. Based on Little's (2013) recommendations, we thus created three parcels for the measures of role conflict and mindfulness by combining items with higher factor loadings with those with lower factor loadings. The CFA results are reported in Table 1. As can be seen, the fit indices indicate that the hypothesized three-factor model has an acceptable fit and outperformed all alternative models ( $p < .01$ ). These results provide evidence for the distinctiveness of the study variables.

[Table 1 about here]

### ***Hypothesis Testing***

Table 2 provides means, standard deviations, and intercorrelations among the study variables. Using SPSS Version 22, we conducted polynomial regression analyses to test our hypotheses. The results of analyses predicting creativity are reported in Table 3. Consistent with Cohen, Cohen, West, and Aiken (2013), predictors were mean-centered before calculating the linear and quadratic interactions between role conflict and mindfulness, and the quadratic term of role conflict squared. In addition, as suggested by prior research examining moderated curvilinear

relationships (e.g., Lin, Law, & Zhou, 2017; Van Der Vegt & Bunderson, 2005), predictor variables were entered into the regression equation for creativity in the following order: (a) control variables, (b) role conflict, (c) the quadratic term of role conflict squared, (d) mindfulness, (e) the linear interaction between role conflict and mindfulness, and (f) the interaction between role conflict squared and mindfulness.

[Tables 2 and 3 about here]

Table 3 shows that the linear, main effect of role conflict on creativity was non-significant ( $\beta = .02$ , *ns*; Model 2), whereas the quadratic term of role conflict squared added significant variance in creativity, over and above role conflict ( $\beta = -.23$ ,  $p < .05$ ,  $\Delta R^2 = .04$ ; Model 3). The negative sign of the coefficient suggests an inverted U-shaped relationship between role conflict and creativity. Accordingly, following Aiken and West (1991), we graphed this curvilinear relationship. As shown in Figure 1, creativity increased as role conflict increased up to an inflection point after which creativity diminished as role conflict further increased. Based on Weisberg (2005), the estimated standardized inflection point of role conflict was .22. Taken together, these results fully support Hypothesis 1.

[Figure 1 about here]

Moreover, as shown in Table 3 (Model 5), the coefficient of the linear interaction term of role conflict and mindfulness was not significant ( $\beta = -.06$ , *ns*). Conversely, the interaction between role conflict squared and mindfulness was significant ( $\beta = -.33$ ,  $p < .05$ ,  $\Delta R^2 = .04$ ; Model 6), over and above the linear interaction. This interaction is depicted in Figure 2. As can be seen, the relationship between role conflict and creativity followed an inverted U-shaped pattern when mindfulness was high. However, under conditions of low mindfulness, results reveal a flatter curvilinear relationship and less prominent changes in creativity with changing levels of role conflict. In order to assess more closely whether there was any significant effect of role conflict on

creativity at high levels compared to low levels of mindfulness, we conducted a simple curve test to examine the curve at two specific levels of the moderator (Dawson, 2014). The results revealed that when mindfulness was high (+1SD), the second step added significant variance ( $\Delta R^2 = .09$ ,  $p < .01$ ), and the inverted U-shaped relationship between role conflict and creativity was significant ( $\beta = -.57$ ,  $p < .01$ ). Conversely, at low values of mindfulness (-1SD), the second step did not add variance ( $\Delta R^2 = .01$ , *ns*), and squared role conflict did not appear as significant predictor ( $\beta = -.12$ , *ns*). Thus, these findings fully supported Hypothesis 2.

[Figure 2 about here]

## Study 2

### Method

#### *Sample and Procedure*

Study 2 used a two-wave time-lagged design with a one-month interval between measurements. Role conflict and mindfulness were measured at Time 1, and creativity at Time 2. Participants were recruited through an online crowdsourcing research platform, Prolific Academic. This platform allows researchers to collect data for applied and experimental research projects from a large and diverse workforce. Research has shown that the reliability and diversity of the data collected through online platforms are comparable to those obtained through conventional approaches (e.g., Cheung, Burns, Sinclair, & Sliter, 2017). Additionally, Prolific Academic users have been shown to report a higher level of unfamiliarity with commonly adopted research materials and a lower tendency to provide mendacious responses than the users of alternative, notorious online platforms, such as CrowdFlower and Mechanical Turk (Peer, Brandimarte, Samat, & Acquisti, 2017). Respondents were paid £1 at each time point upon completion of the survey questionnaire.

Participants were employees working in a wide range of U.K. industries (e.g., education, healthcare, wholesale and retail, public administration). Participants were provided with an anonymous code to allow researchers match their responses across time. At Time 1, we received completed responses from all employees that were contacted ( $N = 400$ ). At Time 2, we obtained 352 returned questionnaires, of which 32 containing missing information. Accordingly, the final sample included 320 employees (response rate = 80%) with matched data across time. Respondents were 34.43 years old on average ( $SD = 10.43$ ), 59.10% of them were female, and 59% attained an undergraduate degree or a higher level of education. Moreover, they had an average organizational tenure of 5.84 years ( $SD = 59.61$ ).

