the british psychological society
promoting excellence in psychology

Journal of Occupational and Organizational Psychology (2020)

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Rebel with a cause: When does employee rebelliousness relate to creativity?

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Although the literature implies that rebelliousness can be a precursor of creative behaviour, this assumption has rarely been tested empirically. In the present study, we hypothesized that trait-level rebelliousness may have an inverted U-shaped relationship with creativity. Additionally, we expected that the effect is pronounced under two conditions, namely when individuals strive for success (i.e., high promotion focus) or when they are not failure-avoidant (i.e., low prevention focus). We conducted a three-wave weekly survey study among a heterogeneous sample of 156 employees. The results suggested that the expected non-linear relation rebelliousness–creativity occurred under high promotion focus, but we did not find a direct link between rebelliousness and creativity. Furthermore, prevention focus did not moderate the non-linear link. Additional analyses revealed that rebelliousness has a linear link with creativity when promotion focus is high and, at the same time, prevention focus is low. Our study reveals that rebelliousness in itself is not sufficient to unlock creativity. Instead, we uncover promotion focus as the condition that amplifies the link between moderate rebelliousness and creativity. Additionally, when employees simultaneously focus on promotion and refrain from prevention, the more rebellious they are, the more creativity they report.

Practitioner points

- Employee rebelliousness is not necessarily an obstacle for organizations; when displayed by employees who want to achieve positive outcomes, it can be a creative force.
- When employees are moderately rebellious, this can best be coupled with a high promotion focus, so that the potential for creativity is maximized.
- When employees are more than moderately rebellious, this can best be coupled with both high promotion focus and low prevention focus, so that the potential for creativity is maximized.

The history of both scientific and commercial innovations contains numerous examples of discoveries made by people who went against the common beliefs or the authorities of

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DOI:10.1111/joop.12324

their time and their environment. Galileo Galilei, for instance, is known to have displayed rebellious acts in his life, ranging from disregarding his university tradition of wearing a toga to clashing with the scientific community and the church by proposing that the earth is not the centre of the solar system, an innovative yet scandalous idea for his time (McNeese, 2009). Einstein, a commonly accepted genius, is known to have been 'stubborn' and in favour of rebellion against orthodox ideas (Holton, 1996, p. 180). More recently, a most typical example is that of Steve Jobs. Known to have been a difficult person to work with, Jobs himself had helped to write the script for Apple ads that favoured the misfits, the rebels, and those who think differently (Isaacson, 2012). Arguably, his persistence to create technological products that operate as closed systems, which sounded bizarrely uncommon in the beginning of his career, did not stop Apple from becoming a common household product.

The idea of the creative rebel has often been addressed in developmental psychology literature (e.g., Gaynor & Runco, 1992; Sulloway, 1996). This line of research suggests that because later-borns need to compete with their older and more capable siblings, they more often tend to disrupt the status quo through rebellion, in order to discover their own place in the world. From a sociological perspective, according to Selznick's (1948) classic proposition, conflict with authority triggers adaptation and reformation. Organizational research has observed that acts of individual disobedience towards organizational rules or/and managerial authority played a pivotal role in the making of several iconic creative products, such as Pontiac's *Fiero*, the first mid-engine commercial car in North America (Pinchot, 1985); Hewlett-Packard's breakthrough large electrostatic display technology (Nemeth, 1997); 3M (2002) innovative tape slitter; Paramount's critically acclaimed and financially successful film *The Godfather* (Mainemelis & Epitropaki, 2013); and Nichia's light-emitting diode (LED) bright lighting technology, which has ushered in a multibillion dollar industry (Johnstone, 2007).

Considering that the creativity literature has long suggested that rebelliousness may be a creative force in the workplace (e.g., Augsdorfer, 2005; Criscuolo, Salter, & Ter Wal, 2014; Mainemelis, 2010; Staw & Boettger, 1990), we find it remarkable that this idea remains largely untested. Current creativity literature mostly focuses on the Big-five personality traits as individual predictors of creativity (Ma, 2009). However, rebelliousness cannot be clearly positioned within existing personality frameworks. Specifically, Big-five literature seems to suggest that individuals tend to score high on different adaptive Big-five traits and low on maladaptive Big-five traits (Van der Linden *et al.*, 2010). Rebelliousness, though, does not seem to converge with this pattern, since, as we will show later on, it involves a mixture of high levels of adaptive personality traits (e.g., openness to experience) and, in contrast, low levels of other adaptive traits (e.g., conscientiousness). As such, the ambition of the present paper is to contribute to new theorizing that can be used to address rebelliousness as a stand-alone and unique predictor of creativity.

The theoretical framework that we propose and test has two distinct pillars. First of all, we suggest that non-linear reasoning is necessary to understand and address the link between rebelliousness and creativity, due to the nature of rebelliousness. As touched upon previously, the concept of rebelliousness (e.g., Cloninger, Przybeck, Svrakic, & Wetzel, 1994; Goldberg *et al.*, 2006) bears similarities with the high end of adaptive Big-five personality traits, such as openness to experience and extraversion, and the low end of other adaptive Big-five personality traits, such as conscientiousness and agreeableness. At the same time, rebelliousness may share conceptual space with maladaptive traits, such as aggressiveness or disconstraint (i.e., low self-control) from the PSY-5 personality

framework of psychopathology (Harkness, Finn, McNulty, & Shields, 2012). In that sense, too high rebelliousness may encompass harmful or antisocial elements that can undermine performance, while too low rebelliousness may indicate a lack of imagination and excessive conformity that may harm creativity. As such, the present paper will theorize and test that the highest levels of creativity will be displayed at moderate levels (i.e., neither too high nor too low) of rebelliousness.

The second pillar of our theoretical framework is that relevant boundary conditions should be addressed that make rebelliousness more socially desirable and subdue its potentially socially undesirable elements or, at least, channel them towards creative outcomes. When employees disregard authorities (cf. rebelliousness), this can be done with a constructive and noble purpose or not (Warren, 2003). It is therefore logical to expect that the link between rebelliousness and creativity depends on the condition or state under which individuals operate, that is, whether they are in the pursuit of positive outcomes (i.e., a positive mindset) or they try to avoid undesired outcomes (i.e., an avoidant mindset that may enhance maladaptive sides of rebelliousness). Such a distinction can most effectively be tackled by the regulatory focus theory (Higgins, 1997, 1998). We expect that moderate rebelliousness relates to creativity particularly when employees operate under a motivational state characterized by high promotion focus (focused on achieving success) or low prevention focus (not focused on avoiding failure). Accordingly, we suggest that a high promotion focus, or a low prevention focus, ensures that rebelliousness has a developmental nature aimed at improvement (Higgins, 1997, 1998) rather than a nature associated with immorality or anarchy.

