



When Breaking the Rules Relates to Creativity: The Role of Creative Problem-Solving Demands and Organizational Constraints

ABSTRACT

Drawing on theoretical views of creative deviance, the present study hypothesized that employees with a tendency to break rules are more creative at their jobs (Hypothesis 1). Furthermore, we expected that this is particularly the case when employees face high problem-solving demands (i.e., they are expected to be creative) but at the same time they face high organizational constraints (e.g., they are not given the resources they need in order to be creative; Hypothesis 2). To test these expectations, we conducted a cross-sectional survey study (Study 1) and a daily diary survey study (Study 2) among employees from different occupational groups. Study 1 provided evidence that employee rule-breaking is related to other-rated employee creativity. Study 2 replicated this finding with a day-level measure of self-rated employee creativity. Furthermore, multilevel regression analyses revealed that the link is stronger when day-level problem-solving demands and organizational constraints are both high. Our findings contribute to the literature by providing empirical support to hardly examined propositions, namely, that non-compliant behaviors (i.e., rule-breaking) and obstacles (i.e., organizational constraints) may, in fact, boost creativity. Finally, suggestions for practice are made, recognizing the challenges posed to management in regulating employee rule-breaking.

Keywords: rule-breaking, positive deviance, creativity, organizational constraints.

If individual creativity involves thinking out of the box (Shin & Zhou, 2007), and the “box” symbolizes the standard rules and procedures, it follows that deviating from these rules and procedures or even breaking them, may lead to creative solutions. Indeed, empirical research suggests that individuals who are rebellious by nature (meaning that they feel less restrained by authorities) may have a higher probability of also being creative (Griffin & McDermott, 1998). Experimental research has confirmed the relevance of rule-breaking behaviors in the laboratory by showing that individuals who are primed with rule-breaking stimuli produce more creative ideas (Gino & Wiltermuth, 2014).

The concept of rule-breaking has received limited research attention (e.g., Dahling, Chau, Mayer, & Gregory, 2012; Morrison, 2006) and there is mostly experimental research suggesting that rule-breaking boosts creativity of students in the laboratory (Gino & Wiltermuth, 2014). Our paper aspires to follow up on this scarce and preliminary evidence, exploring whether the link between rule-breaking and creativity is relevant outside the laboratory, among individuals whose daily and real-life tasks require creative solutions. Such an exploration has the potential to lead to knowledge that employees and practitioners and, therefore, organizations will profit from. To ensure that we only focus on rule-breaking instances that are intended to do well rather than to cause harm, our paper and hypothesized model (see Figure 1) uses the concept of “prosocial rule-breaking for improved efficiency” (Dahling et al., 2012; hereafter referred to simply as “rule-breaking”). Rule-breaking highlights the tendency of employees to bypass organizational rules and procedures if they know that this way they can boost their efficiency and the attainment of their work goals (Dahling et al., 2012). Our focal outcome is creativity, which is defined as the production of novel and useful ideas (Amabile, 1988; Tierney, Farmer, & Graen, 1999).

The first aim of the present set of studies is to examine the link between employee rule-breaking and employee creativity, both other-rated and self-rated. Our second aim is to zoom in the day-to-day job

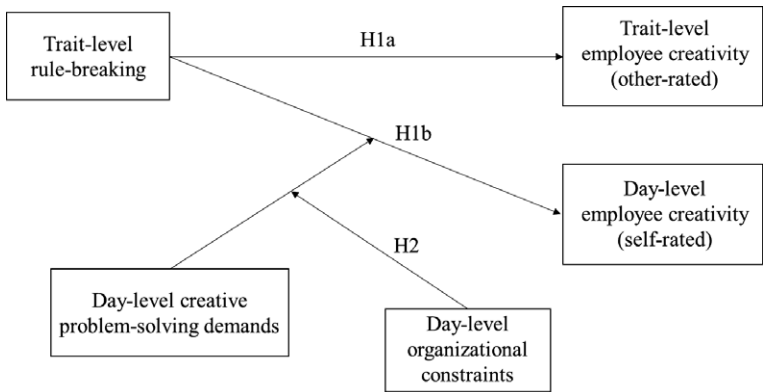


FIGURE 1. Our hypothesized model.

