4-2022

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Citation

BLEDOW, Ronald; KÜHNEL, Jana; JIN, Mengzi; and KUHL, Julius. Breaking the chains: The inverted-U-shaped relationship between action-state orientation and creativity under low job autonomy. (2022). *Journal of Management*. 48, (4), 905-935.
Available at: https://ink.library.smu.edu.sg/lkcsb_research/6690

Breaking the Chains:

The Inverted-U-Shaped Relationship between Action-State Orientation and Creativity under low Job Autonomy

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Acknowledgments: We would like to thank Gary Greguras, Britt de Soete, Abhijeet Vadera, and Amanda Williamson for their valuable comments on previous versions of this article. This research was funded by Singapore's Ministry of Education (15-C207-SMU-009), the German Federal Ministry of Education and Research (SGP-PROG2 01DP14012), and the National Natural Science Foundation of China (No. 72091314)

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ABSTRACT

When the social fabric of organizations limits individual autonomy, new ideas are needed that satisfy a person's will as well as the constraints imposed by the social context. To explain when people achieve this synthesis and display creativity under low job autonomy, we examine the influence of their action-state orientation. The theory of action versus state orientation contrasts two responses people display when faced by a situation that conflicts with their will. An action-oriented response entails that people readily disengage from processing the situation and initiate goal-striving, while a state-oriented response entails that people remain focused on the situation. We argue that creativity under low job autonomy requires the integration of the competing processes underlying action and state orientation and is most frequently displayed by people in the midrange of the action-state orientation continuum. We test this theorizing with three studies. In a constrained laboratory setting, we induced a focus on an unwanted situation and demonstrated an inverted-U-shaped relationship between action-state orientation and creativity. A field study showed that the inverted-U-shaped relationship between action-state orientation and daily self-reports of creativity was strongest under low job autonomy and disappeared under high job autonomy. A multi-source study replicated and extended these relationships using managerial ratings of creativity.

Keywords: Creativity, Innovation, Action-State Orientation, Autonomy, Motivation

BREAKING THE CHAINS: THE INVERTED-U-SHAPED RELATIONSHIP BETWEEN ACTION-STATE ORIENTATION AND CREATIVITY UNDER LOW JOB AUTONOMY

In today's era of rapid social and technological change, where what is proven and tested quickly becomes obsolete, routine jobs give way to automation, and social and ecological threats loom large, there is an unprecedented demand for creativity in organizations (Anderson, Potočnik & Zhou, 2014). Creativity entails that people draw from their unique knowledge and experience to develop new and useful ideas (Amabile, 1996). The development of new ideas is fueled by a supportive work context that empowers people to express themselves and act according to their own will (Amabile, 2000; Liu, Jiang, Shalley, Keem & Zhou, 2016; Oldham & Cummings, 1996). Yet, an emerging body of research suggests that creativity also can be observed in situations that conflict with people's will and prompt negative emotions (e.g., Acar, Tarakci & van Knippenberg, 2019; Rosso, 2014; Zhou & George, 2001).

While research on creativity in organizations has focused on the instrumentality of creativity for goal achievement (Amabile & Pratt, 2016), it has paid less attention to the role creativity plays as a coping mechanism for dealing with unwanted situations (Folkman & Moskowitz, 2004). The creative potential of the human mind, however, is needed most in situations that conflict with people's will or even pose existential threats as the current pandemic aptly demonstrates. Fortunately, evolutionary adaptation has equipped the human mind with the ability to generate new and useful ideas in response to such adverse situations (Damian & Simonton, 2015; Simonton, 1999). Creativity is thus not limited to situations in which supportive contextual factors facilitate creativity because coping mechanisms empower people to also be creative in response to situations that conflict with their will (Bledow, Rosing & Frese, 2013).

Shedding light on these coping mechanisms is an important research endeavor for the field of management because situations that conflict with one's will are a prevalent and unavoidable aspect of work life. The social fabric of organizations limits the degrees of freedom people have available so that they are often confronted with situations in which they cannot act according to their own will alone and have to consider the constraints imposed by the social context (Acar et al., 2019). In other words, work behavior is only partly self-determined and to a fair extent other-determined and the constraints imposed by others can conflict with a person's own will. Accordingly, creative self-expression will often be insufficient for creativity at work because employees need to consider social constraints when generating new ideas (Chua & Iyengar, 2006; Goncalo, Chatman, Duguid & Kennedy, 2015). To qualify as both novel and useful, creative ideas need to serve the requirements of customers, supervisors, coworkers, and other stakeholders (Martinaityte, Sacramento & Aryee, 2019; Montag, Maertz & Baer, 2012). These requirements constrain the range of ideas that are useful and can conflict with a person's own will (Grant & Berry, 2011). For creativity in work settings, it is therefore important to take into account social constraints when searching for creative solutions.

The importance of achieving a creative synthesis between the constraints imposed by the social context and one's own will likely varies across jobs and may be particularly important in jobs that grant only low autonomy (Britt, Crane, Hodson & Adler, 2016). Job autonomy refers to the extent that employees encounter constraints in their daily work lives (Acar et al., 2019). When job autonomy is high, employees are free from constraints and can independently determine how to perform work tasks, while employees have few degrees of freedom in making decisions and experience reduced self-determination when job autonomy is low (Hackman & Oldham, 1976; Morgeson & Humphrey, 2006). Past research has found that low job autonomy

can undermine the motivation to be creative and that people display overall less creativity when job autonomy is low (Liu et al., 2016; Shalley, Zhou & Oldham, 2004). These findings raise the question whether employees can display creativity despite low job autonomy and achieve a creative synthesis that satisfies their own will as well as the constraints of their job. Creativity could enable employees to constructively deal with a situation of low job autonomy.

Toward the goal of unpacking the coping mechanism that enables creativity when autonomy is low, we examine the influence of people's action-state orientation. The theory of action versus state orientation contrasts two responses people can display when faced by a situation that conflicts with their will (Kuhl, 1994b): A state-oriented reponse means to remain focused on processing the situation. A person can thereby learn from the situation and adapt goal-striving to the constraints it imposes. By contrast, an action-oriented response entails that people readily terminate the focus on information that conflicts with their will and initiate goal-striving to influence their situation. State-oriented individuals consistently show the former, while action-oriented individuals consistently show the latter response. However, most people are insufficently described when classified as either action- or state-oriented because they do not consistently display either response. In this article, we develop and test the theory that people who do not strongly lean toward either action or state orientation frequently display a different response that integrates elements of action and state orientation. They generate new and useful ideas that address the contraints imposed by their social context.

By specifiying the coping mechanism that enables creativity under the social constraints of work settings, this article contributes to the extant literatures in multiple ways. First, we contribute to theories of creativity by showing that creativity is not limited to a context that grants high autonomy because people can integrate social constraints when searching for creative

solutions. Second, we add to an interactionist perspective on creativity and further the understanding of person-situation interactions in work settings (Shalley et al., 2004; van Knippenberg & Hirst, 2020). According to our theory, people differ in whether they respond with creativity to a work situation that restricts their autonomy and reduces the experience of self-determination and in how strongly their creativity benefits from high job autonomy. Third, the article further develops the theory of action versus state orientation (Kuhl, 1994b). Despite a large body of research on individual differences in action-state orientation in the psychological sciences, the construct's explanatory potential for organizational behavior in general and for creativity in particular has rarely been explored (for exceptions see: Diefendorff, Richard & Gosserand, 2006; Van Dijke, De Cremer, Brebels & Van Quaquebeke, 2015; Wanberg, Zhu & Van Hooft, 2010). Moreover, past research has contrasted the two ends of the action-state orientation continuum and focused on the benefits of an action orientation. We move beyond this dichotomy by focusing on people who sometimes endorse action and sometimes state orientation and thus fall in the mid-range of the bi-ploar action-state orientation continuum.

THEORY DEVELOPMENT AND HYPOTHESES

We base our study on an interactionist perspective that focuses on how creativity in organizations arises from interactions between personal and situational factors (e.g., Shalley et al., 2004; Tett & Burnett, 2003). An interactionist perspective stresses that personal and situational factors need to be accounted for simultaneously because their influence unfolds in an interdependent manner (Shoda, Cervone & Downey, 2007). To explain variations in individual creativity, it is therefore insufficient to isolate personal and situational factors and their unique influence on creativity. Research also needs to examine interactions between both factors and

take into account how people respond differently to the situation they are embedded in (van Knippenberg & Hirst, 2020; Zhou & Hoever, 2014).