Our model operationalizes rebelliousness as a trait-level variable, which stays relatively stable over time (Cloninger *et al*., 1994; Goldberg *et al*., 2006), whereas regulatory focus and creativity are fluctuating states over time (Gevers & Demerouti, 2013; Petrou & Demerouti, 2015). We acknowledge that regulatory focus has a stable (trait) component (Higgins *et al*., 2001), yet, for theoretical and practical reasons, we specifically aim at addressing its state component. Theoretically, rebelliousness is not necessarily and exclusively focused on promotion or prevention. Various situational factors can affect whether the rebellious behaviour will be promotion- or prevention-focused. Therefore, by conceptualizing regulatory focus as a state, we highlight under which boundary conditions rebelliousness becomes more socially desirable and able to predict creativity. From a more practical point of view, by focusing on weekly regulatory focus, our study addresses malleable employee states rather than personality, which may be difficult to change. In fact, both organizational research (Brockner & Higgins, 2001) and experimental research (Liberman, Idson, Camacho, & Higgins, 1999) reveal that promotion and prevention can be manipulated by priming in the laboratory, or by organizational communication, leadership style or use of language and symbols. Therefore, by conceptualizing regulatory focus as a state we aim to inform both theory and practice as to what type of goal regulation rebellious employees can best favour if they want to maximize their chances to attain creative outcomes.

The present study aims to deliver one theoretical and one practical contribution. First of all, we suggest that because rebelliousness has both dark and bright sides and because it cannot be decisively located in dominant personality frameworks, its potential to predict creativity has been neglected by organizational research. To compensate for this paucity of research, we want to contribute to new theorizing that can more persuasively address rebelliousness as a predictor of creativity. We, thus, aim to uncover a link that has been frequently hinted upon (e.g., Feist, 1999) but rarely tested empirically, and therefore advance and refine literature addressing individual predictors of creativity (e.g., Ma,

2009). Second, our study aligns research with new trends from practice. For example, the Massachusetts Institute of Technology Media Lab recently announced a disobedience award intended for candidates who have achieved great organizational or societal benefits through acts of disobedience (MIT, 2018). Our study tests whether empirical evidence may lend credibility to such initiatives, by showing to organizations that hiring employees who are a little rebellious is not a danger but rather an asset.

Rebelliousness and creativity

Rebelliousness, often also referred to as disorderliness, is considered a personality trait characterized by strongly non-conforming tendencies, such as resisting authorities, breaking rules, or even cheating (Goldberg *et al.*, 2006). The conceptualization and measure of rebelliousness used in the present paper is based on the 'disorderliness' facet of the novelty-seeking factor from Cloninger *et al.*'s (1994) Temperament and Character Inventory. Disorderliness represents a strong desire to get what one wants no matter what and a resistance to rules, regulations, and fixed routines (Koset, 2003). Accordingly, in the present paper, we treat rebelliousness as part of someone's personality or 'temperament' (Cloninger *et al.*, 1994).

Empirical research on rebelliousness is scarce, and operationalizations of rebelliousness are inconsistent. However, existing evidence seems to suggest that rebelliousness cannot clearly be located within dominant personality frameworks as it is an amalgam of different qualities and it has overlap with different and distinct personality traits. For example, in a validation of Cloninger *et al.*'s (1994) Temperament and Character Inventory among Dutch respondents, De Fruyt *et al.* (2000) found that the higher-order factor of rebelliousness (i.e., novelty-seeking) related positively to extraversion and openness and negatively to conscientiousness. The operationalization of rebelliousness that the present paper adopts has been found to load positively on openness to experience and negatively on conscientiousness (Goldberg, 1990). Furthermore, research among adolescents has found that rebelliousness negatively correlates with agreeableness (Essau, 2004). At the same time, acts of rebellion may often be characterized by aggression and a lack of self-control, which, on their extreme, are both elements of pathological personality (Harkness *et al.*, 2012).

To summarize, rebelliousness has a predominantly socially undesirable side due to its low conscientiousness, low agreeableness, and antisocial tendencies, but also a socially desirable side, linked to extraversion and, most importantly, openness to experience. Interestingly, both of these sides have been found to be predictive of creativity. On the one hand, breaking rules and conventions, defying expectations, spending time alone, and facing resistance by others often relate to creative outcomes (Feist, 1998; George & Zhou, 2001; Gino & Wiltermuth, 2014; Janssen, 2004; Stopfer, Egloff, Nestler, & Back, 2013). Similarly, psychotic and antisocial interactional tendencies allow individuals to let go of others' expectations and the status quo, which suppress creative ideation (Eysenck's, 1993; see also Dutton & Van der Linden, 2015). On the other hand, by being open to considering the counterintuitive and by keeping all options open, individuals who are open to new experiences are typically creative, a proposition that has been supported repeatedly by literature (e.g., Ma, 2009).

The double nature of rebelliousness suggests that some of its components, such as openness to experience and a reluctance to follow standards uncritically, enhance creativity, while other components, such as antisocial tendencies, may jeopardize employee functioning within organizations. This brings up the question of whether

there is a 'right amount' of rebelliousness that people and organizations should strive for. The question as to what is the right balance between socially desirable and socially undesirable personality can most appropriately be addressed by the too-much-of-a-good-thing (TMGT) meta-theory (Pierce & Aguinis, 2013), suggesting that the truth lies somewhere in the middle. For example, certain socially desirable personality characteristics (e.g., conscientiousness) can negatively influence performance if they are excessive (Le *et al.*, 2011). A possible explanation for this could be found in the cue utilization theory (Easterbrook, 1959), suggesting that environmental cues calling for attention enhance human performance only up to a certain extent. At some point, such cues become distracting. Too high levels of socially desirable personality characteristics rigidly focus one's attention on one direction only. This may compromise one's attentional resources and harm creative performance (Coelho *et al.*, 2016). Because creativity requires a certain amount of self-determined (Sheldon, 1995) and even individualistic behaviour (Goncalo & Staw, 2006), it may be that attending to external pressures is at odds with creativity. The other side of the same phenomenon is reflected by a new research agenda proposing that a moderate level of socially undesirable personality can benefit (creative) performance (Goncalo, Flynn, & Kim, 2010; Smith, Hill, Wallace, Recendes, & Judge, 2018).