conditions under which the link between rule-breaking and creativity becomes pronounced. Specifically, we argue that rule-breaking becomes a key attribute that fosters creativity when employees experience a somewhat unfair paradox. That is, when they are expected by their organization to solve problems creatively but at the same time they are not given the resources they need in order to achieve this. This dissonant situation is recognizable for many workers. Organizations today increasingly value innovation (Baruah & Ward, 2015) while performing considerable cutbacks (Kiefer, Hartley, Conway, & Briner, 2014) so it becomes urgent to examine if and how organizational constraints may, in fact, boost creativity. To substantiate this proposition, we draw on the strain theory, a sociological theory proposed by Merton (1968). This theory posits that certain contexts put pressure on individuals to behave in non-conforming ways, not because these individuals are deviant but simply because this is their only choice, given the situation they find themselves in. Similarly, theorizing on creative deviance (Mainemelis, 2010) suggests that when employees are expected to be creative but are not given what they need in order to be creative, the only route to creativity is being deviant or simply breaking the rules. To date, this intriguing theoretical proposition (and its associated interaction between rule-breaking, need for creativity and organizational obstacles) has received no research attention. Our intention is, thus, not only to offer ecological validation to the experimentally supported link between rule-breaking and creativity (Gino & Wiltermuth, 2014) but also to clarify this link further by addressing the moderating roles of the need to be creative (i.e., problem-solving demands) and the lack of opportunities to achieve this (i.e., organizational constraints).

To address the research questions and test the hypothesized model (see Figure 1) two studies were conducted. Study 1 was a cross-sectional survey among a heterogeneous sample of employees as well as their coworkers and explored the link between the employees' self-rated general tendency for rule-breaking and their level of creativity as rated by others. Study 2 employed a daily diary survey methodology among a heterogeneous group of employees and it had two goals: First, to examine the link between self-rated trait-level (i.e., stable) rule-breaking and self-rated average day-levels of employee creativity. Second, to explore the daily circumstances under which trait-level rule-breaking translates to day-level creativity. By eliminating recall biases and producing more reliable estimates through repeated measures, diary research has emerged as a particularly robust methodology within organizational research (Ilies, Schwind, & Heller, 2007). Specifically, when it comes to proactivity or problem-solving behavioral outcomes (cf. creativity), diary research becomes an ideal research methodology. This is because it uncovers fluctuating situational factors that go hand-in-hand with fluctuations in outcome measures, addressing what triggers individuals to initiate actions (Fritz & Sonnentag, 2009). Furthermore, it allows a distinction between stable individual factors and fluctuating situational factors and explores how their interaction relates to outcomes of interest (Ohly, Sonnentag, Niessen, & Zapf, 2010). We note here the distinction we make between other-rated creativity (Study 1) and self-rated creativity (Study 2). Although extensive research indicates that self-rated creativity correlates with both objective and self-rated measures of creativity (Batey & Furnham, 2008; Kaufman, Beghetto, & Watson, 2016; Tierney et al., 1999), employees are better than others to follow the fluctuations of their own creativity

over a period of time (Ng & Feldman, 2012). In line with this notion, the cross-sectional Study 1 employs other-ratings whereas Study 2 that focuses on daily fluctuations employs self-ratings of creativity.

As illustrated in Figure 1, we propose that employee rule-breaking relates to trait-level creativity and also to day-level creativity, especially on days when employees are asked to solve problems creatively and, at the same time, they experience organizational constraints. Our paper views rule-breaking as a concept with a rather stable component since employees with different personality (e.g., lower or higher conscientiousness) have been found to display different levels (e.g., higher or lower, respectively) of rule-breaking (Dahling et al., 2012). In that sense, our paper adopts the perspective of trait activation theory (Tett & Guterman, 2000), which states that general behavioral tendencies only become activated when encountering corresponding situations. The notion of trait activation is, thus, relevant because we examine the situations (e.g., organizational constraints and problem-solving demands) in which rule-breaking tendencies manifest as creative behavior, reflected, for example, by creative ways to cope with the rather conflicting reality of obstacles (i.e., constraints) and problem-solving demands. In accordance with much of the previous diary research on how people deal with daily demands (e.g., Ohly et al., 2010; Roesch et al., 2010), trait-level and state-level measures reflect different operationalizations but have a strong conceptual overlap. For example, scoring high on trait creativity, implies that one has an increased probability of displaying state-level (daily, weekly, etc.) creative behavior.

RULE-BREAKING AND CREATIVITY

Our stance is that breaking the rules (at the workplace) is often driven by noble values and intentions and can, thus, lead to positive outcomes, such as problem-solving. Such types of breaking or simply revising rules and roles already exist in the literature. The nomological network of such behaviors includes concepts such as positive deviance (i.e., behaviors departing from the norm in honorable ways; Spreitzer & Sonenshein, 2003), creative deviance (i.e., “the violation of a managerial order to stop working on a new idea”; Mainemelis, 2010; p. 560), and bootlegging (i.e., working on ideas with no formal organization support with the aim of producing innovations; Criscuolo, Salter, & Ter Wal, 2014). In the present paper, we focus on prosocial rule-breaking for improved efficiency for both theoretical and practical reasons. First, this concept entails a clear notion of improvement and efficiency. In other words, the definition of the concept is equally targeted at breaking the rules and at facilitating one’s work goals. Second, the proposed instrument that has been developed to measure this concept has been successfully validated and is “generalizable” in nature (Dahling et al., 2012; p. 22). This enables us to develop a theoretical model which is applicable to the average employee rather than only to industries that are specifically focused on innovations.