The literature on job autonomy and creativity exemplifies that a focus on situational factors alone paints an incomplete picture. Theories of organizational behavior point to job autonomy as one of the most important situational antecedents of creativity that simulates employee motivation (Amabile & Pratt, 2016; Gagné & Deci, 2005). While several studies support this assumption (e.g., Liu, Chen & Yao, 2011) and meta-analytic evidence indicates that the overall relationship between job autonomy and creativity is positive, results vary widely across studies and, in particular, unpublished studies often fail to find significant relationships (Liu, Jiang, Shalley, Keem & Zhou, 2016). Our interactionist perspective suggests that this pattern of findings may be due to a one-sided focus on situational factors and a neglect of personal factors. Specifically, varying levels of job autonomy may not exert a mechanistic positive or negative effect on creativity but constitute different contexts in which human agency—as the primary cause of creativity—takes place. Depending on whether the context provides high or low job autonomy, creativity may require different agentic processes on the side of the person. While a context of high job autonomy appears to in general facilitate creativity, creativity in a context of low job autonomy may be the result of a specific process that only some people frequently display. To specify this process and to identify the people who display it, we turn to the theory of action versus state orientation.

The Theory of Action versus State Orientation

The theory of action versus state orientation builds on the work of early 20th century psychologist Narziss Ach and examines the volitional processes involved in goal striving (Ach, 1910; Kuhl, 1994b). The theory was developed in the context of research on learned helplessness

to explain findings that learned helplessness, which surfaces after exposure to an uncontrollable situation, is not due to a lack of motivation but due to the inability to initiate intended actions (Kuhl, 1981). At the core of the theory is the distinction between competing volitional processes that give rise to an action or a state orientation. A state orientation is the outcome of volitional processes that inhibit behavioral execution and focus attention on information that conflicts with a person's will and on intentions for future actions that cannot be immediately enacted (Koole, Kuhl, Jostmann & Vohs, 2005). An action orientation is the outcome of volitional processes that terminate state-oriented processing to initiate action and guide behavior toward goals (Kazen, Kaschel & Kuhl, 2008). In other words, an action orientation can be characterized as a strong and efficient top-down influence of a person's will on attention and behavior. For a state orientation, this influence is temporarily reduced so that bottom-up processing of information that conflicts with the person's will is facilitated.

The competing volitional processes that give rise to an action or a state orientation are necessary for goal-striving and coexist in any one person. This coexistence can be viewed as a paradox because it refers to "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith & Lewis, 2011). However, people also differ in the relative strength of competing volitional processes and are identified as either action- or state-oriented depending on which response they typically display when faced by a situation that conflicts with their will.[1] Action-oriented individuals usually respond by filtering out information that conflicts with their will to focus attention on goal pursuit. For instance, Koole and Jostmann (2004) showed that action-oriented participants shifted attention away from negative stimuli across multiple experimental paradigms. By contrast, state-oriented people respond by intensively elaborating on information that conflicts with their will such as failures and threats (Kuhl & Baumann, 2000).

A large body of research has examined the psychological, behavioral, and neurophysiological differences between action- and state-oriented participants that become observable when unwanted situations are encountered (e.g., Gröpel, Baumeister & Beckmann, 2014; Koole, Jostmann & Baumann, 2012; Wolff et al., 2016). For instance, after negative emotions were induced, state-oriented participants found it difficult to discriminate self-chosen goals from external directives and displayed impaired intuitive judgments (Baumann & Kuhl, 2002, 2003). Under stressful and demanding conditions, studies in experimental as well as field settings found superior task performance of action-oriented participants (Diefendorff et al., 2006; Jostmann & Gieselmann, 2014). Under stress-free and supportive conditions, these differences usually disappear or are even reversed such that state-oriented participants show higher task performance (e.g., Chatterjee, Baumann & Osborne, 2013).

Although some people are clearly either action- or state-oriented, most people report that they do not consistently report one type of response. In empirical terms, they do not lean toward either end of the bi-polar action-state orientation continuum but fall in the mid-range. In the following, we develop the argument that people who fall in the mid-range of action-state orientation respond with creativity to situations that conflict with their will. Figure 1 provides an overview of the conceptual model we develop below.

Insert Figure 1 about here

Action-State Orientation and Creativity

To display creativity in response to an unwanted situation, we argue that neither a strong action nor a strong state orientation is the optimal prerequisite because a creative response

requires the integration of competing volitional processes. One the one hand, a person needs to detect, store, and process information that conflicts with the person's will such as incompatible expectations of relevant others (Kazén, Kuhl & Quirin, 2015; Koole et al., 2005; Roskes, De Dreu & Nijstad, 2012). On the other hand, creativity requires the top-down influence of a person's goals, knowledge, and experience as the 'raw material' from which new ideas are formed (Baumann & Kuhl, 2002; Marguc, Forster & Van Kleef, 2011; Mednick, 1962). The integration of these competing processes may enable the development of new ideas that draw from both sources and achieve a synthesis between a person's will and the constraints imposed by the social context (Bledow, Frese, Anderson, Erez & Farr, 2009). We argue that employees who do not strongly lean toward either action or state orientation most frequently achieve this creative synthesis. Across different situations, they endorse both action and state orientation and thus display flexibility and balance with respect to the requisite volitional processes (Lievens, Lang, De Fruyt, Corstjens, Vandevijver & Bledow, 2018). They sufficiently engage in bottom-up processing of information that conflicts with their will and can shift to the top-down application of goal-relevant knowledge to execute their will. We argue that the combination of these factors facilitates a creative response to unwanted situations.

We thus expect employees who consistently display either an action or a state orientation to be overall less creative than employees who do not lean toward one end of the action-state orientation continuum. A state orientation will be accompanied by lower creativity because a narrow focus on unwanted information prevents people from forming new and unusual associations (Biebrich & Kuhl, 2002; Förster & Higgins, 2005; Friedman & Förster, 2010). A state orientation involves an increased susceptibility to social influence (Baumann & Kuhl, 2003), which facilitates other-directed behavior rather than the generation of ideas that deviate

from what is given in the context (Koole et al., 2005). Less creativity will also result when employees display an action orientation and tend to apply existing knowledge and routines to strive toward goals instead of forming new associations when encountering situations that conflict with their will. An action orientation allows a person to filter out information that is irrelevant for goal pursuit and to strive toward goals in a flexible and effort-less manner (e.g., Buschman & Miller, 2007; Koole & Jostmann, 2004). However, when employees readily filter out information that appears irrelevant for their goals and apply existing knowledge to achieve goals, the generation of creative solutions is suppressed (Carson, Peterson & Higgins, 2003; Wieth & Zacks, 2011). In sum, we thus anticipate a curvilinear relationship between action-state orientation and creativity such that creativity is highest for employees who fall in the mid-range of action-state orientation.

Hypothesis 1: There is a curvilinear relationship between action-state orientation and creativity that follows an inverted U-shape.

The Moderating Role of Job Autonomy

Based on our interactionist perspective, we next qualify our line of argument and posit that the proposed inverted-U-shaped relationship between action-state orientation and creativity is strongest under low job autonomy and disappears under high job autonomy. When job autonomy is low, social constraints have a strong influence on how employees perform their work tasks and limit the extent to which goal-striving is self-determined (Amabile, Conti, Coon, Lazenby & et al., 1996; Dong, Liao, Chuang, Zhou & Campbell, 2015). Employees will therefore frequently encouter situations that conflict with their will. As a consequence, employees are usually less motivated to be creative (Liu et al., 2016; Wu, Parker & De Jong, 2014). However, these motivational consequences of low job autonomy for creativity may be

offset when employees respond by integrating a focus on constraints with the search for creative solutions.

In an attempt to deal with the constraints that are imposed by a context of low job autonomy and reduce personal freedom, employees who integrate the volitional processes related to action and state orientation will instead respond by generating new ideas that are useful in this context. Specifically, when they cannot act in a way that is consistent with their will, they activate their creativity so that new ideas can emerge that satisfy their own will as well as the constraints they encounter. This synthesis is paramount in a context of low job autonomy because new ideas will only be useful to the extent that they consider the constraints that are imposed by others (Acar et al., 2019). Creative ideas that result from this synthesis serve one's own goals as well as the goals of relevant others and enable the person to constructively deal with a context of low job autonomy. By contrast, we can expect low creativity under low job autonomy for employees who strongly lean toward either action or state orientation. For state-oriented employees, a typical response is to pay close attention to constraints and to conform to the requirements imposed by others (Baumann & Kuhl, 2003). A typical response of action-oriented employees is to strive toward goals while paying little attention to goals of others that are in conflict with their own will (Koole et al., 2005). Neither of these tendencies support the development of new ideas that are useful in the context of low autonomy.

Achieving a creative synthesis between one's own will and social constraints is less important when job autonomy is high. In such a context, the tendency of people in the mid-range of action-state orientation to integrate the outlined volitional processes should therefore matter less for creativity. Under high job autonomy, the context supports creativity by empowering employees and stimulating self-determined goal-striving (Liu et al., 2016; Oldham & Cummings,

1996). Creativity is then the expression of employees' free will rather than a response to a constrained situation (Gagné & Deci, 2005; Greguras & Diefendorff, 2009). Under high job autonomy, processing of information about the context that conflicts with a person's will is therefore relatively less important for the generation of new and useful ideas than the top-down influence of a person's will. A context of high job autonomy should therefore be particularly supportive for the creativity of action-oriented employees. As they do not need to pay much attention to social constraints, they will be motivated and capable to use their creativity and strive toward goals in a self-determined manner (Baumann & Kuhl, 2002). We thus predict that the curvilinear relationship between action-state orientation and creativity is moderated by job autonomy.