Following this line of research, it is reasonable to expect that the link between rebelliousness and creativity can, in fact, be better understood as a non-linear one. On the one hand, very low levels of rebelliousness suggest an incapacity to disregard norms and authorities. This should hinder creativity since challenging the status quo is a hallmark of creativity (Zhou & George, 2001). On the other hand, too high rebelliousness may lead to uncompromising non-conformity and lack of respect for rules (Criscuolo *et al.*, 2014). Although it may seem intuitive that a disregard for rules can lead to creativity, some level of discipline is needed, as much as flexibility, to produce creative output (De Dreu, Baas, & Nijstad, 2008). Psychotic (Eysenck, 1993) or even jailed individuals (Brower, 1999) may be creative, but one can doubt whether this could be consistently the case in an organizational context, which is goal-directed, structured and focused on useful solutions. Put differently, moderate levels of rebelliousness ensure that its antisocial elements do not become perilous, while, at the same time, its socially desirable elements (i.e., courage, openness, and imagination) are still adequately present.

We clarify that, in order to address the link between rebelliousness (i.e., trait) and creativity (i.e., week-level behaviour) in a meaningful way, our first hypothesis operationalizes creativity as the aggregate levels of creativity that respondents have displayed over three consecutive working weeks. Accordingly, we propose that:

Hypothesis 1. There is an inverted U-shaped relationship between trait-level rebelliousness and (week-level) aggregated creativity.

Beyond this first expectation, our paper also aims at uncovering the conditions under which rebelliousness is more likely to be constructive and creative, rather than destructive. Specifically, we propose that these conditions are best highlighted by employees' regulatory foci. Because we have addressed these conditions at the week level (e.g., in which weeks is rebelliousness more likely to relate to creativity?), the rest of our hypotheses address creativity in terms of weekly fluctuations (rather than aggregated creativity).

Regulatory focus theory

According to regulatory focus theory (Higgins, 1997, 1998), individuals broadly operate under two distinct types of motivation. Individuals with a promotion focus frame goals in terms of 'gains' and 'non-gains' and want to grow and develop. Individuals with a prevention focus frame goals in terms of 'losses' and 'non-losses' and want to live up to their duties and responsibilities. While promotion and prevention focus may partly reflect trait-like preferences, the theory (Higgins *et al*., 2001) and evidence (Dane & George, 2014) suggest that regulatory focus is more a malleable state than a stable trait and that it can fluctuate over weeks (Petrou & Demerouti, 2015). Our paper, thus, draws on the 'state' conceptualization of regulatory focus to address the conditions under which a moderate amount of rebelliousness may relate to creativity. We view state regulatory focus as a mode under which employees operate. Arguably, this mode can be shaped not only by stable individual differences but also by fluctuating factors, either internal (e.g., personal goals) or external (i.e., leadership or organizational goals; Wallace, Johnson, & Frazier, 2009). Because promotion and prevention foci are independent orientations rather than opposite ends of a single continuum (Higgins, 1997), it is possible for employees to be characterized at varying degrees by both or to show neither orientation (Kark & Van Dijk, 2019).

The main effects of regulatory focus

Although our primary aim is to address regulatory focus as a moderator within our hypothesized model, our paper also acknowledges its main effects on creativity. Promotion regulatory focus has been shown to have important implications for creativity. Specifically, a promotion focus goes hand in hand with an openness to changes (Liberman *et al*., 1999) or new experiences (Lanaj, Chang, & Johnson, 2012). Both field studies and experimental research confirm that leading or priming others to operate under a promotion rather than a prevention focus boosts their creative behaviour (Friedman & Förster, 2001; Kark *et al*., 2018; Neubert *et al*., 2008). This is because a promotion focus entails an explorative cognitive style (Friedman & Förster, 2001) and urges individuals to search for new possibilities (Zacher & De Lange, 2011), both of which are essential for creativity (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Prevention focus entails a persistence (Friedman & Förster, 2001) that might be necessary but is not sufficient by itself to unlock creativity, since creativity requires flexible thinking as well (De Dreu *et al*., 2008). Although prevention focus on its own does not necessarily harm creativity, it likely does not enhance it either. This is in line with a meta-analysis on the topic that reveals no direct significant links between prevention focus and creativity (Lanaj *et al*., 2012). Kark and Van Dijk (2019) reached the same conclusion in their recent integrative review of the organizational literature on regulatory focus. Therefore, based on those previous meta-analytic findings we refrain from formulating a hypothesis about the link of prevention focus with creativity, but we do formulate a main-effect hypothesis regarding promotion focus.

Hypothesis 2. Week-level promotion focus relates positively to week-level creativity.

The moderating role of regulatory focus

Non-conforming or slightly deviant pathways to creativity have been addressed by literature with concepts such as creative deviance (Lin, Mainemelis, & Kark, 2016;

Mainemelis, 2010) and bootlegging (Criscuolo *et al*., 2014; Globocnic & Salomo, 2015), namely employee creative efforts that are secretive and non-compliant to organizational rules and policies. Similarly, prosocial rule-breaking (i.e., breaking organizational rules with constructive rather than destructive intentions) has been found to relate to employee creativity (Petrou, van der Linden, & Salcescu, 2018). Such deviant pathways to creativity fall under the umbrella term of counter-role behaviours (Staw & Boettger, 1990) that seek to achieve socially desirable outcomes while failing to conform to norms and prescriptions. What all these behaviours have in common is a motivation to correct or improve procedures (Staw & Boettger, 1990) and the intrinsic passion for exploring new ideas (Augsdorfer, 2005; Mainemelis, 2010). In other words, the pathway from non-conformity to creativity requires that individuals are not rebellious for the mere sake of being rebellious but, rather, with a cause or because they seek improvements. In fact, this notion of improvement (i.e., achieving positive outcomes rather than avoiding negative outcomes) is the distinguishing characteristic of a promotion regulatory focus (Higgins, 1997, 1998). A high promotion focus or a low prevention focus may, thus, be two distinct conditions under which rebelliousness is constructive or, at least, less destructive than one might think.