Empirical research on the constructive side of rule-breaking has given rise to intriguing, albeit, somewhat mixed results. Morrison (2006) has found that breaking the rules is linked to more job autonomy and higher risk-taking, while Dahling et al. (2012) have validated a questionnaire to capture behaviors through which employees break rules in order to help clients, colleagues or their organization. However, while the former study provides qualitative evidence that rule-breaking may promote organizational efficiency, the latter has, in fact, found a negative relationship between rule-breaking and employee job performance. These findings call into question whether or how employee rule-breaking can contribute to employee performance and, therefore, to organizational outcomes.

We argue that rule-breaking can be an asset that boosts employee creativity, and, thereby, supports organizational innovation, which in turn may lead to increased performance of organizations as a whole. This proposition is rooted in theoretical views (e.g., Merton, 1968; Spreitzer & Sonenshein, 2003) which posit that departing from institutionalized (and perhaps outdated) expectations serves as a driving force leading to novelty and regeneration. This is in line with the literature suggesting that organizations that tolerate deviance are generally more innovative (Baucus, Norton, Baucus, & Human, 2008). Indeed, rule-breaking is not always undesirable, but rather an integral part of several business processes, such as entrepreneurship (Zhang & Arvey, 2009) which requires innovative thinking for the success of its business ventures. The development of new products or services, which is the cornerstone of innovation in organizations, is facilitated by rule-breaking. Managerial practice often shows that rules and procedures may hinder project development or work against novelty (Olin & Wickenberg, 2001). Those ideas have been put to experimental tests revealing that individuals who are primed (via images) to break the rules, also display higher creativity (Gino & Wiltermuth, 2014). Thus, we expect that employees with a greater tendency to break the rules will report higher creativity at their jobs.

The present paper follows the view that one's tendency to disregard norms or authorities is relatively stable and can be considered part of one's personality (Cloninger, Przybeck, & Svrakic, 1994; Griffin & McDermott, 1998). Our reasoning is consistent with the conceptualization of rule-breaking as prosocial (Dahling et al., 2012), namely, the behavior employees display with constructive rather than destructive (Robinson & Bennett, 1995) intentions, and, thereby, with more chances to unlock creativity. We address the hypothesized link between rule-breaking and creativity using other-ratings for the trait-level (i.e., overall) creativity and self-ratings for day-level creativity. This is in line with the finding that employees are generally better in producing overall (rather than specific and narrow) evaluations of their coworkers' performance (Griffin, Neal, & Parker, 2007). Hence, we formulate:

Hypothesis 1: Trait-level rule-breaking relates positively to other-rated trait-levels of employee creativity (1a) and to average day-levels of self-reported employee creativity (1b).

THE MODERATING ROLE OF PROBLEM-SOLVING DEMANDS AND ORGANIZATIONAL CONSTRAINTS

Although situational constraints such as time pressure or lack of freedom would normally impair creativity (Amabile, Conti, Coon, Lazenby, & Herron, 1996), they could, at times, actually trigger people's creative potential. This is because, according to Roskes (2015), when individuals have an approach motivation, namely, they want to achieve success (cf. prosocial or constructive rule-breaking), they are more likely to interpret constraints as challenges, rather than as hindrances. This naturally enhances their intrinsic motivation to do well and, thereby, come up with creative solutions. This proposition is founded on the dual pathway to creativity model (De Dreu, Baas, & Nijstad, 2008) which posits that there are two different routes one can follow in order reach creativity. Namely, one route involves increased flexibility (compare with the positive motivating factors that boost creativity; Amabile et al., 1996) and the other route involves perseverance. Perseverance refers to extra efforts in the face of challenges, difficulties, or negative emotions (Nijstad, De Dreu, Rietzschel, & Baas, 2010). In other words, when things do not go the way one planned or expected, persisting and trying harder may solve the problem in a novel way.

However, if intrinsic motivation and positive moods generally predict creativity (Amabile et al., 1996; Fredrickson, 2001), a relevant question is how problems and constraints are supposed to also be predictive of creativity. In order to address this paradox, we argue that suboptimal environmental factors (i.e., organizational constraints) are better understood as moderators rather than direct predictors of creativity. This is because rule-breakers who try to solve problems are less prone to feel bound or helpless by existing constraints and are more prone to think broadly and out of the box about how to solve them best. Thus, this offers the opportunity to be creative in the face of challenges rather than being overwhelmed by them. Along similar lines, Mainemelis (2010) theorized that when organizations encourage employees to be creative but do not give them the resources they need to do so, thus, posing constraints to their performance, deviance is, in fact, the ideal mindset that makes creativity possible. This proposition is grounded on Merton's (1968) strain theory which posits that when a social entity has worthwhile goals and, the same time, lacks access to legitimate means in order to attain these goals, then nonconformity (i.e., illegitimate behavior) is not simply a necessary but also a normal and acceptable course of action. The paradoxical state of being urged to be creative while not being facilitated to achieve this leads employees to take the situation in their hands. They overrule their leaders or the standard procedures when they believe that they have creative answers to existing problems.