### ***Measures***

*Role conflict, mindfulness and creativity.* We adopted the same scales as in Study 1 to assess role conflict (8 items;  $\alpha = .81$ ), mindfulness (15 items;  $\alpha = .85$ ) and creativity (3 items;  $\alpha = .87$ ).

*Cognitive adjustment at work.* We measured CAW using Malo et al.'s (2016) 12-item scale, which captures three interrelated dimensions of CAW, namely: task adjustment, group adjustment, and organizational adjustment. The items were rated on a 5-point scale (1. *Totally disagree* to 5. *Totally agree*). A sample item is "I know how to perform in my work" (task adjustment). ( $\alpha = .82$ ).

*Control variables.* As in Study 1, we controlled for gender and organizational tenure, but we also included age and education as control variables given their relationship with creativity according to prior research (e.g., Runco & Charles, 1997; Simonton, 1984). Additionally, we included strain and intrinsic motivation in our data collection because we were interested in examining whether these variables could work as alternative mediators to CAW in the role conflict–creativity curvilinear relationship (see Auxiliary Analyses section). Consistent with prior research

on work stressors, which has operationalized the concept of strain using measures focused on exhaustion (e.g., LePine, LePine, & Jackson, 2004; Zhang, LePine, Buckman, & Wei, 2014), we measured *strain* with the five-item exhaustion scale from the Maslach Burnout Inventory (Schaufeli, Leiter, Maslach, & Jackson, 1996). The items were rated on a 5-point scale (1. *Totally disagree* to 5. *Totally agree*). A sample item is “I feel emotionally drained from my work”. ( $\alpha = .88$ ). Intrinsic motivation was measured using the 3-item subscale from the Multidimensional Work Motivation Scale (Gagné et al., 2015). Responses were rated on a 5-point scale (1. *Not at all* to 5. *Completely*) ( $\alpha = .91$ ).

## **Results**

### ***Confirmatory Factor Analysis***

As in Study 1, a CFA with the maximum likelihood method was conducted to examine the factor structure of the study variables. Again, to maintain a favorable indicator-to-sample-size ratio, we created three parallel parcels for the latent constructs of role conflict, mindfulness, CAW and emotional exhaustion to save degrees of freedom. As seen in Table 4, the CFA showed that the expected model with six factors demonstrated a satisfactory fit, while all other alternative models yielded a significantly poorer fit ( $p < .01$ ). These results provide evidence for the distinctiveness of the substantive variables.

[Table 4 about here]

### ***Hypothesis Testing***

Descriptive statistics and intercorrelations among the study variables are reported in Table 5. We adopted the same analytical strategy as in Study 1 to test our hypotheses. The results of polynomial regression analyses for creativity are reported in Table 6. As shown in Table 6, the linear relationship between role conflict and creativity was positive and significant ( $\beta = .18, p <$

.01; Model 8). However, in the next step, the quadratic term of role conflict squared was negatively related to creativity ( $\beta = -.12, p < .05, \Delta R^2 = .01$ ; Model 9), over and above the linear effect of role conflict. The negative sign associated with role conflict squared suggests an inverted U-shaped relationship between role conflict and creativity. As can be seen in Figure 3, the relationship between role conflict and creativity was positive up to an inflection point (standardized value = 1.75) after which the relationship turned out to be negative. Hypothesis 1 was thus supported.

Table 6 also illustrates the results of regression analysis for CAW. These results show that the linear relationship between role conflict and CAW was negative but not significant ( $\beta = -.09, ns$ ; Model 2). Conversely, in the next step, the quadratic term of role conflict squared was negatively related to CAW ( $\beta = -.12, p < .05, \Delta R^2 = .02$ ; Model 3), over and above the linear effect of role conflict. As shown in Figure 4, the relationship between role conflict and CAW followed an inverted U-shaped curvilinear trend (standardized inflection point = .50). Thus, Hypothesis 2 was supported. Moreover, using gender, age, educational level and organizational tenure as covariates and role conflict and its quadratic term as other predictors, we found that CAW was positively related to creativity ( $\beta = .29, p < .01$ ; Model 13).

Having provided evidence for an inverted U-shaped relationship of role conflict with CAW and creativity, and for a positive association between CAW and creativity, we followed Hayes and Preacher's (2010) guidelines and MEDCURVE macro to test the curvilinear indirect relationship between role conflict and creativity via CAW (Hypothesis 3). Based on 5,000 bootstrap samples, we calculated the instantaneous indirect effect of role conflict on creativity through CAW at different values of role conflict (i.e.,  $-1SD, +1SD$ ). The results indicated that this indirect effect was positive but not significant for low levels of role conflict (.05, 95% bias-corrected CI  $[-.04, .14]$ ), and negative and significant for high levels of role conflict ( $-.08$ , 95% bias-corrected CI  $[-.16, -.02]$ ). This result suggests that at low levels of role conflict, increasing role conflict has no

discernible effect on creativity through changes in CAW. However, at high levels of role conflict, any increase in conflict lowers creativity through changes in CAW. This pattern of findings supported Hypothesis 3.