Specifically, we propose that the concept of regulatory focus can help to clarify and to address the motivation behind rebelliousness. When looking at the conceptualization of rebelliousness (e.g., see Goldberg *et al*., 2006), the underlying motivation of such a behaviour remains rather ambiguous. Specifically, the question remains whether rebellious individuals are trying to achieve something worthwhile (i.e., 'proactive rebelliousness') or rather are simply trying to deal with frustrations (i.e., 'reactive rebelliousness'; McDermott, 1988, p. 304). This distinction between pursuing the positive versus avoiding the negative is closely mirrored by the concept of promotion versus prevention regulatory focus.

Based on research and theorizing on personality and regulatory focus (Manczak *et al*., 2014), it can be assumed that people are motivated to achieve gains or to avoid loss and that such tendencies are expressed both at the trait level (e.g., personality) and at the state level (e.g., week-level goal-setting). However, as we have argued previously, rebelliousness cannot be seen as a personality trait that is typically promotion- or prevention-focused. In fact, situational factors may determine whether the rebellious behaviour will favour promotion or prevention. In other words, whether trait-level rebelliousness leads to constructive versus destructive outcomes may partly depend on its interaction with weekly regulatory focus. To illustrate, rebellious individuals would more likely solve problems creatively rather than simply avoid frustrations on weeks when they adopt a promotion rather a prevention focus.

Consider, as an example, a Research & Development Department of a technological company. In a certain week, the company asks its workforce to engage in brainstorming to come up with as many ideas for new products as they can, a promotion goal. In such a week, moderately rebellious employees may be positively motivated and inspired. Subsequently, they may adopt their preferred working style, which is being independent and relying on their own judgement rather than what others or the company expects them to find. Eventually, they might come up with a very innovative breakthrough product.

Now imagine the same employees in a week when the workforce has been warned that failing to come up with innovative products will result in negative points in the yearly employee evaluation, a prevention goal. The same employees may now be more likely to experience frustration with the organizational policy. However, due to their rebellious

nature, this could possibly lead to a destructive or negative form of rebellion such as counterproductive behaviours or encouraging other colleagues to disregard the organizational policy, because the environmentally imposed regulatory focus is incongruent with an explorative and open frame of mind that allows creativity to flourish. At most, these employees could display business-as-usual practices that may help them survive and avoid negative evaluations but they would probably not come up with the invention of the year under such circumstances.

Due to the scarcity of research on rebelliousness and creativity, there is currently little empirical evidence to support our expectations. However, useful insights could be gained from research on conflict and creativity. Looking at the conceptualization of rebelliousness that the present paper uses (i.e., Goldberg *et al*, 2006), it can be expected that rebellious individuals often experience disagreements with others or with authorities, which may naturally lead to conflicts, whether about one's tasks or even relationship conflict with others. Although relationship conflict is distressing for most employees, this is not the case if employees operate under low prevention focus (Brenninkmeijer, Demerouti, Le Blanc, & Van Emmerik, 2010). Similarly, and even more relevant to our scope, a moderate amount of task conflict has been found to relate to creativity when employees pursue positive outcomes, targeted at improvements (Petrou, Bakker, & Bezemer, 2019). As such, we formulate:

Hypothesis 3. The inverted U-shaped relationship between trait-level rebelliousness and week-level creativity is stronger when week-level promotion focus is high (3a) or week-level prevention focus is low (3b).

Method

Participants and procedure

Participants were 156 employees (60 men and 96 women) working in various occupational sectors in the Netherlands. Mean age was 41.4 years (SD = 12.8), and they worked, on average, 10.4 years (SD = 9.8) at their organization. Their contract involved an average of 33.6 hours per week (SD = 8.6), and 28.2% of them held a supervisory position. Participants worked in sectors such as health (28%), commerce (10%), industry (8%), government (8%), business (7%), construction (5%), education (3%), communication (3%), and finance (3%). Seventeen per cent of participants indicated that they worked in another occupational sector not included in the checklist, such as ICT, research, catering, or entertainment.

All participants were recruited by means of network sampling by research assistants (Demerouti & Rispens, 2014) using their professional contacts and social media network. In total, 417 participants were asked to participate in an online weekly survey study comprising three surveys that had to be filled in during three consecutive working weeks, at the end of each week. Survey 1 included demographics, trait-level rebelliousness, and all week-level variables; the remaining two surveys comprised only the week-level variables. One hundred and fifty-six participants filled in all three surveys and formed the final sample for our analyses, resulting in a response rate of 37%. Such response rates are common in studies that use multiple weekly measurements and networking sampling (e.g., Binnewies, Sonnentag, & Mojza, 2010). Dropout analyses revealed that participants who filled in less than three surveys did not differ significantly

in any demographic or other study variable, with age being the only exception (dropouts were younger).

Measures

All trait-level items (rebelliousness) used a 5-point Likert format ranging from 1 = completely disagree to 5 = completely agree, while all week-level items were on a 7-point Likert format ranging from 1 = totally disagree to 7 = totally agree. Cronbach's alphas for all variables can be found in Table 1.

Trait-level rebelliousness was measured with the 10-item rebelliousness scale from the International Personality Item Pool (IPIP; Goldberg *et al*., 2006), which is based on the Temperament and Character Inventory (Cloninger *et al*., 1994). Sample items include 'I break rules' and 'I respect authority' (reversed). The IPIP is an increasingly popular copyright-free and ready-to-use pool of personality items, validated by Goldberg *et al*. (2006), which works as proxy for a large number of existing personality measures.

Week-level regulatory focus was measured with the questionnaire by Wallace *et al*. (2009) adapted to refer to the week level. Items followed the sentence 'During the previous week at work, I focused my attention on. . .' The questionnaire included 6 items for promotion focus (e.g., '. . .accomplishing a lot' or '. . .how many job tasks I could complete') and 6 items for prevention focus (e.g., '. . .my work responsibilities' or '. . .the details of my work').

Week-level employee creativity was measured with the 9-item scale by Tierney, Farmer, and Graen (1999) adapted to refer to the week level (e.g., 'During the previous week, I demonstrated originality in my work' or '. . .I generated novel but operable work-related ideas'.).