Our paper aims at providing empirical evidence to explore this previously unexamined interaction between a predisposition toward a constructive type of rule-breaking and the demands to be creative in the face of organizational constraints. Note that the above line of reasoning presupposes a three-way interaction: First, employees have a tendency to break the rules and, thus, feel less constrained by them (Gino & Wiltermuth, 2014). Second, employees perceive organizational constraints. People who want to reach positive outcomes (i.e., rule-breakers) are more inclined to interpret constraints as challenges rather than hindrances and, therefore, they are more capable of coming up with novel solutions (Roskes, 2015). Third, it is important that this process takes place within a context that requires or values innovation (i.e., problem-solving demands). This is because if the organization does not need or support creativity, then the instances of rule-breaking have little relevance and could simply reflect employee frustration (Criscuolo et al., 2014). Accordingly, we formulate our second hypothesis:

Hypothesis 2: The positive link between trait-level rule-breaking and day-level self-rated employee creativity becomes stronger when day-level creative problem-solving demands are high and day-level organizational constraints are also high.

STUDY 1 METHODS

Participants were 83 pairs of employees working in various occupational sectors in the Netherlands. The employees rated their tendency for rule-breaking behavior, while their coworkers (hereafter called “raters”) rated the creative behavior of the employees. The employees were 47 men and 34 women (two participants did not fill in the demographic questions) and their mean age was 41.8 years ($SD = 12.7$). Their mean working hours per week were 35.8 ($SD = 6.2$) and their mean years of experience were 12.4 ($SD = 10.3$). Their occupational sectors included, among others, industry (30.9%), healthcare (12.3%), education (8.6%), commerce (6.2%), finance (6.2%), government (6.2%), and business administration (6.2%). The mean age of the raters was 42.4 years ($SD = 12.1$). Of them, 47 were men and 36 were women and 34 (41%) had a supervisory position. Their mean number of working hours per week were 35.0 ($SD = 8.5$); their mean tenure was 10.0 years ($SD = 9.2$) and they largely indicated working in similar occupational sectors as the employees.

All employees were recruited by means of network sampling by research assistants (Demerouti & Rispen, 2014). In total, 969 employees were asked to participate in an online survey about their work behavior and to also ask a coworker of theirs (i.e., colleague or daily supervisor) to rate the work behavior of the employees (i.e., “focal participants”) via another online survey. Although employees were told that it was not obligatory to find a rater, they were also told that those of them who would fill in their survey and whose rater also had filled in his/her survey, would enter a lottery for a €50 gift voucher. Finally, 83 pairs of participants filled in both their surveys, forming the final sample for the analyses (response rate = 9%). We note that due to partly simultaneous data collection during Study 1 and Study 2, a subsample of Study 1 ($N = 18$) also participated in Study 2 (for details, see Methods section of Study 2).

MEASURES

Employees’ survey

Trait-level rule-breaking of the employees was measured with the 5-item efficiency subscale of the prosocial rule-breaking scale by Dahling et al. (2012). Items (e.g., “I break organizational rules or policies to do my job more efficiently”) were rated on a scale ranging from 1 = completely disagree to 5 = completely agree ($\alpha = .92$).

Raters’ survey

Trait-level employee creativity of the employees was rated by the raters with the 9-item scale by Tierney et al. (1999). Items (e.g., “Coworker X generates novel but operable work-related ideas.”) were rated on a scale ranging from 1 = completely disagree to 6 = completely agree ($\alpha = .94$). The questionnaire captures creativity that is not tailored to specific occupations and has often been used by research among heterogeneous samples of employees (e.g., Wang & Rode, 2010). The validation of this instrument has revealed that supervisory ratings of subordinate creativity based on the 9-item creativity scale agree with objective measures of creativity and self-reported innovative cognitive style of the subordinates (Tierney et al., 1999). Furthermore, literature suggests that peers and supervisors agree in their ratings for the (creative) performance of their coworkers or subordinates (Harris & Schaubroeck, 1988; Ng & Feldman, 2012). This means that allowing both peers and supervisors to provide the other-ratings (as we did in our study) should not lead to discrepancies between the assessments from the two sources.