> *Hypothesis 2*: Job autonomy moderates the curvilinear relationship between action-state orientation and creativity such that the inverted-U-shaped relationship is strongest under low job autonomy and disappears under high job autonomy.

The Mediating Role of Self-Determination

Lastly, we specify our conceptual model and examine how low job autonomy as a situational factor evokes the creativity of some employees. Specifically, we argue that low job autonomy influences the relationship between action-state orientation and creativity directly and through an additional, indirect pathway. The direct moderating effect accounts for the fact that action-state orientation refers to responses people initiate spontaneously on a sub-cognitive level (Koole, 2009). Research has found that the affective reaction to an unwanted situation is sufficient to activate individual differences in action-state orientation (e.g., Baumann & Kuhl, 2002; Koole & Jostmann, 2004). People who display and integrate the competing processes underlying action and state orientation should thus spontaneously respond with creativity when

they face a job with low autonomy. In addition, low job autonomy will also influence a person's subjective experience and can thereby exert an indirect effect on the relationship between action-state orientation and creativity.

A context with low autonomy will lead to the experience of reduced self-determination because the social context regulates behavior and limits the extent to which people can influence goal-striving (Gagné & Deci, 2005; Ryan, Kuhl & Deci, 1997). The experience of reduced self-determination is an explicit cognitive representation of the conflict between the constraints imposed by the social context and a person's will. As the experience of reduced self-determination is adverse, we expect employees who fall in the mid-range of action-state orientation to activate their creativity instead of displaying either an action or a state-oriented response. They will search for creative solutions that take into account the constraints of their situation in an attempt to respond to the experience of reduced self-determination. We thus hypothesize that self-determination partially mediates the influence of job autonomy on the relationship between action-state orientation and creativity.

> *Hypothesis 3*: Self-determination partially mediates the moderating effect of job autonomy on the curvilinear relationship between action-state orientation and creativity. Low job autonomy reduces self-determination and thereby amplifies the inverted-U-shaped relationship between action-state orientation and creativity.

Overview of Studies

We tested our theorizing in three studies. Study 1 examines the internal validity of the proposed link between action-state orientation and creativity in a controlled laboratory setting. Study 2 examines the relationship between action-state orientation and employees' self-reported creativity over the course of one working week and the presumed moderating effect of job

autonomy. Study 3 attempts to replicate and extend these findings using managerial ratings of creativity and examines self-determination as a partial mediator of the moderating effect of job autonomy.

STUDY 1

To examine the internal validity of our theorizing, we used a creativity task in a laboratory setting. The creativity task asked participants to generate as many ideas as possible in a limited period of time about potential uses of a series of everyday objects that were sequentially displayed. The objects served as visual constraints participants had to take into account when generating new ideas from their knowledge repertoire. The laboratory setting thus created a constrained situation, in which participants' behavior was regulated by the experimenter. As constraints are the norm in laboratory settings and do not per se conflict with participants' will, we used an experimental manipulation and induced a focus on an unwanted situation. We randomly assigned participants to an experimental or a control condition. Participants in the experimental condition recollected a situation that conflicted with their will to activate the proposed coping mechanism, while participants in the control group recollected a neutral or a positive situation. We expected participants who fall in the mid-range action-state orientation to show high creativity after the experimental manipulation.

Method

Participants and Measures. The sample consisted of 148 students who took part in the experiment for course credit (75% women, age: $M = 22$ years). We used 12 items of the action-control scales to assess the disengagement-preoccupation dimension of action-state orientation ($\alpha = .71$, $M = .40$, $SD = .22$). To operationalize the relative strength of a person's action versus state orientation at an experiential level, this instrument presents a sample of concrete situations that

conflict with a person's will. For each situation, the instrument asks respondents to make a choice between an action- and a state-oriented response. An example is: When several things go wrong on the same day: a) I don't know how to deal with it (state orientation). b) I just keep on going as though nothing had happened (action orientation). State-oriented responses are coded with 0, action-oriented responses are coded with 1. Respondents display a low value in action-state orientation when they select exclusively or primarily state-oriented responses (Kuhl, 1994a). The more frequently participants choose an action- over a state-oriented response, the higher is their score in action-state orientation (after averaging the choices across scenarios scores range from 0 to 1). Participants who endorse action- and state-oriented responses with the same frequency have a value of 0.5 and thus do not lean toward one end of the action-state orientation continuum. For additional analyses, we also measured the initiative-hesitation dimension of action-state orientation ($\alpha = .70$, $M = .54$, $SD = .25$). The correlation between the disengagement-preoccupation and the initiative-hesitation dimensions was $r = .12$.

Experimental manipulation. We randomly assigned participants to an experimental or a control condition. We split the control condition in two subgroups as we used two different control conditions. To have equal group sizes, we also split the experimental condition in two groups and administered the same manipulation in both groups. This allowed us to examine if the effect of action-state orientation that was expected in the experimental condition replicates across two independent subgroups. In the experimental condition, participants focused on the memory of an unwanted situation that elicited negative emotions; in the control condition participants focused either on the memory of a positive situation or neutral situation. For the experimental manipulation, participants were asked to write a short essay about a situation that made them feel afraid, distressed, or nervous and to describe the situation and their feelings in detail (De Dreu,

Baas & Nijstad, 2008). They were asked to underline those parts of the text that described the causes of their feelings and to remain focused on thinking about the situation. For the positive control group participants were asked to focus on a situation that made them feel happy, inspired, or enthusiastic. In the neutral control group, participants wrote down a detailed list of all activities they had done the preceding day (Fong, 2006). As a manipulation check, participants indicated on two items how positive and how negative they felt after recollecting the situation (1 = *not at all*, 5 = *extremely*). After time lags of 10 and 20 minutes, participants again indicated how positive and how negative they felt using the same two items.

Creativity. To measure creativity, we used the creative uses task, which has been validated in experimental and field studies (e.g., De Dreu et al., 2008; Tadmor, Galinsky & Maddux, 2012). After the experimental manipulation, participants were presented with a picture of one of three objects (brick, piece of paper, rope) and were asked to brainstorm as many alternative uses for the object as possible within three minutes (Guilford, 1967). After time lags of 10 and 20 minutes, participants brainstormed about possible uses for the second and third object for explorative analyses on the duration of the hypothesized effect. The sequence of the three objects was counterbalanced and randomly assigned to participants.

Three independent raters evaluated participants' responses on the creativity tests regarding three facets of creativity: idea fluency, originality, and cognitive flexibility. For idea fluency, the raters counted the number of unique ideas participants had generated (M = 10.22, SD = 3.46); for originality, they used a 5-point rating scale (M = 2.81, SD = 0.86). Cognitive flexibility was measured by assigning each response to one of seven content categories (e.g. tool, weapon, decoration for the object rope) and by counting the number of content categories participants used for each item (M = 3.35, SD = 0.80). The more content categories a person

used, the higher the person's cognitive flexibility (De Dreu et al., 2008). To derive a composite measure of creativity, we standardized and averaged the three measures of idea fluency, originality, and cognitive flexibility and added a constant so that creativity scores ranged from 0 to 3.97 (M = 1.90, SD = 0.80). The reliability of the average between raters was above .73 for all measures of creativity as indicated by ICC (2, k) using an absolute agreement definition of the Interclass Correlation Coefficient.

Results

Creativity. There was a significant inverted-U-shaped relationship between action-state orientation and the composite measure of creativity across all groups (p = .007, R^2 = .06). We next examined the three facets of creativity (i.e. creative fluency, originality, and cognitive flexibility) separately. The inverted-U-shaped relationship was significant for each of the three facets (creative fluency: p < .001, R^2 = .12; originality: p = .025, R^2 = .07, cognitive flexibility: p = .016, R^2 = .10). Participants in the mid-range of the action-state orientation continuum thus generated more ideas, ideas that were more original, and displayed greater cognitive flexibility. Additional analyses showed that the initiative-hesitation dimension did not show the same pattern of results as the disengagement-preoccupation dimension.

Experimental manipulation. Participants in the experimental condition reported higher negative emotions (M = 2.42, SD = .82) immediately after the experimental manipulation than participants in the control condition (M = 1.90, SD = .84; *Mean difference* = .52, t[145] = -3.75, p < .001, *Cohen's d* = .63). Moreover, participants in the experimental condition displayed lower positive emotions (M = 3.07, SD = .77) as compared to participants in the control condition (M = 3.67, SD = .91; *Mean difference* = .60, t[145] = 4.35, p < .001, *Cohen's d* = .71). Ten minutes after the experimental manipulation, there were no longer significant differences between the

experimental and the control condition in the level of positive and negative emotions participants reported.