[Tables 5 and 6 about here]

Table 6 also reports the findings for the moderating effect of mindfulness on the curvilinear relationship between role conflict and creativity. As can be seen, while the interaction term of role conflict and mindfulness was not significant ( $\beta = .00$ , *ns*; Model 11), role conflict squared significantly interacted with mindfulness to influence creativity ( $\beta = -.17$ ,  $p < .05$ ,  $\Delta R^2 = .01$ ; Model 12), over and above the linear interaction. The pattern of this interactive effect is shown in Figure 5. As can be seen, the point of inflection of the inverted U-shaped relationship between role conflict and creativity shifted vertically as a function of mindfulness, suggesting that mindfulness amplified the effect of role conflict on creativity. In addition, a simple slope test revealed that at high values of mindfulness (+1SD), role conflict and its squared term added significant variance after inclusion of the other terms ( $\Delta R^2 = .05$ ,  $p < .01$ ) and that the inverted U-shaped relationship between role conflict and creativity was significant ( $\beta = -.22$ ,  $p < .01$ ). At low values of mindfulness (-1SD), role conflict and its squared term did add significant variance ( $\Delta R^2 = .01$ ,  $p < .05$ ), but the curvilinear relationship between role conflict and creativity was not significant ( $\beta = -.00$ , *ns*). Overall, these results indicate that the inverted U-shaped relationship between role conflict and creativity was stronger for employees with higher levels of mindfulness. Thus, Hypothesis 4 was supported.

With regards to the moderating effect of mindfulness on the inverted U-shaped relationship between role conflict and CAW, Table 6 shows that the interaction term of role conflict and mindfulness was not significant ( $\beta = .04$ , *ns*; Model 5), whereas role conflict squared significantly interacted with mindfulness to influence creativity ( $\beta = -.16$ ,  $p < .05$ ,  $\Delta R^2 = .01$ ; Model 6), over



and above the linear interaction. As depicted in Figure 6, the inverted U-shaped relationship between role conflict and CAW was noticeable only when mindfulness was high. A simple slope test indicated that when mindfulness was high (+1SD), role conflict and its squared term added significant variance after inclusion of the other terms ( $\Delta R^2 = .02, p < .05$ ) and that the inverted U-shaped relationship between role conflict and CAW was significant ( $\beta = -.21, p < .01$ ). However, when mindfulness was low (-1SD), role conflict and its squared term did not add significant variance ( $\Delta R^2 = .00, ns$ ), and the curvilinear relationship between role conflict and creativity was not significant ( $\beta = -.00, ns$ ). These results supported Hypothesis 5.

Finally, we tested the curvilinear moderated mediation relationship between role conflict and creativity via CAW. We estimated the curvilinear indirect effect of role conflict on creativity via CAW by calculating the product of the instantaneous relationship between role conflict and CAW and the relationship between CAW and creativity under different values of mindfulness, and obtained a 95% bias-corrected CI around the population values for the estimate. The results indicated that at relatively low levels of role conflict, increasing role conflict was positively and indirectly related to creativity via CAW when mindfulness was high (+1SD) (.12, 95% bias-corrected CI [.03, .26]), while increasing levels of role conflict were indirectly unrelated to creativity when mindfulness was low (-1SD) (-.02, 95% bias-corrected CI [-.18, .11]). At relatively high levels of role conflict, the instantaneous indirect effect of role conflict on creativity via CAW was significantly negative when mindfulness was high (-.09, 95% bias-corrected CI [-.19, -.01]), and negative but not significant when mindfulness was low (-.03, 95% bias-corrected CI [-.12, .06]). This result suggests that the curvilinear effect of role conflict on creativity conveyed by CAW depended on the values of role conflict and mindfulness. In particular, increasing levels of role conflict boosted creativity via CAW only at relatively low levels of role conflict and high levels of mindfulness. Hypothesis 6 was thus supported.

### Auxiliary Analyses

To ascertain the unique mediating function of CAW, we examined whether the curvilinear (moderated) relationship between role conflict and creativity could be alternatively explained by two additional mechanisms, strain and intrinsic motivation. Prior studies have indeed shown that both strain and intrinsic motivation are affected by stressful conditions, such as role conflict (Bamberger et al., 2017; Lambert, 1991), and influence employee creativity (Han, Harms, & Bai, 2017; Liu, Jiang, Shalley, Keem, & Zhou, 2016). Our results revealed that role conflict had a positive linear relationship with strain ( $\beta = .25, p < .01$ ) and a non-significant relationship with intrinsic motivation ( $\beta = -.03, ns$ ), whereas its squared term was unrelated to both strain ( $\beta = .02, ns$ ) and intrinsic motivation ( $\beta = -.06, ns$ ). Moreover, strain ( $\beta = .18, p < .01$ ) and intrinsic motivation ( $\beta = .32, p < .01$ ) were both positively related to creativity. We also found that role conflict did not significantly interact with mindfulness in predicting strain either linearly ( $\beta = .05, ns$ ) or curvilinearly ( $\beta = .03, ns$ ). Likewise, the linear ( $\beta = -.00, ns$ ) and curvilinear ( $\beta = -.11, ns$ ) interaction effects of role conflict and mindfulness on intrinsic motivation were not significant.