RESULTS

Trait-level self-rated rule-breaking had a mean score of 2.50 ($SD = .84$) and trait-level other-rated creativity had a mean score of 4.52 ($SD = .88$). Gender, age, years of experience, and working hours per week of the employee as well as the rater had no significant correlations with any of the two variables (self-rated rule-breaking or other-rated creativity). Notably, the hierarchical position of the rater (i.e., supervisor or not) did not correlate significantly with his/her rating of the employee’s creativity ($r = -.02$; $p = .83$). We conducted regression analysis to test the effect of self-rated rule-breaking on other-rated creativity and the

standardized regression coefficient was $b = .25$; $p < .05$, which provides support to Hypothesis 1a. Furthermore, we dummy coded organizational sector into three variables comparing the sectors with the largest representation (i.e., industry, education, and health sectors) with all other sectors. We reran the analysis controlling for sector, which did not alter the finding substantially ($b = .28$; $p < .05$).

STUDY 2

To further explore the link of rule-breaking with a self-reported measure of day-level creativity (Hypothesis 1b) and also to address the moderating mechanisms within the link (Hypothesis 2), we went on to conduct Study 2. This was a daily diary study that addressed rule-breaking, again, as a trait-level variable, and organizational constraints, creative problem-solving demands and creativity as day-level variables.

METHODS

Participants

Participants were 128 employees (74 men and 54 women) working in various occupational sectors in the Netherlands. The mean age of the participants was 36.7 ($SD = 13.5$). The mean number of working hours per week was 35.9 ($SD = 6.8$) and their mean years of experience were 7.9 ($SD = 8.8$). The occupational sectors included education (16%), industry (13%), commerce (10%), finance (9%), health (9%), business (7%), government (7%), or other sectors with lower representation.

Procedures

All participants were recruited by means of network sampling by research assistants (see Study 1). Of the 969 employees asked to participate in the survey of Study 1 (i.e., trait-survey comprising demographics and rule-breaking), 392 (40%) were asked to participate in an additional online diary survey. This comprised five online surveys that had to be filled in during five consecutive working days, at the end of each working day. In total, 128 participants filled in at least three daily surveys as well as the survey of Study 1, forming the final sample for our analyses amounting to a response rate of 32%. Because 18 of these employees were also rated by their coworkers in Study 1, this resulted in the overlap between the two studies ($N = 18$). On average, participants of Study 2 completed 4.0 ($SD = 0.8$) daily surveys. Drop-out analyses revealed that the respondents who filled in less than three daily surveys had an average age of 31.5 years (i.e., they were 5.2 years younger compared to the remaining sample; $t = 2.09$, $p < .05$) and worked an average of 32.3 h per week (i.e., 3.6 h less; $t = 2.31$, $p < .05$). No other comparisons were significant. *T*-test comparisons for demographic variables and trait-level rule-breaking ($N = 37$ drop-outs vs. $N = 128$ participants) comprised a smaller sample of dropouts than the comparisons for the day-level variables ($N = 67$ drop-outs vs. $N = 128$ participants). This was because the drop-outs who had not filled the survey of Study 1 had missing data on all demographic variables and trait-level rule-breaking.

Measures

Survey 1 included demographics, trait-level rule-breaking, and all day-level variables of day 1. The remaining Surveys comprised only the day-level variables of days 2–5, respectively.

Trait-level rule-breaking

To measure trait-level rule-breaking the same items were used as in Study 1. Cronbach's alpha was .90.

Day-level organizational constraints

The 11-item scale by Spector and Jex (1998) was adapted to refer to the day-level in order to measure day-level organizational constraints. All items followed the sentence "Today, I found it difficult or impossible to do my job because of. . ." Example items are "poor equipment or supplies," "incorrect instructions," "my supervisor," or "interruptions by others" and they were rated using a scale ranging from 1 = completely disagree to 7 = completely agree (alpha ranged from .88 to .90 over the 5 days; average alpha = .89).

Day-level creative problem-solving demands

The 4-item scale by Morgeson and Humphrey (2006) was adapted to refer to the day-level so as to measure day-level creative problem-solving demands. Items (e.g., "Today, my job involved solving problems that had no obvious correct answer") were rated on a scale ranging from 1 = completely disagree to 7 = completely agree (alpha ranged from .84 to .87 over the 5 days; average alpha = .87).

Day-level employee creativity

The same scale as in Study 1 was adapted to refer to the day-level and was used to measure day-level employee creativity. Items (e.g., “Today, I generated novel but operable work-related ideas.”) were rated on a scale ranging from 1 = completely disagree to 7 = completely agree (alpha ranged from .88 to .93 over the 5 days; average alpha = .91). This scale has often been used in diary research among heterogeneous samples of employees (e.g., Volmer, Richter, & Syrek, 2018).