There were no significant mean differences in creativity between the experimental (M = 1.69, SD = .78) and the control condition (M = 1.98, SD = .91; *Mean difference* = .29, F *[3,144]* = .73, p = .54, *Cohen's d* = .34). When we examined the relationship between action-state orientation and creativity separately for the experimental and the control condition, there was a significant inverted-U-shaped relationship in the experimental condition only (β_{linear} = .23, $\beta_{quadratic}$ = -.38, p = .002, R^2 = .12). In the control condition, the coefficient for the curvilinear relationship had a negative sign but was not significant (p = .742). It needs to be noted that these results do not imply that the relationship between action-state orientation and creativity was statistically different between the two conditions. Figure 2 displays the inverted-U-shaped relationship for the experimental and the control condition. Further analyses on the subgroups in the experimental and the control condition showed that the inverted-U-shaped relationship was significant for each of the two subgroups who had received the same experimental manipulation. For the two subgroups in the control condition, the curvilinear relationship was not significant. These results are consistent with the theoretical assumption that individual differences in action-state orientation are a latent tendency that becomes observable in response to an unwanted situation.

Insert Figure 2 about here

We next examined how enduring the effect of the experimental manipulation was by analyzing the scores of participants in the experimental groups on the second creativity test (10

min after reflecting on the unwanted situation) and on the third creativity test (20 min after reflecting on the unwanted situation). In the experimental condition, the inverted-U-shaped relationship between action-state orientation and creativity was also significant for the second (β_{linear} = .31, $\beta_{quadratic}$ = -.39, p = .001, R^2 = .14) and the third creativity test (β_{linear} = .29, $\beta_{quadratic}$ = -.44, p < .001, R^2 = .19) as well as for an overall score that combined the three creativity tests (β_{linear} = .32, $\beta_{quadratic}$ = -.46, p < .001, R^2 = .19). Moreover, there were no significant differences in creativity across the three creativity tests. The heightened creativity of participants in the mid-range of the action-state orientation continuum thus lasted for a period of at least 20 minutes after the experimental manipulation and persisted after negative emotions had dissipated.

Discussion

Study 1 provided evidence for the internal validity of our assumption that participants who do not strongly lean toward either action or state orientation respond with creativity to unwanted situations and generate ideas that take into account social constraints. The effect of action-state orientation on creativity was significant only after participants had recollected an unwanted situation that elicited negative emotions. Studies 2 and 3 examine whether the proposed inverted-U-shaped relationship between action-state orientation and creativity can be observed in a work setting.

STUDY 2

Method

Participants and procedure. We contacted full-time employees in professional jobs in Germany through private networks and asked if they were willing to participate in an experience sampling study. Of the 140 people we contacted, we obtained usable data sets of 102 participants. Of the 27.1% of people we contacted but who did not provide usable data, 24

persons declined to participate, and 14 participants responded to less than three daily surveys. Participants first responded to a survey that assessed action-state orientation, job autonomy, and demographic characteristics. In the following week, participants responded to short surveys every evening at the end of their working day over the course of one week to assess the level of creativity they had displayed each day and their daily mood state. Participants were on average 34 years old (*SD* = 9.52), 56 % were men, and 75% held a university degree. Participants' most frequent professions were business, psychology, and engineering.

Measures. *Creativity* was measured by asking participants at the end of each day over the period of one working week to what extent they had generated new and useful ideas during the day. By asking participants repeatedly if they displayed creativity in a specific time frame and context, we obtained a measure that is reliable and less prone to biases than self-report measures that tap into participants' general self-concept (Kahneman, Krueger, Schkade, Schwarz & Stone, 2004). For the measure, we used five items based on Tierney, Farmer, and Graen (1999) that have been used by previous research to capture daily idea generation and creative problem solving (Bledow et al., 2013; Ohly & Fritz, 2010). An example item is: *"*Today, I generated novel, but operable work-related ideas". Participants provided responses on a 5-point Likert scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Cronbach's α ranged between .77 and .87 across the five days.

To measure *action-state orientation* (Kuhl & Beckmann, 1994), we used the short scale proposed by Diefendorff et al. (2000) that consists of a selection of eight items of the original twelve item scale by Kuhl (1994a). Cronbach's *α* for the eight-item scale was .68. We also measured the initiative-hesitation dimension of action versus state orientation with eight items as a control variable (*α* = .70, *M* =.54, *SD* = .25).

Job Autonomy was measured with six items of the Work Design Questionnaire (Morgeson & Humphrey, 2006), two items were used for each facet autonomy in work scheduling, decision making, and work methods. An example is: "The job gives me considerable opportunity for independence and freedom in how I do the work". Items were answered on a 5-point Likert scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Cronbach's α was .77.

As control variables, we measured positive and negative mood, educational level, and openness to experience. Educational level was included because it may explain shared variance between job autonomy and creativity. Educational level was coded 1 = *primary school*, 2 = *secondary school*, 3 = *some postsecondary education*, 4 = *university degree*. Openness to experience was included as the individual difference construct most closely related to creativity to demonstrate the distinctiveness of the proposed effects of action-state orientation (George & Zhou, 2001). Openness to experience was assessed with the two items of the short version of the Big Five Inventory (Rammstedt & John, 2007). Items were answered on a 5-point Likert scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Positive and negative mood were included as control variables to reduce problems of common method bias and to ensure that the measure of self-reported creativity did not capture mood differences. We used items of the PANAS scales to measure positive mood (six items, α = .81-.90) and negative mood (seven items, α = .76-.83) each day (Watson, Clark & Tellegen, 1988).

Insert Tables 1 and 2 about here

Results

Table 1 shows means, standard deviations, and correlation of all variables with the daily measure of creativity aggregated across work days. Table 2 displays a set of random coefficient regression models with creativity as a repeatedly measured outcome variable that varies at the within- and between-person level. As the focal predictors actions-state orientation and job autonomy vary only between persons, they predict only between-person variance in the level of creativity participants displayed across work days. Model 1 includes the control variables, while Model 2 includes the linear and Model 3 the curvilinear term of action-state orientation. In support of Hypothesis 1, the curvilinear effect of action-state orientation on creativity in Model 3 was negative and significant (p = .044, ΔR^2 = .03). Participants in the mid-range of action-state orientation displayed overall the highest level of creativity across the five working days.

Insert Figure 3 about here

In support of Hypothesis 2, job autonomy moderated the curvilinear relationship between action-state orientation and creativity in Model 4 (p = .003, ΔR^2 = .05). Figure 3 illustrates this moderating effect using a response surface plot (Edwards & Parry, 1993). In line with Hypothesis 2, the inverted-U-shaped relationship was strongest under low autonomy (i.e. at the front of Figure 3). This relationship became weaker with increasing job autonomy and disappeared under high job autonomy (moving along the job autonomy axis from the front to the back of Figure 3).

We used the procedures developed by Hayes (2017) to estimate the size and significance of the quadratic effect at different values of job autonomy. The quadratic effect was -12.35 (p < .001) at a value of 1.5 in job autonomy, at which participants were between disagreeing and

strongly disagreeing with having job autonomy. At a value of 3.67 in job autonomy (i.e. the mean in the sample), at which participants reported some agreement with having job autonomy, the quadratic effect was -2.32 (p = .009). At a value of 4.29 (i.e. one *SD* above the mean), at which people more strongly agreed that they have job autonomy, the quadratic effect was 0.45 and non-significant (p = .718). At a value of 5.0 in job autonomy (i.e. the highest value in the sample), at which people strongly agreed that they have job autonomy across different aspects of their jobs, the quadratic effect was positive at 3.71 and non-significant (p = .120). In sum, these results show that the inverted-U-shaped relationship between action-state orientation and creativity is limited to contexts with low or moderate job autonomy. Under high job autonomy, the regression models predict the highest creativity for action-oriented participants. These results remained unaffected when we removed the control variables.

Discussion

Study 2 demonstrated an inverted-U-shaped relationship between action-state orientation and creativity in a work setting. This relationship was moderated by job autonomy. Participants who fall in the mid-range of action-state orientation reported the highest creativity over the course of one working week. The inverted-U-shaped relationship was strongest under low job autonomy and disappeared under high job autonomy.

A notable limitation of Study 2 is the use of a self-report measure of creativity. Although common method bias cannot provide a parsimonious alternative explanation due to the interactive and nonlinear pattern of results (Podsakoff, MacKenzie, Lee & Podsakoff, 2003), the differences in creativity could reside primarily in participants' subjective perception. Specifically, participants in the mid-range of action-state orientation may perceive that they were more creative under low job autonomy but this assessment may not be shared by observers. The

next study addresses this limitation by using managerial assessments of creativity. Moreover, it examines whether the moderating effect of job autonomy is mediated by perceived self-determination.