Conversely, when controlling for strain and intrinsic motivation, the relationship between CAW and creativity remained positive and significant ( $\beta = .24, p < .01$ ). Likewise, the curvilinear indirect relationship between role conflict and creativity via CAW maintained an inverted U-shaped trend when strain and intrinsic motivation were controlled for: at relatively low levels of role conflict, the instantaneous indirect effect was positive but not significant (.04, 95% bias-corrected CI [-.03, .13]), whereas at relatively high levels of role conflict, the instantaneous indirect effect was negative and significant (-.05, 95% bias-corrected CI [-.11, -.01]).

Finally, the inclusion of strain and intrinsic motivation as alternative mediators did not substantially alter the moderating effect of mindfulness on the curvilinear indirect relationship between role conflict and creativity via CAW. Indeed, at relatively low levels of role conflict,

increasing role conflict was positively and indirectly related to creativity via CAW when mindfulness was high (.09, 95% bias-corrected CI .02, .20 versus low (-1SD) (-.01, 95% bias-corrected CI [-.15, .10]). At relatively high levels of role conflict, the instantaneous indirect effect of role conflict on creativity via CAW was significantly negative and when mindfulness was either high (-.05, 95% bias-corrected CI [-.13, .01]) or low (-.02, 95% bias-corrected CI [-.09, .05]). Overall, these results suggest that CAW exerted a significant mediating effect on the main and moderated curvilinear relationship between role conflict and creativity, over and above the effects of strain and intrinsic motivation. Precisely, increasing levels of role conflict enhanced creativity via CAW only when role conflict was low and mindfulness was high, thereby lending supplemental support for our predictions.

## **Discussion**

### **Theoretical Implications**

The present study aimed to investigate the presence of a curvilinear relationship between role conflict and employees' creativity, and whether mindfulness moderates this relationship. Consistent with *Hypothesis 1*, our findings provided empirical evidence for an inverted U-shaped relationship between role conflict and creativity: a moderate (versus low or high) level of role conflict was found to be beneficial for creativity. This finding shows for the first time that, either too much or too little role conflict hindered employee creativity, whereas only moderate amounts of role conflict benefited employees' creative expression. Thus, a first theoretical contribution of this study is to shed light on the relationship between role conflict and creativity, which represents a critical step in the innovation process (Jansen, 2000; Shalley et al., 2004). Differently from Leung and colleagues' (2011) research, which revealed a (non-inverted) U-shaped relationship between role conflict and innovative behavior (i.e., an overarching behavior entailing not only idea generation, but also idea promotion and realization), this study showed that in the case of creativity

(i.e., idea generation), the relationship is still non-linear, but in the opposite direction. This suggests that role conflict could operate differently with diverse phases of the innovation process.

With regards to *Hypotheses 2* and *3*, role conflict had an inverted U-shaped relationship with CAW which, in turn, was positively associated with creativity, such that at high levels of role conflict any increase in conflict lowered creativity through changes in CAW. By providing evidence for this mediated relationship, our study highlights for the first time the accumulation of work-related informational resources as a key resource-based outcome that employees need to achieve in order to keep their creative potential alive under conflicting role demands. As such, the present investigation provides novel insights into the benefits of CAW by unravelling its critical role in conveying the positive, resource-enhancing benefits of moderate levels of role conflict to employee creativity. Interestingly, however, our results also revealed a positive and significant linear relationship between role conflict and creativity, above and beyond the (conditional) curvilinear indirect effects of role conflict on creativity via CAW. This result is consistent with prior research reporting a positive role conflict-creativity relationship (e.g., Tang & Chang, 2010). Yet, since role conflict was linearly unrelated to CAW, this finding also suggests that, although CAW plays a key role in explaining the curvilinear effect of role conflict on creativity, there might be alternative, yet still unidentified, mechanisms that would account for a linear relationship between role conflict and creativity. Accordingly, future research is warranted to jointly consider the linear and curvilinear patterns of relationship between role conflict and creativity as well as to examine the different processes that uniquely explain these relationships.