Statistical analyses

Daily observations were nested within individuals, resulting in a multilevel data structure. Therefore, we conducted multilevel analyses using MlwiN. Trait rule-breaking, which was measured only once, was a between-level variable, while the rest of the variables, that were measured daily, were within-level variables. The sample size ($N = 128$ participants and 514 occasions) is in line with general recommendations regarding sample size for multilevel analyses that address cross-level interactions (Ohly et al., 2010). Preliminary analyses showed that a 2-level Null model for the dependent variable (i.e., day-level creativity) had a better fit to the data compared to a 1-level Null model, justifying a multilevel approach. Furthermore, the intraclass correlation (i.e., variance at the between-level of analyses) for creativity was 55%, suggesting that there was sufficient variation in the dependent variable to be explained by within-level fluctuations. The intraclass correlations for day-level problem-solving demands and day-level organizational constraints were 43% and 66%, respectively, which also reveals meaningful within-level fluctuations. To test the hypotheses, we conducted a multilevel regression analysis comparing a Null model with three nested models comprising successively the independent variables. The models comprised trait-level rule-breaking, and the two moderators, namely, day-level organizational constraints and problem-solving demands (Model 1), the 2-way interactions between rule-breaking and the moderators (Model 2) and the three-way interaction between rule-breaking and the two moderators (Model 3; see Table 2).

RESULTS

Table 1 shows the means, standard deviations, and intercorrelations between the study variables. Trait-level rule-breaking had a significant positive correlation with day-level creativity ($r = .22, p < .05$).

Table 2 presents all the nested models (except the Null model, which is not shown due to space constraints and is available upon request). As shown in Model 1, trait-level rule-breaking positively related to day-level creativity ($\beta = .18, p < .05$), providing support to Hypothesis 1b. Although not hypothesized, day-level problem-solving demands were also positively related to day-level creativity ($\beta = .28, p < .01$).

Finally, we examined the three-way interaction between trait-level rule-breaking, day-level organizational constraints and day-level creative problem-solving demands on day-level creativity. The three-way interaction effect on day-level creativity was positive and significant (see Table 2, Model 3; $\beta = .13, p < .05$). Simple slope tests revealed that the link between trait-level rule-breaking and day-level creativity was stronger when problem-solving demands were one *SD* above the mean, and day-level organizational constraints were also one *SD* above the mean (estimate = .52, $z = 3.22, p < .01$), providing support to Hypothesis 2. However, the link was also positive and significant (but the slope was less steep) when problem-solving demands were 1 *SD* below the mean and day-level organizational constraints were also 1 *SD* below the mean (estimate = .40, $z = 2.47, p < .05$). Figure 2 presents the plotted three-way interaction.¹

GENERAL DISCUSSION

The present set of studies was driven by the expectation that rule-breaking relates to creativity and that this link is particularly strong when creative problem-solving demands and organizational constraints are both high. The results of both studies supported the hypotheses we formulated.

The finding that prosocial (i.e., constructive) rule-breaking was positively related to other-rated (Study 1) and self-rated (Study 2) employee creativity is in line with theoretical views on creativity as a thinking-outside-the-box behavior, namely, deviating from the “usual” (Cropley, 2006) and deconstructing or reinventing standard rules and procedures (Kern, 2006). To the best of our knowledge, to date, this is the first empirical field validation of an effect that previously has only been addressed in the laboratory (Gino & Wilmer, 2014). Specifically, we confirmed this effect among employees reporting on their real-life creative

¹ We dummy coded organizational sector into five variables comparing the sectors with the largest representation (i.e., industry, commerce, finance, education and health) with all other sectors and we repeated the analysis, which did not alter our findings.

TABLE 1. Means, Standard Deviations and Intercorrelations Between Study Variables of Study 2 ($N = 128$ Employees and $N = 514$ Occasions)

	<i>M</i>	<i>SD</i>	1	2	3	4
1. Trait-level rule-breaking (1–5)	2.48	.78				
2. Day-level problem-solving demands (1–7)	4.31	1.13	.12	–	.14**	.47**
3. Day-level organizational constraints (1–7)	2.26	.84	.31**	.14	–	.06
4. Day-level employee creativity (1–7)	3.59	1.01	.22*	.69**	.17	–

Note. Correlations below the diagonal are at the between-level and above the diagonal at the within-level; please note that the between-level variable can only be correlated at the between-level. * $p < .05$, ** $p < .01$.

performance at work, as perceived by the employees themselves as well as by their coworkers. This phenomenon should be seen under the overarching term of positive deviance (Spreitzer & Sonenshein, 2003). Within our model, employees are motivated to break rules because they want to facilitate the attainment of their work goals (Dahling et al., 2012) and not because they intend to cause harm to the organization (Robinson & Bennett, 1995).