STUDY 3

Method

Participants. We recruited supervisors and their subordinates from different organizations and professions in Belgium via telephone and e-mail invitations. The final sample consisted of 105 supervisors and 312 employees. The response rate was 52 percent. About a third of the recruited sample consisted of dyads with one supervisor and one employee; the remaining sample consisted of supervisors with on average 4 employees who participated in the study. Employees' age ranged from 18 to 65 years (M = 39, SD = 10.53), 57 percent were women, 47 had some form of postsecondary education, and 23 percent held a university degree. Supervisors' age ranged from 23 to 65 years (M = 45, SD = 10.53) and 37 percent were women. Supervisors worked together with subordinates for on average 6 years (SD = 6.12, *Skewness* = 1.82).

Procedures. Supervisors and employees received paper-and-pencil questionnaires. For each participating employee, the supervisors filled in a paper-and-pencil questionnaire. To ensure confidentiality and to match data of supervisors and employee, each supervisor generated codes consisting of alphabetic and numerical characters. Employees could directly send their questionnaire back to the research team.

Measures. Supervisors rated employees' *creativity* with six items from Madjar, Greenberg and Chen (2011) that distinguish between incremental creativity (3 items, α = .85) and radical creativity (3 items, α = .88). While the content of items for radical creativity is very similar to other measures of workplace creativity and the measure we used in Study 2,

incremental creativity captures a different construct. It explicitly refers to ideas that build on existing ideas and make only small adaptations (Kirton, 1976). An example item for radical creativity is "Is a good source of highly creative ideas" and an example item for incremental creativity is "Is very good at adapting already existing ideas". Items were answered on a 7-point Likert scale, ranging from 1 = *strongly disagree* to 7 = *strongly agree*.

Employees answered 12 items of the *disengagement-preoccupation* dimension of action versus state orientation (α = .73, referred to as action-state orientation) and 12 items of the *initiative-hesitation* dimension (α = .71) (Kuhl, 1994a). For job autonomy, the same items as in Study 2 were used (α = .88). For perceived self-determination, we included a four-item measure by Kuhl and Fuhrmann (1998) and used a 5-point Likert scale, ranging from 1 = *strongly disagree* to 5= *strongly agree*. An example item is: "In most work situations, I feel at peace with myself." Cronbach's alpha for self-determination was .70. As in Study 2, we included educational level and openness to experience as control variables. In contrast to Study 2, we did not include mood as a control variable because we used managerial ratings of creativity rather than a self-report measure. Descriptive statistics and correlations are displayed in Table 3.

Insert Tables 3 and 4 about here

Results

We first tested Hypotheses 1 through 3 for incremental creativity as the dependent variable. Table 4 summarizes the results of multiple regression analyses. In Model 2, the curvilinear relationship between action-state orientation and incremental creativity (p = .092) was significant at p <.10 providing limited support for Hypothesis 1. In Model 3, we added the

moderating effect of job autonomy on the linear and quadratic term of the relationship between action-state orientation and incremental creativity. The moderating effect of job autonomy on the quadratic term (p = .057) was significant at p <.10 providing limited support for Hypothesis 2. Models 4 and 5 show that self-determination did not moderate the curvilinear relationship between action-state orientation and incremental creativity failing to support Hypothesis 3.

Insert Table 5 about here

We next tested our hypotheses with managerial assessments of radical creativity as outcome variable (see Table 5). Model 1 shows that educational level and openness to experience predicted radical creativity. In Model 2, the quadratic term of action-state orientation on radical creativity was significant and had a negative sign (p = .026). In support of Hypothesis 1, participants in the mid-range of the action-state orientation continuum were assessed as most radically creative by their managers. In line with Hypotheses 2, job autonomy moderated the curvilinear relationship between action-state orientation and radical creativity (p < .001). Figure 4 illustrates this moderating effect using a response surface plot.

Insert Figure 4 about here

We used the procedures developed by Hayes (2017) to test the significance of simple slopes of the response surface plot. We examined how the curvilinear relationship between action-state orientation and radical creativity varied as a function of job autonomy (moving from the front to the back of Figure 4). The inverted-U shape, that is the negative quadratic effect, was

strongest at the low end of job autonomy (front side of Figure 4). At a value of 1.75 in job autonomy, which indicates disagreement with having job autonomy, the negative quadratic effect was -14.13 ($p < .001$). This effect became weaker with increasing job autonomy and was non-significant for values of job autonomy above 3.79 when people increasingly agree with having job autonomy. At the high end of job autonomy (i.e. a value of 5.00, which indicates strong agreement with having job autonomy), the quadratic effect of the relationship between action-state orientation and radical creativity was positive but significant only at a level of $p < .10$ (quadratic effect: 1.35; $p = .066$). These analyses support Hypothesis 2 by showing that the inverted-U-shaped relationship between action-state orientation and radical creativity was strongest when job autonomy was low and disappeared when job autonomy was high. Under high job autonomy, the regression models predict the highest creativity for action-oriented participants. Taken together, these results replicate the findings of Study 2 for managerial ratings of radical creativity as the outcome variable.

According to Hypothesis 3, self-determination partially mediates the effect of job autonomy on the curvilinear relationship between action-state orientation and creativity. As implied by the hypothesis, job autonomy was related to self-determination (Table 3: $r = .40$; $p < .001$). Moreover, self-determination moderated the curvilinear relationship between action-state orientation and radical creativity (see Model 4 in Table 5: $p < .001$; $\Delta R^2 = .04$). For low self-determination (-1*SD* below the mean), there was a significant inverted-U-shaped relationship between action-state orientation and radical creativity (quadratic effect: -5.91; $p < .001$). At the mean in self-determination, the quadratic effect was -2.43 ($p = .012$). For high self-determination (+1*SD* above the mean), the quadratic effect was positive and non-significant (1.04, $p = .440$).

The moderating effect of self-determination thus followed the same pattern as the moderating effect of job autonomy.

To directly test Hypothesis 3, we examined the indirect effect of job autonomy via self-determination on the curvilinear relationship between action-state orientation and creativity. Specifically, we used random slope analysis in Mplus (Muthen & Muthen, 2004) and modelled the curvilinear slope of action-state orientation on creativity as the outcome variable. We predicted this slope with self-determination and self-determination with job autonomy. The indirect effect is defined as the product of the path from job autonomy to self-determination and the path from self-determination to the curvilinear slope. In support of Hypothesis 3, this indirect effect was significant (p = .004). A one-unit decrease in job autonomy (e.g. moving from *disagreement* to *strong disagreement* regarding one's level of job autonomy) indirectly decreased the curvilinear slope by 1.698 through reduced self-determination. That is, as decreasing levels of job autonomy reduce self-determination, the value of the quadratic effect of action-state orientation on creativity becomes more negative and the inverted-U-shaped relationship thus becomes more pronounced.

In Model 5, we included both the moderating effects of job autonomy and self-determination on the curvilinear relationship between action-state orientation and radical creativity. When both moderators were accounted for simultaneously only the moderating effect of job autonomy remained significant. Self-determination thus had a moderating effect only to the extent that it shared variance with job autonomy. Job autonomy, on the other hand, had a moderating effect on the relationship between action-state orientation and radical creativity even when the moderating effect of self-determination was statistically controlled for. These results

imply that job autonomy as situational factor plays a more important role than the subjective construal of self-determination.

Discussion

Study 3 replicated the results of Study 2 using managerial ratings of creativity. Employees in the mid-range of action-state orientation displayed higher creativity under low job autonomy than employees who are strongly action- or state-oriented. This effect was stronger for the development of highly novel and original ideas ('radical creativity') than for ideas that adapt already existing ideas ('incremental creativity'). The study further showed that the moderating effect of job autonomy on the relationship between action-state orientation and radical creativity could be only partially explained by perceptions of reduced self-determination.

GENERAL DISCUSSION

We theorized that creativity under the constraints of low job autonomy requires the integration of competing processes because new ideas need to satisfy a person's own will as well as the constraints imposed by the social context. Neither a strong action nor a strong state orientation serves this purpose well but the tendency to display and integrate the volitional processes underlying both orientations. In support of the internal validity of our theorizing, we found that participants in the midrange of the action-state orientation continuum displayed high creativity in a constrained laboratory setting after recollecting an unwanted situation. Two field studies demonstrated an inverted-U-shaped relationship between action-state orientation and creativity in work settings using self-reports of creativity and managerial assessments of creativity, respectively. Employees in the mid-range of action-state orientation displayed overall the highest creativity. The inverted-U-shaped relationship was strongest under low job autonomy and disappeared under high job autonomy.

Theoretical Implications

Theories of organizational psychology and a large body of empirical research highlight the important role autonomy plays for creativity (Amabile & Pratt, 2016; Gagné & Deci, 2005; Liu et al., 2016). Our studies do not contradict but qualify this argument: Employees engage in creativity not only because high job autonomy motivates creativity but also because creativity serves as a coping mechanism to constructively deal with low job autonomy. We would like to emphasize that our research is not intended to nor does the data suggest to diminish the value of autonomy for creativity and goal-striving. Our goal is instead to shed light on the capacity that enables people to be creative in situations with low autonomy. While low job autonomy can be caused by factors such as ineffective work design and dysfunctional leadership and may thus often be avoidable (Morgeson & Humphrey, 2006; Schaubroeck, Shen & Chong, 2017), limited autonomy is a given in many jobs due to the interdependent nature of work, economic dependence, and the hierarchical structure of organizations (Halevy, Chou & Galinsky, 2011). Arguably, in most jobs, employees face some situations in which their autonomy is constrained and behavior is influenced by others in a way that conflicts with their will. Understanding how people can be creative in such 'imperfect' situations is thus as important and closer to the reality of most employees as understanding how the ideal work environment for creativity could look like.