In line with *Hypothesis 4*, employees' mindfulness was found to enable the inverted U-shaped relationship between role conflict and creativity. More specifically, employees exhibited relatively high creativity when they experienced a moderate role conflict level and had high mindfulness levels. This is consistent with COR theory, which states that individual differences in

levels of some stress-buffering personal characteristics may affect how people response to stress or loss of resources, making some workers more able at minimizing their losses and at decreasing negative stressor appraisal. Previous studies have revealed that mindfulness is positively related to qualities that may be instrumental to creative tasks. For instance, being open to the present experience and exploring new information and perspectives (Prabhu, Sutton, & Sauser, 2008; Langer, 1989) might facilitate ideas novelty. In addition, mindfulness-related improvements in attentional abilities might facilitate the recognition of new internal feelings, their verbal expression and reconnection with full awareness of the initial focus, all of which are key abilities to facilitate the generation of original and useful ideas (Silvia, 2008).

Consistent with *Hypothesis 5*, mindfulness moderated the inverted U-shaped relationship between role conflict and CAW, such that the U-shaped trend was noticeable only at high levels of mindfulness. Additionally, as predicted by *Hypothesis 6*, mindfulness moderated the inverted U-shaped relationship between role conflict and creativity through CAW, such that among high mindful individuals, increasing role conflict at relatively low role conflict levels resulted in higher creativity levels. These findings suggest that employees who are high in mindfulness are more likely to invest their energies to gain more in-depth work-related knowledge (Lee, 2012). As a result, high mindful workers are better able to cognitively adjust at work and, therefore, to utilize their valuable knowledge and skills regarding different organizational realities (i.e., task, work group and organization) to think creatively and generate innovative solutions.

Overall, our moderated mediation results also extend current research on the processes and boundary conditions associated with the effect of work stressors on innovation-related behaviors. Indeed, prior to our work, only two studies attempted to address this issue (Authors A, blinded for review; Authors B, blinded for review). Precisely, Authors A (blinded for review) found that role conflict had an indirect negative relationship with innovative work behavior via reduced

organizational affective commitment, and that high levels of leader-member exchange attenuated this negative path. Authors B (blinded for review) showed that under moderate levels of workload, highly mindful employees reported increased work engagement, and, ultimately, innovative work behavior. Our study goes an important step forward by taking into account the specific creative component of innovation (rather than the whole innovative process), which, as discussed above, represents a necessary condition for the effective realization of new and valuable products, services and procedures (Amabile, 1996; Baron & Tang, 2011). In doing so, this research suggests for the first time that, among mindful employees, the psychological mechanisms explaining effects of role conflict levels on creativity are cognitive in nature (i.e., cognitive adjustment at work), rather than motivational (i.e., work engagement or organizational affective commitment), and that these mechanisms play a key role in explaining *why* role conflict is curvilinearly, and not linearly, related to employee capacity to initiate creative actions. As such, these results provide a new and meaningful input for future research on work stressors and innovation. Precisely, they highlight that in order to understand the relationship between these constructs it would be essential to take into account the specific psychological states that are expected to uniquely link, either linearly or curvilinearly, each typology of stressor with different components of the innovation process, as well as the conditions upon which such states can be preserved or enhanced.

Moreover, this study, by bemonstrating the moderating effects of mindfulness on the role conflict-creativity and on the role conflict-CAW relationships, contributes to reconcile previous conflicting on the influence of mindfulness on creativity. For example, some studies have found a negative impact of mindfulness on intuitive thinking (Remmers, Topolinski, & Michalak, 2014) and on insight ability (Zedelius & Schooler, 2015), suggesting that mindful people might perform badly on tasks which rely on spontaneous insights. By contrast, evidence has been provided for the beneficial effect of meditation and mindfulness training on creativity performance (Ding, Tang,

Deng, Tang, & Posner, 2015; Colzato, Ozturk, & Hommel, 2012; Grant, Langer, Falk, & Capodilupo, 2004). Addressing these inconsistencies, our results suggest that mindfulness might contribute to employee creativity indirectly, precisely by enhancing the beneficial effects of moderate amounts of role conflict on CAW. As such, our results also offer relevant insights into the moderating impact of individual differences on creativity.

However, our results also highlighted that mindful individuals are more likely to cognitively adjust at work and, then, develop creative solutions only under moderate role conflict levels. Conversely, either too much or too little role conflict hindered employee creativity among highly mindful employees, suggesting that the beneficial effect of mindfulness for creativity is limited to situations of moderate role conflict. This finding might be explained by the fact that under high role conflict levels, highly mindful individuals might reach a more in-depth understanding of the negative implications related to excessive contrasting job demands and responsibilities, thus being less willing to further deplete their resources (i.e., time and energy) through creative endeavors (Tuckey, Sonnentag, & Bryan, 2018). Likewise, under low role conflict situations, highly mindful people may experience monotony, which may decrease their motivation to acquire the informational resources necessary to develop creative solutions. Consistent with this interpretation, Hafenbrack and Vohs (2018) found that compared to those in the mind-wandering condition, individuals induced with state mindfulness exhibited lower motivation to engage in relatively tedious tasks by decrements in future focus and state arousal.