The three-way significant interaction effect, namely that rule-breaking positively relates to creativity when both creative problem-solving demands and organizational constraints are high, is in line with theoretical views of creative deviance (Mainemelis, 2010). This finding, specifically, suggests that creativity is likely to be displayed by people who break the rules, but particularly when they are confronted by an urgency to be creative and also by insufficient organizational resources to achieve this. Such conditions could trigger their “rebellious” nature, leading them to look for other work-arounds or alternatives in order to reach the inaccessible yet desired levels of creativity.

Interestingly though, the results did not only provide support for the hypothesized effect but also revealed an additional condition under which rule-breaking relates (although less strongly) to creativity: namely, when problem-solving demands are low and organizational demands are also low. Although subsequent research may want to replicate this effect in order to test its robustness, it is nevertheless useful to speculate on the reasons for this finding. One possible explanation is that this specific condition (i.e., no need but also no obstacles for creativity) represents a relatively passive job condition that allows rule-breakers to express themselves without really having to strive for anything. If rule-breakers are, in fact, creative by nature (Kirtan, 1976), it could be that this rather autonomous job situation simply allows them to do what they do best, which is to express themselves in unconventional and creative ways. While the condition of high problem-solving demands and organizational constraints could represent the typically challenging situation that motivates the rule-breakers to take action, the condition of low problem-solving demands and organizational constraints may represent one’s “normal” or, at least, not extraordinary, circumstances. Such circumstances possibly highlight simply the main effect that we have found (namely, that, in any case, rule-breakers are creative). Utilizing the dual pathway to creativity model (De Dreu et al., 2008), one could argue that while the first condition represents the preferred “perseverance” route to creativity for the rule-breakers, the second route is a more flexible one. Although this route of flexibility does not trigger rule-breakers that much, it does not impede their creativity neither, thus, producing a weaker interaction effect.

All in all, we contribute to the literature in two distinct ways. First, we offer ecological validation to a rare experimental finding that addresses rule-breaking as a precursor of creativity (Gino & Wiltermuth, 2014). In that sense, we expand a novel and scarce line of research, uncovering a new and less negative way in which scientists, organizations, practitioners and employees can view rule-breaking, namely, as a way to solve problems and reach innovative ideas. Second, we have uncovered the situational conditions under which this link is more pronounced. Specifically, we have shown that although rule-breaking generally relates to creativity, this is more likely to happen when employees are asked to be creative and at the same time experience constraints in reaching their goals. This suggests that our examined phenomenon is stronger in organizations that experience at least some type of obstacles (like the majority of organizations nowadays) but are also supportive of innovative ideas or are in need of innovative solutions.

LIMITATIONS AND FUTURE RESEARCH

Our network sampling has led to heterogeneous samples of employees. Although we did not particularly focus on professions that require creativity, our moderator (i.e., problem-solving demands) ensures that our

TABLE 2. Multilevel Estimates for Models With Day-Level Creativity as Dependent Variable ($N = 128$ Employees and $N = 514$ Occasions)

Model variables	M1			M2			M3		
	<i>b</i>	<i>SE B</i>	β	<i>b</i>	<i>SE B</i>	β	<i>b</i>	<i>SE B</i>	β
Intercept	3.59	.09		3.60	.09		3.59	.09	
Trait-level rule-breaking	.29*	.11	.18*	.29*	.11	.18*	.27*	.11	.17*
Day-level creative problem-solving demands	.35**	.03	.28**	.35**	.03	.27**	.36**	.03	.28**
Day-level organizational constraints	.00	.07	.00	.00	.07	.00	.00	.07	.00
Trait-level rule-breaking \times Day-level creative problem-solving demands				.01	.04	.01	.02	.04	.01
Trait-level rule-breaking \times Day-level organizational constraints				.06	.09	.02	.05	.09	.01
Day-level creative problem-solving demands \times Day-level organizational constraints				-.03	.04	-.01	-.06	.09	-.02
Trait-level rule-breaking \times Day-level creative problem-solving demands \times Day-level organizational constraints							.20*	.10	.13*
$-2 \times \log$	1,390.69				1,389.91			1,385.97	
$\Delta -2 \times \log$	103.76**				.78			3.94*	
<i>df</i>	3				3			1	
Within-person variance	R^2				R^2			R^2	
Between-person variance	13%				22%			23%	
	1%				2%			2%	

Note. The Null model is not presented due to space constraints. * $p < .05$, ** $p < .01$.