Our findings suggest that the integration of bottom-up processing of constraints and the top-down application of goal-relevant knowledge results in radical rather than incremental creativity. While incremental creativity promotes the status quo, radical creativity has the potential to change the status quo (Madjar et al., 2011). Employees who face a context of low job autonomy and integrate a focus on constraints with the search for creative solutions thus generate

new ideas that are aimed at changing the status quo. This finding aligns with the basic idea of this article that creativity serves as a coping mechanism for unwanted situations and adds to a growing literature on the different processes underling incremental and radical creativity (e.g., Gilson & Madjar, 2011; González-Gómez & Richter, 2015). Specifically, our study sheds light on the motivational underpinnings of radical creativity, while factors such as explicit goals and rewards have been found to primarily motivate incremental creativity (Byron & Khazanchi, 2012; Gong, Wu, Song & Zhang, 2017).

We examined creativity in the context of low job autonomy through the lens of individual differences. It needs to be noted, however, that we consider achieving a creative synthesis between one's will and social constraints to be a basic capacity everybody can display. Individual differences in action-state orientation refer to the relative frequency and cross-situational consistency in how people respond to situations that conflict with their will (Kuhl, 1994b). Employees who display flexibility and balance with respect to action and state orientation respond relatively more frequently with creativity than employees leaning strongly toward either action or state orientation (cf. Fleeson, 2001). This leaves open the possibility that employees deviate from their habitual tendency in a given situation and can adjust to situational demands to be creative under low job autonomy (Lievens et al., 2018). For example, employees leaning strongly toward action orientation may sometimes deliberately focus on the constraints that are imposed by others to counter-regulate their intuitive tendency to pay little attention to those constraints.

Our research adopted an interactionist approach and informs the literature on person-situation interactions and creativity (Shalley et al., 2004; van Knippenberg & Hirst, 2020). While we focused on explaining creativity in situations of low autonomy, our theorizing and empirical

findings also have implications for creativity in situations with high autonomy. In both field studies, the highest creativity was displayed by action-oriented employees who worked in jobs with high autonomy. High job autonomy thus amplifies the creativity of action-oriented employees and this was the case for incremental as well as radical creativity. This finding is consistent with Kuhl's (2000) theory, according to which an action orientation is a functional adaptation to an autonomy-supportive context that encourages independent goal-striving, tolerates a variety of behavioral responses, and poses few constraints on self-expression (Kuhl, 2001; Ryan et al., 1997). An action orientation is based on the intuitive regulation of cognitive, affective, and attentional processes that increase the likelihood that goals are achieved (Kazen & Kuhl, 2005; Koole & Jostmann, 2004; Wolff et al., 2016). This includes that people have increased access to their goal-relevant knowledge and a heightened awareness of action opportunities (Baumann & Kuhl, 2002). An action orientation is therefore the ideal prerequisite for creativity when high job autonomy allows for and necessitates self-determination. However, it can backfire in interdependent contexts that reduce self-determination and require the consideration of constraints imposed by others.

Limitations and Future Research Directions

While our studies replicated the expected curvilinear relationship between action-state orientation and creativity across three independent samples, they unpacked the processes underlying this link only to a limited extent. Study 1 showed that recollecting an unwanted situation activated the proposed coping mechanism and that creativity remained amplified after negative emotions had dissipated. Moreover, Study 2 demonstrated that the curvilinear effect of action-state orientation on creativity was statistically independent of the effect of positive and negative mood. Thus, while an initial negative reaction to a situation appears to be necessary to

activate the coping mechanism and amplify creativity, this does not imply a persisting negative mood state. Indeed, persisting negative mood likely indicates that the creative search for solutions has not (yet) been successful (Bledow et al., 2013). We encourage future research to examine the specific events and affective reactions in response to which people display creativity and provide a fine-grained account of the affective dynamics that follow. Ideally such research also uses implicit measures of affect because affective dynamics are only partially captured by self-report measures (Quirin, Kazen & Kuhl, 2009).

Related to the issue of affective dynamics are our findings on perceptions of reduced self-determination (Gagné & Deci, 2005). Although Study 3 supported the prediction that people can respond with creativity to reduced self-determination, we found that low job autonomy had a stronger effect that accounted for the effect of reduced self-determination. This implies that low autonomy as an objective characteristic of jobs matters more for whether people display creativity than the subjective construal of reduced self-determination. People can thus respond with creativity to low job autonomy even if perceptions of self-determination are not reduced.

Important questions our research did not address concern the long-term consequences of creativity under constraints and changes in job autonomy and action-state orientation. In particular, we did not examine whether and when a person's action-state orientation results in changes in job autonomy due to the person's creativity (Frese, Garst & Fay, 2007). Our theorizing suggests that employees who develop ideas that synthesize goals and constraints will most likely change a situation and regain degrees of freedom in a job by being creative, while employees who strongly lean toward action orientation may disengage and ultimately quit jobs with low autonomy. However, a scenario is also conceivable in which a person keeps generating creative solutions but does not manage to implement these solutions and change the situation,

which would likely have negative consequences for the person's well-being and performance (Fernet, Guay & Senécal, 2004). Future research can specify moderators of different developmental trajectories. Moreover, a person's action-state orientation is only moderately stable and may also change as a function of the processes we discussed (Koole et al., 2005).

Our studies are to our knowledge the first that explicitly focus on the mid-range of action-state orientation and consider curvilinear relationships. Future research is needed to examine the antecedents, processes, and consequences related to the coexistence and integration of competing volitional processes within a person. For example, besides individual differences in the relative strength of volitional processes that are captured by the construct of action-state orientation, people may also show different patterns of within-person variability between action- and state-oriented phases over time. Of particular interest are transitions between these phases and the degree to which competing volitional processes occur simultaneously as creativity requires their integration. We thus encourage future research to study within-person variability in action-state orientation and its antecedents and consequences.

Practical Implications

To achieve their goals, organizations need creativity in jobs that grant high autonomy as well as in jobs that constrain employee autonomy. The processes through which new and useful ideas are developed differ between these contexts and so does the ability to be creative. One practical implication that follows from our studies is to increase person-environment fit through selection, placement or job crafting by aligning a job with a person's action-state orientation (Kristof-Brown & Guay, 2011). Our studies suggest that the creativity of strongly action-oriented employees benefits the most from leaving jobs that restrict autonomy in favor of jobs that grant high degrees of freedom. The tendency to display creativity in response to situations that conflict

with goals gives employees in the mid-range of the action-state orientation continuum a competitive advantage in jobs with low autonomy because they are creative when others are not.

To remain creative across different situations, employees encounter within one job, they have to tune their approach with the requirements of the context. Unconstrained creative self-expression may be effective when the context grants high autonomy. The more constraints the social context imposes that conflict with a person's goals, however, the more does creativity demands alternations between a narrow focus on problems and constraints and the broad search for creative solutions (Bledow et al., 2009). This process can also be viewed as balancing the pleasure principle that aims at desired future states with the reality principle that ensures the compatibility of new ideas with the social context (Oettingen, Pak & Schnetter, 2001). Paying close attention to the context may be particularly important for creativity in cultures that emphasize conformity to social norms (Gelfand et al., 2011). Japanese culture, for instance, even has an expression ('kuuki yomenai') for the inability to 'read the air' and perceive what is appropriate in a given social context.

In achieving high creativity across contexts, employees face different challenges depending on their action-state orientation. For employees leaning toward state orientation, a frequent challenge may be to free themselves from the constraining influence of the social context and to imagine unconventional solutions to the problems they encounter. Research suggests that supportive interpersonal work relationships and a climate of participative safety may then support creativity (Chatterjee et al., 2013; Gong, Cheung, Wang & Huang, 2012). To be creative under the constraints of organizations, employees leaning toward action orientation, on the other hand, may frequently need to 'discipline their imagination' (cf. Weick, 1989) by deliberately focusing on constraints and processing negative feedback they receive from others.

For managers, our study suggests that an individualized leadership approach that counterbalances one-sided tendencies of employees is most appropriate for the development of new and useful ideas. For team creativity, it suggests that teams composed of members who differ in their action-state orientation may create synergies by counterbalancing each other's orientations.

Conclusion

The social fabric of organizations can limit individual autonomy and thereby undermine employee creativity. We showed, however, that people can be creative despite low job autonomy by integrating state-oriented processing with the action-oriented search for creative solutions. Employees who fall in the mid-range of action-state orientation most frequently achieve this synthesis. On a more general level, our research highlights the role creativity plays as a coping mechanism for situations that conflict with people's will and increases the awareness of the influence of people's action-state orientation on behavior in organizations.