### **Practical implications**

The present study provides some interesting implications for possible organizational interventions aimed at increasing employee creative thinking. First, managers should offer opportunities to employees to work on organizational boundaries (Cooper & Marshall, 1978), while remaining sensitive not to overemphasize role conflict. Second, since excessive role conflict levels

may undermine employees' creativity, organizations should provide interventions aimed at reducing role incongruities by facilitating positive social interactions and by setting frequent and effective discussion meetings between supervisors and employees to clarify organizational job expectations and establish clear roles. Third, managers should monitor and possibly survey employees about their cognitive adjustment at work, as such insight would provide useful feedback about the informational resources they perceive themselves as possessing for engaging in creative tasks.

Fourth, the finding that individual differences in levels of mindfulness may affect how people react to role conflict suggests that minimizing role conflict might not be a "one-size-fits-all" solution. Managers should seek to selectively add challenging situations to the work settings of specific workers, such as those with high mindfulness levels, in order to enhance their creative responses. Moreover, organizations should seek to help low-mindful employees to better cope with role conflict by providing communication, conflict management or negotiation training to enable them to ameliorate their coping skills. Finally, although the current study was limited to assessing individuals' dispositional tendencies to be mindful without considering the state-like form of mindfulness, research has revealed that the strength of the association between the two components increases with frequency of mindfulness-based meditation practice (Bravo, Pearson, Wilson, & Witkiewitz, 2018). This suggests that employees with high levels of dispositional mindfulness might experience an enhanced state of mindfulness if they are exposed to specific trainings that spur them to maintain meditation practice as a routine, such as on-the-spot mindfulness interventions and follow-up informational programs (Eby et al., 2017; Hafenbrak, 2017). As a result, such employees would be more likely to fully capitalize on their mindful potential to cope creatively with moderate levels of conflicting role demands. However, in order to provide more solid evidence-based recommendations concerning the implementation of mindfulness-based



interventions, additional studies need to be carried out to examine whether and how such interventions might enhance employee creativity under moderate (versus low or high) levels of role conflict.

### **Limitations and Future Research Directions**

The contributions of this research need to be interpreted in the light of its limitations. First, the self-report nature of our studies raises issues of common method bias. However, in Study 2, we temporally separated the measurement of the independent variable (role conflict) and the moderator (mindfulness) from that of the dependent variable (creativity), thus reducing the odds for common method bias to influence the study results. Moreover, research has shown that, unlike bivariate linear relationships, quadratic and interaction effects cannot be inflated by common method variance (Siemsen, Roth, & Oliveira, 2010). Since our investigation was design to test hypotheses about complex curvilinear interaction patterns, method bias was unlikely to account for the corresponding statistically significant effects observed in both Study 1 and Study 2.

Second, causal relationships cannot be inferred because of the cross-sectional nature of our studies. Consequently, further research should adopt longitudinal designs to assess the presence of a bi-directional association between CAW and creativity. This positive relationship is likely since previous studies found that creative activity facilitates the acquisition of further resources, including the development of skills (Amabile, 1983), beliefs of influencing results (Byron et al., 2010), positive affect, mastery, and control (Eschleman, Madsen, Alarcon, & Barelka, 2014; Fredrickson, 2001). Thus, by engaging in creative behaviours in their workplace, employees may acquire work-related knowledge and abilities (i.e., mastery), foster their self-efficacy and feelings of competence (i.e., control), all of which would facilitate CAW. Likewise, future research should use panel designs to explore more deeply the causal ordering between role conflict and creativity (Pitariu & Ployhart, 2010). This research endeavor is particularly relevant since creativity has been

shown to increase people's perceived control over outcomes and to enhance mastery experiences (Eschleman et al., 2014), which are effective coping resources against work stressors (Schaubroeck & Merritt, 1997). Accordingly, engaging successfully in creative actions might allow creative employees to effectively cope with incompatible job demands and, thereby, to experience decreased role conflict. The adoption of panel designs in future studies would thus allow to explore more deeply the role of creativity as both an outcome and a predictor of role conflict.

Third, we could not empirically measure the neural activation mechanisms that moderate levels of role conflict are supposed to spur. Accordingly, like prior activation-based studies (e.g., Janssen, 2001; Schmitt, Ohly, & Kleespies, 2015), this study applies rather than testing the assumptions implied in the activation perspective to theorize inverted U-shaped effects of role conflict. Nonetheless, in line with activation theory, we were able to demonstrate an inverted U-shaped relationship between role conflict and creativity across two studies. Moreover, Study 2, by providing evidence for the mediating role of CAW in the role conflict–creativity curvilinear relationship, captured the COR-based mechanisms that result from the activation process and that were assumed to transfer the inverted U-shaped effects of role conflict to employee creativity. Accordingly, although the inferences regarding the activation process remain speculative, our findings allow to make grounded conclusions about the activation-related benefits that creativity derives from moderate levels of conflicting role demands.