Control variables. In order to make a grounded and well-informed choice as to whether to include control variables in our analyses and which ones, we have followed

Table 1. Means, standard deviation, and reliability estimates for all study variables (N = 156 employees and N = 468 occasions)

	Mean	*SD*	Alpha	1	2	3	4	5	6
1. Tenure	10.37	9.80	–	–					
2. Trait-level rebelliousness (1–5)	2.40	.46	.70	−.02	–				
3. Squared trait-level rebelliousness	.21	.34	–	.20*	.10	–			
4. Week-level promotion focus (1–7)	4.81	.94	.82/.85	.06	.09	−.02	–	.31**	.29**
5. Week-level prevention focus (1–7)	5.50	.55	.68/.73	.16*	−.28**	−.03	.37**	–	.00
6. Week-level creativity (1–7)	3.77	1.10	.90/.92	.12	.13	−.09	.48**	.08	–

Note. Correlations below the diagonal refer to the between-level; correlations above the diagonal refer to the within-level; means and SDs refer to the between-level; alpha refers to reliability estimates: For within-level variables, the first value refers to the lowest alpha and the second value refers to the highest alpha.

*p < .05; **p < .01.

the 'decision-making tree' of Bernerth and Aguinis (2016; p. 273). Accordingly, we have decided to use tenure as the sole control variable in all analyses. Tenure can be theoretically expected to enhance creativity. According to the revised componential model of creativity and innovation (Amabile & Pratt, 2016), the basis for any creative performance is skills in the task domain (one's expertise or factual knowledge about the domain, technical skills for doing work and advancing one's knowledge in the domain, and special domain-relevant talents), which can, arguably, be expected to increase with increasing tenure. This link is not only theoretically meaningful but also empirically found (e.g., Hirst, Van Knippenberg, & Zhou, 2009; Woods, Mustafa, Anderson, & Sayer, 2018).

Analytic approach and preliminary analyses

Our sample comprises 156 employees and 468 occasions, which well exceeds previous examples in creativity literature addressing cross-level interactions (e.g., Binnewies & Wörnlein, 2011). Because of the multilevel structure of our data (weekly measurements nested within individuals), we conducted multilevel analyses using MLwiN (Rashbash *et al.*, 2000). Before starting with the main analyses, we found support that a 2-level Null model for the dependent variable (week-level creativity) had a better fit to the data compared to a 1-level Null model, which justifies the multilevel approach. In addition, the intraclass correlation (variance at the between-level of analyses) for creativity was 69%, suggesting that there was variation in the dependent variable left to be explained by within-level (weekly) fluctuations. The remaining intraclass correlations were 67% for weekly promotion focus and 51% for weekly prevention focus.

Because our hypothesized interactions are cross-level interactions, we tested for random slope variance in the link between promotion focus and creativity and between prevention focus and creativity. The slope variance test was significant for promotion focus, $\Delta\chi^2$ (1) = 4.168, p = .041, but not for prevention focus, $\Delta\chi^2$ (1) = .764, p = .382. Therefore, in our reported main analyses (see Table 2), we excluded all interactions of prevention focus. As such, in order to test our hypotheses, we conducted a multilevel regression analysis comparing a Null model with six nested models comprising successively tenure (Model 1), trait-level rebelliousness (Model 2), the quadratic term of trait-level rebelliousness (i.e., trait-level rebelliousness by trait-level rebelliousness; Model 3), week-level promotion focus and prevention focus (Model 4), the two-way interaction term of rebelliousness by promotion focus (Model 5), and the three-way interaction terms of rebelliousness by rebelliousness by promotion focus (Model 6; see Table 2). All week-level variables were centred to the person-mean, while rebelliousness was centred to the grand-mean (Ohly *et al.*, 2010).

Additional analyses

Because researchers have argued that cross-level interactions should be tested even when the slope variance is non-significant (LaHuis & Ferguson, 2009), we repeated analyses replacing promotion focus with prevention focus in both interaction terms. This involved a two-way interaction between trait-level rebelliousness and prevention focus (Model 5) and the interaction between quadratic rebelliousness and prevention focus (Model 6). Finally, although we had no hypotheses about the interplay between promotion and prevention focus, in order to gain a more complete understanding of our data we decided to conduct additional and exploratory analyses addressing the linear and the quadratic effect of trait-level rebelliousness on week-level creativity moderated by both promotion and prevention focus simultaneously.

Table 2. Multilevel estimates for nested models with week-level creativity as dependent variable (N = 156 employees and N = 468 occasions)

	M0		M1			M2			M3		
Model variables	B	*SE* B	B	*SE* B	β	B	*SE* B	β	B	*SE* B	β
Intercept	3.77	.09	3.77	.09		3.77	.09		3.87	.10	
Tenure			.01	.01	.08	.01	.01	.08	.02	.01	.16
Trait-level rebelliousness						.31	.19	.11	.35	.19	.13
Trait-level rebelliousness^2									−.44	.26	−.12
Week-level promotion focus											
Week-level prevention focus											
Rebelliousness × promotion focus											
Rebelliousness^2 × promotion focus											
χ^2		1,293.99		1,291.89			1,289.17			1,286.38	
$\Delta\chi^2$				2.10			2.72			2.79	
df				1			1			1	
Between-person variance		1.05 (.14)		1.04 (.14)			1.02 (.13)			.99 (.13)	
Within-person variance		.47 (.04)		.47 (.04)			.47 (.04)			.47 (.04)	

	M4			M5			M6		
Model variables	B	*SE* B	β	B	*SE* B	β	B	*SE* B	β
Intercept	3.87	.10		3.87	.10		3.87	.10	
Tenure	.02	.01	.16	.02	.01	.16	.02	.01	.16
Trait-level rebelliousness	.35	.19	.13	.35	.19	.13	.35	.19	.13

Continued

Table 2. (*Continued*)

	M4			M5			M6		
Model variables	B	*SE* B	β	B	*SE* B	β	B	*SE* B	β
Trait-level rebelliousness^2	−.44	.26	−.12	−.44	.26	−.12	−.44	.26	−.12
Week-level promotion focus	.33**	.07	.13**	.32**	.07	.13**	.45**	.09	.18**
Week-level prevention focus	−.15	.08	−.05	−.14	.08	−.04	−.15	.08	−.05
Rebelliousness × promotion focus				−.12	.16	−.02	−.15	.16	−.03
Rebelliousness^2 × promotion focus							−.64*	.29	−.08*
χ^2		1,252.04			1,251.52			1,246.91	
$\Delta\chi^2$		34.34**			.52			4.61*	
df		2			1			1	
Between-person variance		1.02 (.13)			1.02 (.13)			1.02 (.13)	
Within-person variance		.39 (.04)			.39 (.04)			.39 (.04)	

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

Results

Table 1 shows the means, standard deviations, reliability estimates, and intercorrelations for all study variables. Notably, rebelliousness correlated positively but not significantly with the aggregate of week-level creativity.