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FOOTNOTE

[1]The theory of action versus state orientation distinguishes two core aspects and empirical dimensions (Kuhl, 2000): Initiative-hesitation refers to decisively enacting intentions in response to demanding situations versus displaying hesitation; disengagement-preoccupation refers to readily terminating the focus on situations that conflict with a person's will versus remaining focused on such situations. As our research question concerns people's response to situations that conflicts with their will, we focus on disengagement-preoccupation and refer to this empirical dimension as 'action-state orientation'.

Table 1

Means, Standard Deviations, and Correlations between Variables of Study 2

Variable	*M*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Creativity	2.44	.67										
2. Gender [a]	1.59	.50	.09									
3. Age	34.11	9.52	.10	.31**								
4. Educational Level	4.65	.75	.20*	-.13	-.04							
5. Openness to Experience	3.48	.85	.20*	.07	.07	-.11						
6. Positive Mood	3.18	.48	.33**	.06	.19	.05	.10					
7. Negative Mood	1.39	.33	.10	-.13	-.16	.05	.05	-.17				
8. Job Autonomy	3.67	.60	.02	-.05	-.02	.32**	-.09	.04	.00			
9. Action-State Orientation	.47	.26	.07	.02	.11	.01	.01	.27**	-.11	.13		
10. Action-State Orientation[2]	.07	.07	-.18	.11	.12	-.12	.05	-.15	-.07	.07	.17	
11. Initiative-Hesitation	.54	.25	.17	-.09	-.07	.07	.09	.27**	-.20**	.20*	.23*	.04

[a] Gender was coded 1 = *male*, 2 = *female*.

* $p < .05$ ** $p < .01$

Table 2

Multilevel Regression Analysis of Study 2 with Self-Ratings of Creativity as Dependent Variable

	Model 1	Model 2	Model 3	Model 4
Variable	*B (SE)*	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)
Intercept	2.44 (0.06)	2.44 (0.06)	2.44 (0.06)	2.44 (0.06)
Educational Level	0.21 (0.08)*	0.21 (0.09)*	0.19 (0.09)*	0.21 (0.08)*
Openness to Experience	0.17 (0.07)*	0.16 (0.08)*	0.17 (0.07)*	0.17 (0.07)*
Positive Mood	0.09 (0.04)**	0.09 (0.04)*	0.09 (0.04)*	0.09 (0.04)*
Negative Mood	-0.06 (0.05)	-0.05 (0.05)	-0.05 (0.06)	-0.06 (0.06)
Initiative-Hesitation		0.31 (0.26)	0.32 (0.26)	0.35 (0.26)
Action-State Orientation		0.02 (0.26)	0.10 (0.25)	0.02 (0.23)
Action-State Orientation^2			-1.81 (0.89)*	-2.32 (0.76)**
Job Autonomy				-0.30 (0.14)*
Job Autonomy × Action-State Orientation				0.47 (0.37)
Job Autonomy × Action-State Orientation^2				4.59 (1.51)**
Model R^2	.11	.11	.14	.19

* $p < .05$ ** $p < .01$

Table 3

Means, Standard Deviations, and Correlations between Variables of Study 3

Variable	*M*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Radical Creativity	4.92	1.19										
2. Incremental Creativity	4.40	1.39	.71**									
3. Gender	1.57	.50	.02	-.04								
4. Age	38.62	10.53	-.05	-.14*	-.02							
5. Educational Level	2.91	.89	.24***	.09	.03	.01						
6. Openness to Experience	3.34	.85	.13*	.14*	.08	-.05	.01					
7. Job Autonomy	3.65	.78	.16**	.11	-.05	.02	.20***	.06				
8. Self-Determination	3.63	.60	.05	.08	-.03	.13*	.07	.05	.40***			
9. Action-State Orientation	.51	.25	-.02	.03	-.21***	.04	-.04	-.05	.15**	.14*		
10. Action-State Orientation^2	.07	.07	-.11*	-.08	-.08	.13*	-.01	.02	.10	.03	.08	
11. Initiative-Hesitation	.73	.21	.00	.03	.00	.16**	-.05	-.01	.08	.19**	.28***	.01

Note: Gender was coded 1 = *male*, 2 = *female*.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 4

Regression Analysis of Study 3 with Managerial Assessments of Incremental Creativity as Dependent Variable

	Incremental Creativity				
	Model 1	Model 2	Model 3	Model 4	Model 5
Variable	*B (SE)*	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)
Constant	3.32 (0.41)***	3.46 (0.42)***	3.53 (0.41)***	3.49 (0.42)***	3.53 (0.41)***
Educational level	0.11 (0.09)	0.10 (0.09)	0.10 (0.09)	0.11 (0.09)	0.10 (0.09)
Openness to experience	0.23 (0.09)*	0.23 (0.09)*	0.21 (0.09)*	0.21 (0.09)*	0.21 (0.09)*
Job Autonomy	0.12 (0.11)	0.14 (0.11)	-0.02 (0.15)	0.10 (0.11)	-0.03 (0.16)
Self-Determination	0.08 (0.14)	0.08 (0.14)	0.02 (0.14)	-0.08 (0.19)	0.03 (0.20)
Initiative-Hesitation	0.07 (0.40)	0.06 (0.40)	0.18 (0.40)	0.03 (0.40)	0.18 (0.40)
Action-State Orientation	0.19 (0.32)	0.23 (0.32)	0.07 (0.32)	0.18 (0.32)	0.07 (0.32)
Action-State Orientation^2		1.99 (1.71)†	-2.40 (1.16)*	-2.26 (1.17)†	-2.40 (1.81)*
Job Autonomy × Action-State Orientation			0.94 (0.39)*	-	0.93 (0.46)*
Job Autonomy × Action-State Orientation^2			2.77 (1.45)†	-	2.84 (1.81)
Self-Determination × Action-State Orientation				0.77 (0.51)	0.04 (0.60)
Self-Determination × Action-State Orientation^2				2.78 (1.98)	-0.18 (2.46)
Model R^2	.04	.05	.08	.06	.08
F for ΔR^2	2.01†	2.89†	5.08**	2.36†	0.01

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Table 5

Regression Analysis of Study 3 with Managerial Assessments of Radical Creativity as Dependent Variable

	Radical Creativity				
	Model 1	Model 2	Model 3	Model 4	Model 5
Variable	*B (SE)*	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)
Constant	3.54 (0.34)***	3.69 (0.35)***	3.76 (0.34)***	3.54 (0.35)***	3.78 (0.34)***
Educational Level	0.28 (0.08)***	0.28 (0.08)***	0.28 (0.07)***	0.28 (0.08)***	0.28 (0.07)***
Openness to Experience	0.17 (0.08)*	0.17 (0.08)*	0.14 (0.07) †	0.17 (0.08)*	0.14 (0.07) †
Job Autonomy	0.18 (0.09) †	0.20 (0.09)*	-0.08 (0.12)	0.15 (0.09)	-0.03 (0.13)
Self-Determination	-0.04 (.12)	-0.05 (0.12)	-0.11 (.12)	-0.39 (0.15)*	-0.03 (0.13)
Initiative-Hesitation	0.08 (0.34)	0.06 (0.33)	0.15 (0.33)	0.04 (0.33)	0.15 (0.33)
Action-State Orientation	-0.05 (0.27)	-0.01 (0.27)	-0.17 (0.26)	-0.10 (0.26)	-0.19 (0.26)
Action-State Orientation^2		-2.21 (0.98)*	-2.54 (0.95)**	-2.45 (0.96)*	-2.55 (0.95)**
Job Autonomy × Action-State Orientation			0.66 (0.32)*	-	0.75 (0.38)*
Job Autonomy × Action-State Orientation^2			4.47 (1.19)***	-	3.51 (1.48)*
Self-Determination × Action-State Orientation				0.32 (0.42)	-0.31 (0.19)
Self-Determination × Action-State Orientation^2				5.77 (1.62)***	2.40 (2.01)
Model R^2	.08	.10	.16	.14	.17
F for ΔR^2	4.59***	5.14*	11.05***	6.94**	0.98

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$.