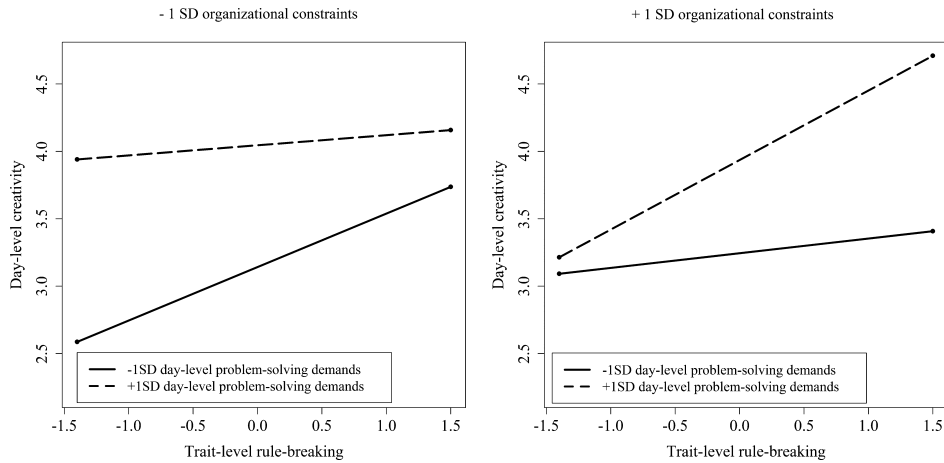


FIGURE 2. The link between trait-level rule-breaking and day-level creativity moderated by day-level creative problem-solving demands and day-level organizational constraints.

theoretical model is applicable to organizations that value or require creativity. However, our methodology does not allow us to make inferences regarding specific occupations. Future research on rule-breaking may want to test our expectations among employees whose job description includes creative tasks, such as in the research and development sector (Crisuolo et al., 2014).

Another limitation of this study is that, although our design captures correlations between fluctuations in the predictor and the outcome variables, it is still limited in its ability to infer causality. By collecting data that involve more data points as well as considerably more participants, future research can test more complex models that, for example, address causality or treat outcome variables as change scores.

Additionally, although our main effect has been cross-validated using both self-rated and other-rated measures of creativity, our three-way interaction effect is based on self-report, which means that it is still subject to common-method bias. However, it has also been argued that although common-method or responses biases can potentially inflate main effects, there are less reasons to believe that they strongly influence interactions (Schmitt, 1994).

Asking raters to provide daily measurements of their coworkers' creativity would also be subject to bias, since it is not legitimate to expect from employees to be able to observe and follow day-to-day changes in their coworkers' creativity (Binnewies & Wörnlein, 2011). In our diary study, we have tried to partly address common-method bias by temporally separating the predictor, measured in the trait-survey, from the outcome, measured in the daily surveys (Podsakoff, MacKenzie, Jeong-Yeon, & Podsakoff, 2003).

Finally, although rule-breaking is not a clearly state-like or trait-like concept in the literature, this study has conceptualized it as a trait. To offer a more complete picture, future research should test alternative (but not incompatible) models whereby situational conditions are predictors of state (rather than trait) rule-breaking which, in turn, predicts creativity. In other words, future research could conceptualize and measure rule-breaking as a situational mediator of the proposed model.

PRACTICAL IMPLICATIONS

Our findings call for an obvious yet difficult question for managerial practice: Should managers and organizations, in fact, be lenient toward rule-breaking? Here we need to note and remind that our conceptualization of rule-breaking is not a destructive one but rather one with constructive and prosocial elements. Therefore, it represents more reinventing the rules or finding a way around obstacles, rather than disregarding rules and procedures altogether. Managers who want to boost creativity in their organizations should, thus, be striving for employees with a more flexible or idiosyncratic interpretation of rules. This could be done either by selecting employees with such tendency or by avoiding the punishment of rule-breaking instances with the potential to lead to creativity. In fact, depending on organizational policies and culture,

organizations may choose to reward the creative elements of employee behavior, while at the same time clarifying that its deviant elements are not rewarded (Mainemelis, 2010). Such an approach is difficult in practice as it shows that thinking in terms of “right” and “wrong” is not a straightforward practice in organizations that want to be innovative.

Regarding organizational constraints, of course, no organization would like to intentionally pose constraints to employees or to be inefficient simply with the hope to boost creativity. Obstacles may boost creativity but they could also exhaust and demoralize employees. Therefore, we would like to refrain from formulating practical implications around regulating organizational constraints. However, constraints are most likely present for most organizations due to market conditions or internal problems. Therefore, it could be a useful viewpoint for management to be aware of the creative potential of constraints. All in all, our results suggest that when employees break the rules, they may reach creativity, especially when this is done in a context of constraints.

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Paraskevas Petrou, Dimitri van der Linden, Oana Catalina Salcescu, Erasmus University Rotterdam

Correspondence concerning this article should be addressed to Paraskevas Petrou, Department of organizational Psychology, School of Social and Behavioral Sciences, Erasmus University Rotterdam, Burg. Oudlaan 50, PO BOX 1738—DR Rotterdam 3000, The Netherlands. E-mail: petrou@essb.eur.nl