Table 2 presents all nested models. In Model 3, the quadratic term of trait-level rebelliousness was unrelated to week-level creativity, failing to support the notion of a direct inverted U-shaped relation between rebelliousness and creativity (Hypothesis 1). In Model 4, week-level fluctuations in promotion focus were significant predictors of week-level fluctuations in creativity (β = .13, p < .01), providing support to the hypothesized main effect of promotion focus (Hypothesis 2). The interaction term between quadratic trait-level rebelliousness and promotion focus was significant (β = −.08, p = .03). Plotting the effect revealed a curvilinear relationship between rebelliousness and creativity (i.e., rebelliousness related to creativity when it was moderate), but only when week-level promotion focus was high (see Figure 1). To interpret our non-linear interaction accurately, we followed methodological advice (Dawson, 2014) and previous practice in empirical research (Chung & Jackson, 2013) so as to test statistically whether the link between rebelliousness and creativity was a curve (i.e., non-linear) at both levels of promotion focus. First, we estimated the non-linear relationship between rebelliousness and creativity at 1 SD above the mean of promotion and we found that, as predicted, it was negative and significant (i.e., inverted U-shaped; B = −.76, SE = .30, p = .01). When promotion focus was 1 SD below the mean, the relationship was non-significant (B = −.12, SE = .30, p = .69). Finally, following Dawson's (2014) recommendations, we performed additional analyses to test whether there is *any* effect of rebelliousness (linear or curvilinear) at low levels of promotion focus and we found that there was none. This suggests that the slope for low promotion focus (Figure 1) should be interpreted as non-significant. Taken together, these findings provide support to Hypothesis 3a.

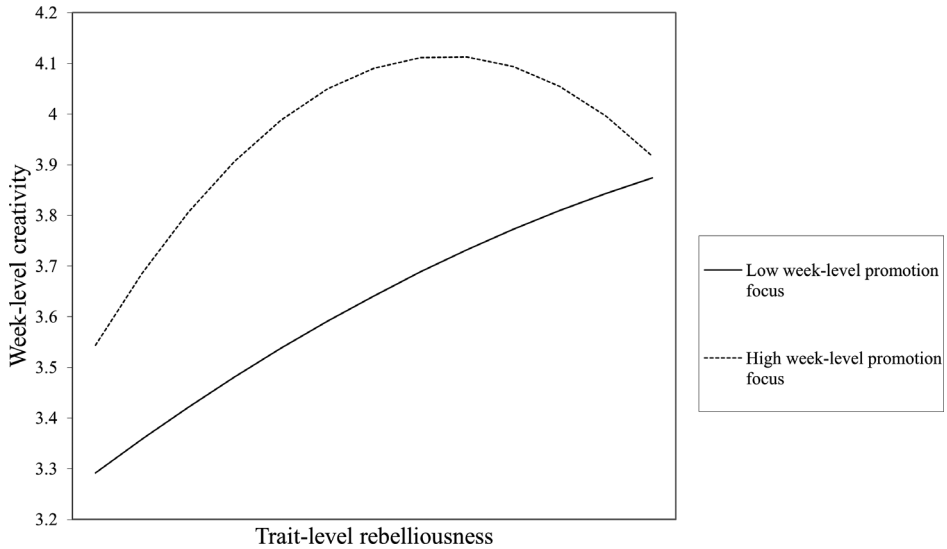

Figure 1. The non-linear link between trait-level rebelliousness and week-level creativity moderated by week-level promotion focus.

As mentioned previously, we conducted additional analyses to test the interaction effects also for prevention focus, even though the random slope variance was non-significant for prevention focus. Findings revealed that prevention focus was a non-significant moderator in the link between unsquared rebelliousness and creativity ($\beta = -.05$, $p = .09$), and between squared rebelliousness and creativity ($\beta = -.05$, $p = .13$). The latter finding fails to provide support to Hypothesis 3b.

Finally, we conducted additional analyses testing promotion and prevention focus as simultaneous moderators in the link between rebelliousness and creativity. This three-way interaction effect was non-significant for squared (non-linear) rebelliousness ($\beta = -.08$, $p = .07$). However, the three-way interaction effect was significant for unsquared (linear) rebelliousness ($\beta = -.08, p = .01$). Simple slope tests revealed that the linear link between trait-level rebelliousness and week-level creativity was positive and significant when promotion focus was 1 SD above the mean and prevention focus was 1 SD below the mean (estimate = .72, $SE = .26$, $p = .01$; see Figure 2). The other three slopes were all non-significant, namely for high promotion and high prevention (estimate = −.02, $SE = .22$, $p = .93$), low promotion and low prevention (estimate = .30, $SE = .23, p = .18$), and high prevention and low promotion (estimate = .41, $SE = .23, p = .08$).

Discussion

Although past research suggests that rebelliousness can be a precursor of creative behaviour, to date, this assumption has rarely been explored. Setting boundary conditions on this relationship, we hypothesized that trait-level rebelliousness has an inverted U-shaped relationship with week-level creativity and that the effect is pronounced when striving for success (i.e., promotion focus) and not while avoiding failure (i.e., prevention focus). While we did not find a direct non-linear link between rebelliousness and creativity, we did find that such an effect occurs under the condition of high promotion focus. Furthermore, we found a positive linear effect of rebelliousness on creativity when promotion focus was high and, simultaneously, prevention focus was low.