Figure 1

Conceptual Model of the Relationship between Action-State Orientation and Creativity

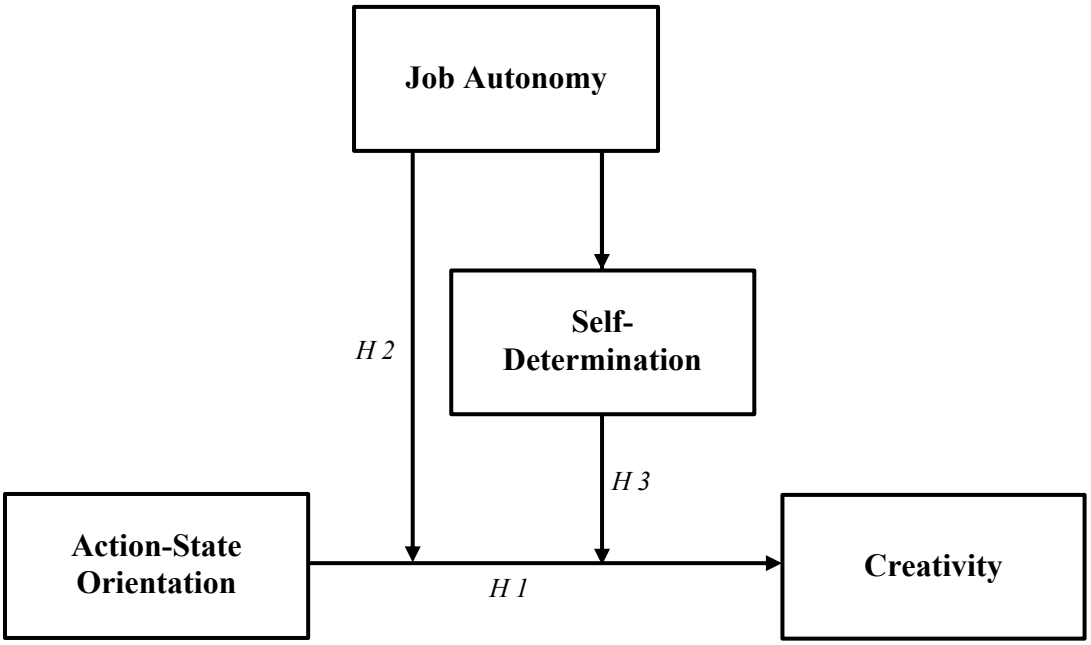

Figure 2

Study 1: Inverted-U-shaped relationship between action-state orientation and creativity

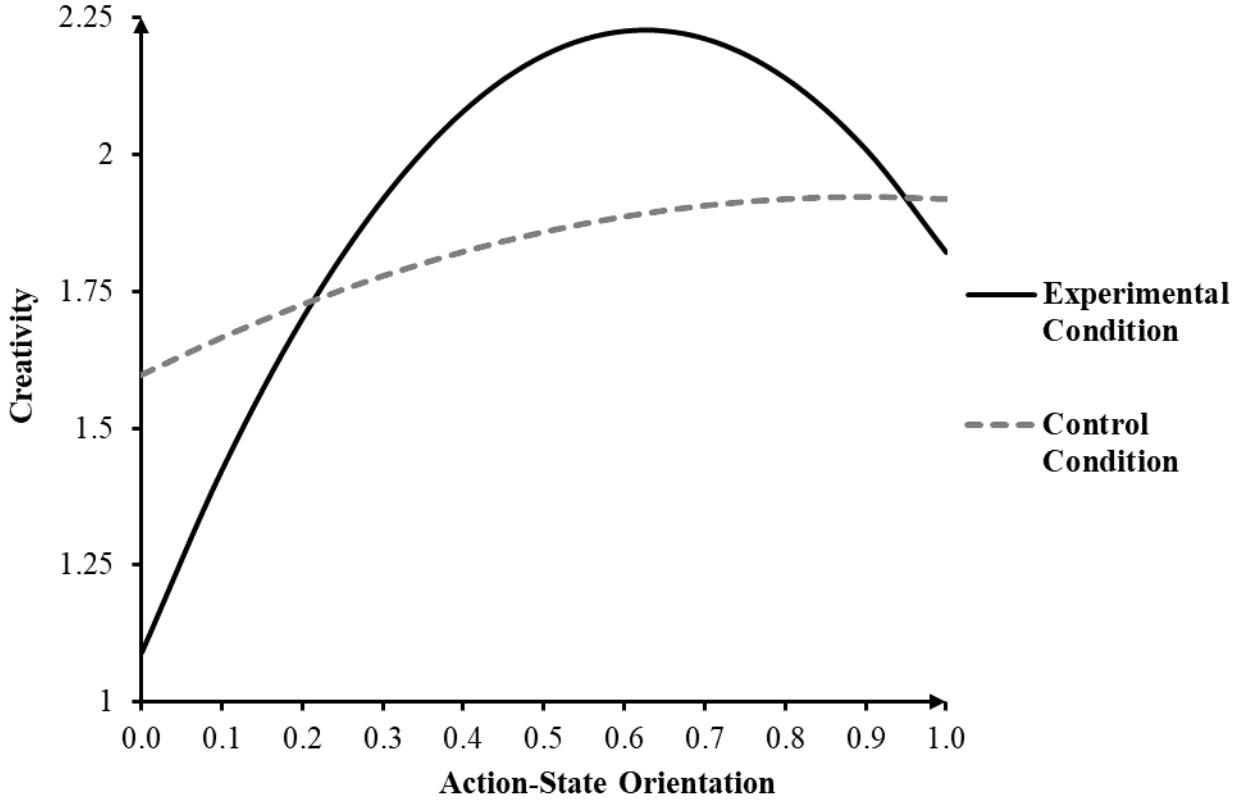

Figure 3

Study 2: Response-surface plot of the curvilinear relationship between action-state orientation and self-reported creativity and the moderating effect of job autonomy

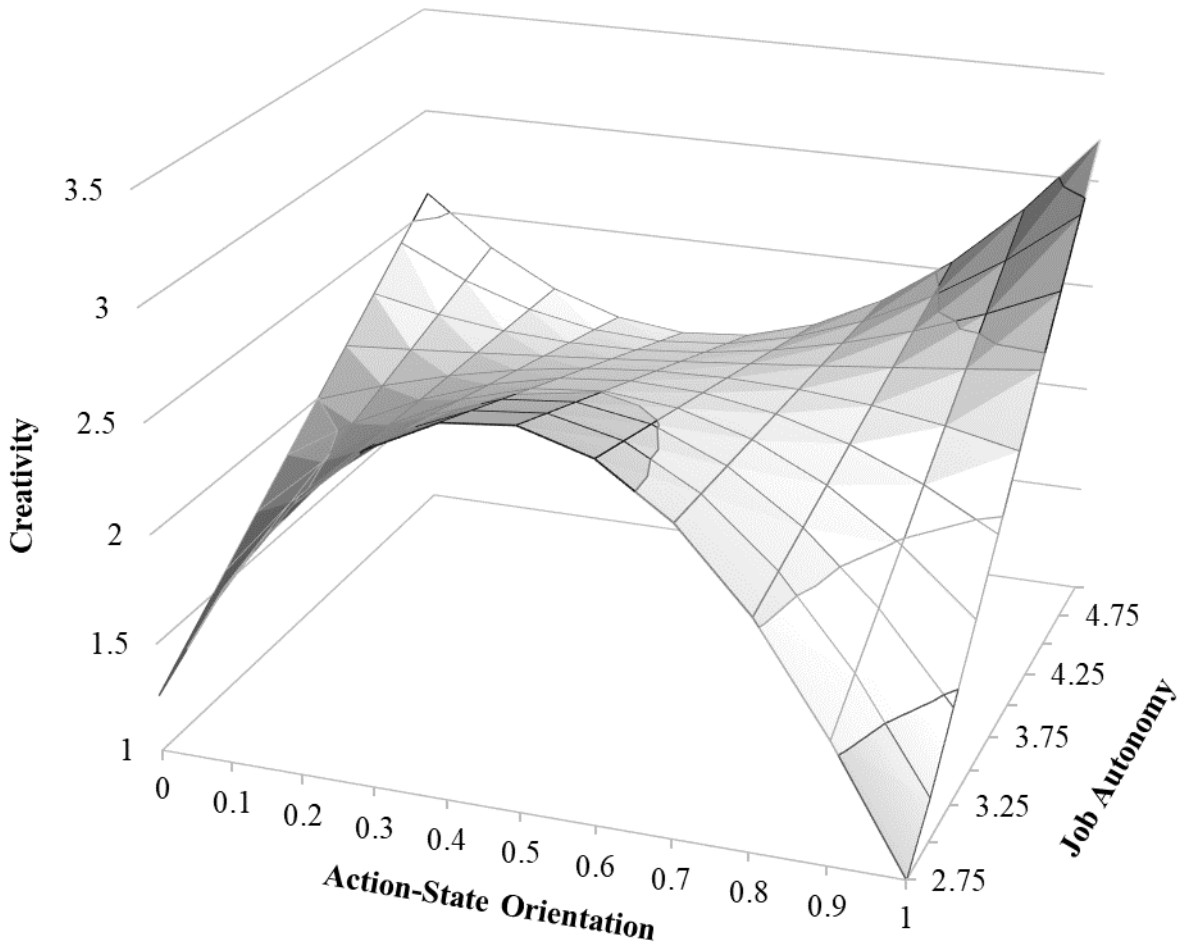

Figure 4

Study 3: Response surface plot of the curvilinear relationship between action-state orientation and managerial ratings of radical creativity and the moderating effect of job autonomy