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Table 1

*Study 1 confirmatory factor analysis results: fit indices*

Model	$\chi^2$	<i>df</i>	$\Delta\chi^2$	$\Delta df$	CFI	TLI	RMSEA	SRMR
Hypothesized three-factor model	36.26	24	–	–	.95	.93	.06	.06
Two-factor models								
Combining role conflict and mindfulness	76.23*	26	39.97*	2	.81	.74	.12	.09
Combining role conflict and creativity	109.90*	26	73.64	2	.69	.57	.14	.14
Combining mindfulness and creativity	106.07*	26	69.81*	2	.70	.59	.16	.14
One-factor model	167.92*	27	131.66*	3	.48	.31	.21	.17

*Note:*  $N = 123$ . CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

\* $p < .01$ .

Table 2

*Study 1 descriptive statistics and correlations*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Gender	–	–	–				
2. Organizational tenure	–	–	.13	–			
3. Role conflict	2.54	0.63	–.03	.05	(.78)		
4. Mindfulness	3.79	0.50	.13	.09	–.28**	(.77)	
5. Creativity	3.26	0.90	.08	–.01	.01	–.02	(.82)

*Note:*  $N = 123$ . For Gender: 1 = male, 2 = female. For Organizational tenure: 1 = less than four years, 2 = beyond four and seven years, 3 = eight years or more.

\* $p < .05$ ; \*\* $p < .01$ .

Table 3

*Study 1 polynomial regression results for creativity*

Variable	Creativity					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Control variables</i>						
Gender	.08 (.21)	.08 (.22)	.09 (.21)	.10 (.21)	.10 (.22)	.11 (.21)
Organizational tenure	-.02 (.08)	-.02 (.08)	-.07 (.08)	-.06 (.08)	-.06 (.08)	-.06 (.08)
<i>Predictors</i>						
Role conflict		.02 (.13)	-.10 (.15)	-.11 (.16)	-.13 (.16)	-.22 (.17)
Role conflict squared			-.23* (.18)	-.24* (.18)	-.25* (.19)	-.35** (.20)
Mindfulness				-.05 (.17)	-.05 (.17)	.13 (.22)
<i>Interaction terms</i>						
Role conflict × Mindfulness					-.06 (.24)	-.19 (.28)
Role conflict squared × Mindfulness						-.33*(.32)
Total $R^2$	.01	.01	.05	.05	.05	.09
$\Delta R^2$		.00	.04*	.00	.00	.04*

*Note:*  $N = 123$ . Except for the Total  $R^2$  and  $\Delta R^2$  rows, the values are standardized regression coefficients.

Standard errors are provided in parentheses next to the standardized regression coefficients. For Gender: 1

= male, 2 = female. \* $p < .05$ ; \*\* $p < .01$ .

Table 4

*Study 2 confirmatory factor analysis results: fit indices*

Model	$\chi^2$	<i>df</i>	$\Delta\chi^2$	$\Delta df$	CFI	TLI	RMSEA	SRMR
Hypothesized six-factor model	248.45*	120	–	–	.95	.94	.06	.06
Five-factor models								
Combining role conflict and mindfulness	462.06*	125	213.61 *	5	.88	.85	.09	.08
Combining CAW and creativity	453.34*	125	204.89*	5	.88	.86	.09	.10
Combining CAW and emotional exhaustion	455.07*	125	206.62*	5	.88	.86	.09	.09
Combining CAW and intrinsic motivation	463.80*	125	215.35*	5	.88	.85	.09	.09
Combining emotional exhaustion and creativity	855.18*	125	606.73*	5	.74	.68	.13	.15
Combining emotional exhaustion and intrinsic motivation	873.63*	125	625.18*	5	.73	.67	.14	.11
Combining intrinsic motivation and creativity	894.33*	125	645.88*	5	.73	.67	.14	.12
Four-factor models								
Combining CAW, emotional exhaustion and intrinsic motivation	938.46*	129	690.01*	9	.71	.66	.14	.13
Combining CAW, emotional exhaustion and creativity	1046.20*	129	797.75*	9	.67	.61	.15	.16
Combining CAW, intrinsic motivation and creativity	899.28*	129	650.83*	9	.73	.68	.14	.12
Combining emotional exhaustion, intrinsic motivation and creativity	1184.59*	129	936.14*	9	.63	.53	.16	.14
Three-factor models								
Combining role conflict and mindfulness, and CAW, emotional exhaustion and intrinsic motivation	1152.29*	132	903.84*	12	.64	.58	.15	.14
Combining role conflict and mindfulness, and CAW, emotional exhaustion and creativity	1266.02*	132	1,017.57*	12	.60	.53	.16	.17
Combining role conflict and mindfulness, and CAW, intrinsic motivation and creativity	1095.98*	132	847.53*	12	.66	.60	.15	.13
Combining role conflict and mindfulness, and emotional exhaustion, intrinsic motivation and creativity	1383.12*	132	1,134.67*	12	.56	.49	.17	.15
Two-factor model (Time 1 variables vs. Time 2 variables)	1570.06*	134	1321.61*	14	.49	.42	.18	.16
One-factor model	1970.34*	135	1721.89*	15	.35	.26	.21	.19

*Note:*  $N = 320$ . CAW = cognitive adjustment at work CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

\* $p < .01$ .