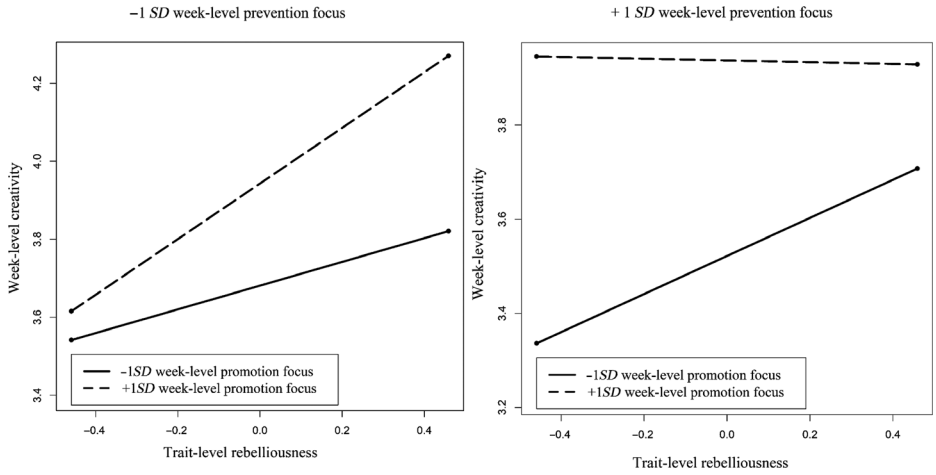

Figure 2. The linear link between trait-level rebelliousness and week-level creativity moderated by week-level promotion focus and simultaneously by week-level prevention focus.

Implications for theory

Our study results suggest that moderate rebelliousness by itself is not sufficient to unlock creativity. Instead, we uncovered a condition that amplifies the effect: Employees need to operate under a promotion regulatory focus. This finding agrees with and extends previous literature suggesting that rebelliousness is particularly constructive when channelled towards creative outcomes (Augsdorfer, 2005; Mainemelis, 2010). Our study is the first to empirically support the notion that being somewhat rebellious relates to creativity but only under certain conditions at work. In that sense, a personality trait that has socially undesirable sides may, in fact, have a constructive side as well (Smith *et al.*, 2018). Just as a good thing can be 'too much' (Pierce & Aguinis, 2013), a little bit of rebellion does not always harm.

Prevention focus did not moderate the non-linear link between rebelliousness and creativity. Furthermore, although we did not expect any linear effect of rebelliousness on creativity, our findings suggest otherwise. In particular, rebelliousness linearly and positively relates to creativity (i.e., the more rebellious, the more creative) when employees simultaneously display high promotion and low prevention focus. Promotion focus and prevention focus have rarely been tested as simultaneous predictors by organizational research. In a few exceptions, though, empirical research has revealed that the combination of high promotion and low prevention focus benefits leader performance (Petrou *et al.*, 2017), and also employee performance, especially when employees face challenges (Byron, Peterson, Zhang, & LePine, 2018). Therefore, in order to achieve performance on complex tasks, employees need to make choices and to clearly favour a promotion over a prevention approach. Particularly in the context of our study, our findings suggest that when employees do not only display promotion focus but also refrain from prevention focus, the effects of rebelliousness on creativity are linear. In other words, even more extreme forms of rebelliousness can lead to creative outcomes when this is done under high promotion and low prevention focus. Perhaps such extremely rebellious employees have managed to find a strategy that simultaneously maximizes the constructive sides of rebelliousness, while minimizing the potentially destructive sides. In that case, rebelliousness is 'balanced' and more likely to be well-intended, productive, and driven by the right motivation.

The lack of a direct non-linear link between rebelliousness and creativity independent of moderators needs to be further explored in future research, and we can only speculate about this finding. Rebelliousness can be considered a rather extreme personality characteristic, as it has low prevalence among the general population (Gutierrez-Zotes *et al.*, 2004; Jylhä & Isometsä, 2006). When expressed, even moderately, at the workplace, a context that normally sets rules that are to be respected, it could be more likely indicative of self-serving rather than organizationally valued purposes. In that sense, it could be that our proposed moderating mechanisms (i.e., high promotion focus and low prevention focus) are more important than we originally thought and that unless they are present, rebelliousness is unlikely to be constructive. Another possibility is that rebelliousness is more likely to directly predict creativity in companies, which, due to their cultural and structural characteristics (Criscuolo *et al.*, 2014; Globocnic & Salomo, 2015) and/or leadership (Mainemelis, Kark, & Epitropaki, 2015; Staw & Boettger, 1990), encourage their employees to think and act independently. In such companies, (moderate) rebelliousness should be less uncommon or even accepted. The companies where our participants worked may not have been homogeneous enough to produce such an effect.

Taken together, our results have contributed to new theorizing positioning rebelliousness as an additional personality trait that can be relevant to creativity research.

Our paper addressed rebelliousness as an ambiguous personality trait, with both adaptive and maladaptive aspects, and therefore aspired to uncover whether and when it can be constructive and have creative implications. Instead of being a stand-alone predictor of creativity, our results seem to suggest that rebelliousness has creative potential when employees are motivated to achieve positive outcomes (i.e., under a promotion focus) and they refrain from a prevention focus.

Limitations and implications for future research

The present study uses self-reports and therefore may be subject to common-method bias. It has, however, been suggested that such bias is predominantly relevant for main effects, but should be of less concern when significant interaction effects are present (Schmitt, 1994). In addition, it has been argued that studies employing a daily or weekly diary design with a temporal separation between predictor and outcome (as we have done with rebelliousness and creativity) are less prone to common-method bias (Ohly *et al*., 2010; Podsakoff *et al*., 2003). Similarly, Ng and Feldman (2012) concluded that, because employees know better than others the fluctuations of their performance, creativity self-ratings are particularly well suited to studies that measure creative performance over a period of time.

A second limitation is that our study variables have been exclusively operationalized either at the trait level or at the week level, while both levels of analyses could be sometimes relevant. For example, although we view rebelliousness as a trait, future research could measure its state component or even manipulate it in the experimental laboratory, uncovering its fluctuations or correlation with situational factors. Another possibility would be to measure creativity at the trait level. While week levels (or state levels) of creativity are ideal to uncover moderators ('*When* does rebelliousness more strongly relate to creativity?'), this may not be the case for main effects. For example, to address further our hypothesized non-linear effect of rebelliousness on creativity, future research could measure trait levels of creativity.