Table 5

*Study 2 descriptive statistics and correlations*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Gender	–	–	–									
2. Age	34.43	10.44	–.06	–								
3. Educational level	–	–	–.04	.12*	–							
4. Organizational tenure	5.84	5.61	–.06	.49**	–.00	–						
5. Role conflict (Time 1)	2.39	0.77	.05	–.02	.15**	.03	(.81)					
6. Mindfulness (Time 1)	3.26	0.58	.11*	.09	.02	.02	–.34**	(.85)				
7. Cognitive adjustment at work (Time 2)	3.84	0.54	.00	.19**	.06	.17**	–.08	.17**	(.82)			
8. Emotional exhaustion (Time 2)	3.04	0.83	–.15**	–.11*	.02	–.08	.24**	–.34**	–.25**	(.88)		
9. Intrinsic motivation (Time 2)	3.09	0.98	.07	.10	.18**	.01	–.02	.10	.29**	–.37**	(.91)	
10. Creativity (Time 2)	3.03	0.85	.04	.05	.24**	.02	.21**	.00	.28**	.04	.35**	(.87)

*Note:*  $N = 320$ . For Gender: 1 = female, 2 = male. For Educational level: 1 = primary school, 2 = secondary school, 3 = college, 4 = undergraduate, 5 = graduate, 6 = Ph.D.

\* $p < .05$ ; \*\* $p < .01$ .



Table 6

*Study 2 polynomial regression results for cognitive adjustment at work and creativity*

Variable	Cognitive adjustment at work					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Control variables</i>						
Gender	.01 (.06)	.02 (.06)	.02 (.06)	.00 (.06)	-.00 (.06)	-.01 (.06)
Age	.13* (.00)	.13 (.00)	.14* (.00)	.13* (.00)	.12 (.00)	.14* (.00)
Educational level	.05 (.03)	.06 (.03)	.07 (.03)	.06 (.03)	.05 (.03)	.06 (.03)
Organizational tenure	.11 (.01)	.11 (.01)	.09 (.01)	.09 (.01)	.09 (.01)	.09 (.01)
<i>Predictors</i>						
Role conflict		-.09 (.04)	-.06 (.04)	.00 (.04)	.00 (.04)	-.02 (.04)
Role conflict squared			-.12* (.04)	-.13* (.04)	-.13* (.04)	-.11 (.04)
Mindfulness				.16* (.05)	.16* (.05)	.27** (.07)
<i>Interaction terms</i>						
Role conflict × Mindfulness					.04 (.06)	.07 (.06)
Role conflict squared × Mindfulness						-.16* (.07)
<i>Mediator</i>						
Cognitive adjustment at work						
Total $R^2$	.05	.05	.07	.09	.09	.10
$\Delta R^2$		.00	.02*	.02*	.00	.01*

Table 6 (Continued)

Creativity							
Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
.06 (.09)	.05 (.09)	.05 (.09)	.04 (.09)	.04 (.09)	.04 (.09)	.04 (.09)	.04 (.09)
.01 (.00)	.02 (.00)	.03 (.00)	.03 (.00)	.03 (.00)	.04 (.00)	-.01 (.00)	.00 (.00)
.24** (.05)	.21** (.05)	.22* (.05)	.21** (.05)	.21** (.05)	.22** (.05)	.20** (.04)	.20** (.04)
.02 (.01)	.01 (.01)	-.01 (.01)	-.01 (.01)	-.01 (.00)	-.01 (.01)	-.04 (.00)	-.04 (.01)
	.18** (.06)	.21** (.06)	.23** (.07)	.23** (.07)	.21** (.07)	.22** (.06)	.22** (.06)
		-.12* (.07)	-.13* (.07)	-.13* (.07)	-.11 (.07)	-.09 (.06)	-.08 (.07)
			.07 (.08)	.07 (.08)	.18* (.12)		.11 (.11)
				.00 (.09)	.03 (.10)		.01 (.09)
					-.17* (.10)		-.12 (.10)
						.29** (.08)	.27** (.09)
.06	.09	.10	.11	.11	.12	.18	.19
	.03**	.01*	.00	.00	.01*		.01

Note:  $N = 320$ . Except for the Total  $R^2$  and  $\Delta R^2$  rows, values are standardized regression coefficients.

Standard errors are provided in parentheses next to the standardized regression coefficients. For Gender: 1 = female, 2 = male. For Educational level: 1 = primary school, 2 = secondary school, 3 = college, 4 = undergraduate, 5 = graduate, 6 = Ph.D.

\* $p < .05$ ; \*\* $p < .01$ .