Last but not least, above we have suggested that high promotion focus displayed simultaneously with low prevention focus may enhance the constructive and minimize the destructive sides of rebelliousness. Future experimental research could further explore this possibility, for example, by simultaneously manipulating promotion and prevention focus.

Implications for practice

The practical implications of our study are twofold and relate, first, to the trait of rebelliousness and, second, to the employee's regulatory focus. With regard to rebelliousness, a common belief among many managers may be that tolerating rebelliousness is risky. However, we suggest that this is, in essence, a choice of each organization and its top management and that, in fact, the risk could be worth taking. Recent research has shown that managers can choose among a range of available options for responding to employees' expressions of rebelliousness. Lin *et al*. (2016) found that when an employee disobeys his or her manager's instructions to stop working on a new idea that the employee finds potentially beneficial for the organization, managers may respond to this act of creative deviance in five alternative ways: by punishing, manipulating, ignoring, forgiving, or rewarding the employee. Lin *et al*. (2016) found that managers who are generally less supportive of employee creativity are more likely to

punish creative deviants, while managers who are generally more supportive of employee creativity are more likely to forgive and even reward creative deviants. An interesting finding in Lin *et al*.'s (2016) study is that when supportive supervision for creativity is low, the likelihood of punishment is higher when employee creative deviance is high, but when supportive supervision for creativity is high, the likelihood of punishment is higher when employee creative deviance is low. This implies that managers who strongly support creativity are more likely to punish employees not for being rebellious but for remaining inactive and for not taking risks in order to explore new ideas (Sutton, 2002).

One way for organizational practice to be accepting towards rebelliousness could be to use a more diverse set of psychometric tools for personnel selection, including not only the commonly used Big-five measures, but also rebelliousness. Hiring employees who score high on the Big-five openness will most likely lead to a creative workforce (Ma, 2009) but perhaps if these employees additionally display moderate levels of rebelliousness, they have even higher chances to excel in creativity. Another possibility relates to organizational awareness that rebellion is not, per definition, destructive. When confronted with the dilemma of fostering conformity versus some rebelliousness, organizations should perhaps not be too fast in excluding the latter, since this could become a competitive advantage and differentiator.

It is also important to note that rebelliousness should be much less desirable if it merely takes the form of sensation-seeking or destructive deviance. In contrast, rebelliousness may be particularly advantageous when it is coupled with a focus on positive outcomes to be achieved (i.e., promotion focus) and the absence of failure avoidance. This brings us to our second main practical implication, referring to employee regulatory focus. Clearly, a promotion focus can only enhance the creative potential of employees, either through its direct or through its moderating effects. Luckily, both promotion and prevention focus are malleable states that can be shaped by organizations, by managers, or even by individual employees. For example, organizations may want to focus more clearly on the achievement of positive outcomes (rather than the avoidance of negative outcomes) through appropriate use of language, symbols, communication styles, leader, and/or goal-setting behaviours (Brockner & Higgins, 2001). Such examples could refer to leaders or organizations formulating goals more in the form of achieving positive outcomes, such as producing innovative products rather than avoidance of failure, like trying not to be overshadowed by competitors (Kark & Van Dijk, 2019; Kark *et al*., 2018). Although regulatory focus research has been predominantly conducted in experimental laboratories or via survey studies, we urge practitioners to collaborate with researchers and test the aforementioned propositions also via organizational interventions.

Similarly, rebellious employees who want to make sure that their rebelliousness leads to creativity rather than mere disobedience may want to focus more on promotion and less on prevention goals. For example, consider a Research & Development Organization where internal and external competition has created an under-motivating work climate. In such a context, rebellious employees may want to specify for themselves all positive ends that they want to achieve, thereby using existing limitations in a creative way to achieve high performance or come up with innovative products, rather than negative outcomes that they want to avoid, for example being outperformed by others or losing their job. While the former mindset utilizes the adaptive sides of rebelliousness, the latter may enhance its antisocial sides.

To discuss and integrate both our linear and non-linear supported interactions, one could say that while promotion focus in itself is not sufficient to render extreme rebelliousness constructive, in fact the combination of high promotion and low

prevention focus may instead be an adequate safeguard. In practice, if employees have managed to master the complex state of high promotion *and* low prevention focus, they can make sure that they stay on track, always pursuing a worthwhile outcome and refraining from the expression of frustrations, even when they display too much rebelliousness. If employees have only managed to master a state of high promotion focus, it is perhaps preferable that their rebelliousness only stays at moderate levels because they may be unable to otherwise channel extreme rebelliousness towards a constructive direction.

Conclusion

Just as too much of a socially desirable personality may have its downsides, a little bit of a socially undesirable personality may actually facilitate employees to attain valued outcomes. In this light, our study addressed the under-examined concept of rebelliousness, making a point that it deserves more attention by creativity researchers. Our findings support the proposition that the effects of rebelliousness on creativity may not be direct but are probably influenced by boundary conditions reflecting the mindset or the motivation of the rebellious employee. Specifically, we have empirically shown that rebelliousness has an inverted U-shaped link with creativity for employees with high promotion focus, while rebelliousness relates to creativity linearly and positively for employees with simultaneously high promotion focus and low prevention focus. All in all, our study suggests that employee rebelliousness does not have to be a hazard for organizations. Instead, it has creative potential when employees pursue goals targeted at the attainment of success rather than the avoidance of failure.

Acknowledgements

Grateful acknowledgements are owed to Prof. Jeremy Dawson and to Dr. Joran Jongerling for kindly providing statistical advice, as well as to our research assistants, Marloes Sikkema and Lisa Versloot, for helping with the data collection.

Conflicts of interest

All authors declare no conflict of interest.

Author contributions

Paraskevas Petrou, PhD (Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; Supervision; Validation; Writing – original draft; Writing – review & editing) Dimitri van der Linden (Conceptualization; Data curation; Methodology; Writing – original draft; Writing – review & editing) Charalampos Mainemelis (Writing – original draft; Writing – review & editing) Oana Catalina Salcescu (Data curation; Writing – original draft; Writing – review & editing).

Data availability statement

The data that support the findings of this study are openly available in Open Science Framework at https://doi.org/10.17605/OSF.IO/Q8W5G.

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Received 29 March 2019; revised version received 8 May 2020