Anja Loderer, Katrin Muehlfeld, Robert Wilken*

Implications of Foreign Language Use for Creative Self-evaluation Bias and Creative Performance**

Abstract

Creative self-evaluations are important determinants of future creativity. Despite extensive research that identifies antecedents of individual creativity, little is known about what determines individuals' biases in self-assessing their own creative performance. In particular, we do not know how contextual factors may influence individual creative self-evaluations. As workplaces become increasingly multilingual in the wake of globalisation, the language in which work is being performed has become one of these factors. In an experiment with working professionals (N = 86), we assessed actual creative performance using established creativity (specifically, idea generation) tasks. Participants worked on these tasks in either their native or a foreign language and were asked to self-evaluate their creative performance afterwards. Results show that creative self-evaluations generally deviate from actual performance, such that high (low) performers tend to underestimate (overestimate) their creative performance. While actual creative performance is lower when using a foreign language, the creative self-evaluation bias tends to be higher in a foreign compared to a native language setting. Further, we find tentative evidence that individuals who work in a foreign language and who are highly proficient in this language may be less biased in their creative self-evaluations. Unlike proficiency, foreign language anxiety does not appear to affect this bias.

Keywords: creativity, self-evaluation, creative self-evaluation, self-evaluation bias, foreign language use
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Introduction

Creativity lies at the heart of organisational innovation and is essential for organisational growth and performance (Cefis & Ciccarelli, 2005). While the process of

* Anja Loderer: Trier University, Universitätsring 15, 54286 Trier (Germany), anja.loderer@gmx.de
Katrin Muehlfeld: Trier University, Universitätsring 15, 54286 Trier (Germany), muehlfeld@uni-trier.de
Robert Wilken (corresponding author): ESCP Business School Berlin, Heubnerweg 8–10, 14059 Berlin (Germany), rwilken@escp.eu
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idea generation has been a focal point of (organisational) research (for reviews, see Anderson et al., 2014; Zhou & Hoever, 2014), the role of self-evaluations of actual creative performance has received comparably little attention (exceptions include Grosser et al., 2021; Pesout & Nietfeld, 2021; Urban & Urban, 2021b). In fact, scholars have recently called for more in-depth research on self-evaluations in the creativity domain (Puente-Díaz et al., 2021; Sidi et al., 2020). This research gap is surprising, as adequately evaluating one's own creativity is important for future individual creative performance and thus for organisational innovation (Fuchs et al., 2019; Grosser et al., 2021; Mumford & McIntosh, 2017).

Individual creative self-evaluations are rarely unbiased (Fuchs et al., 2019; Grosser et al., 2021; Pesout & Nietfeld, 2021). This bias appears to have adverse effects at the individual level that can, in the long run, be detrimental to organisational success. Overestimation of one's own creative performance can reduce future motivation to engage in creative processes as a whole, as well as in preparatory work to improve future creative performance (Graham & Pettinato, 2002; Moore & Schatz, 2017; Vancouver et al., 2008). Underestimation can mean that individuals do not perceive their ideas as creative and worthwhile and thus may not share them within the organisation. In either case, a bias in creative self-evaluations can have profound detrimental impact on future creative performance (Pesout & Nietfeld, 2021).

Various factors cause creative self-evaluation bias—in particular, personal factors, like creative self-concept (Grosser et al., 2021) or gender (Grosser et al., 2021), and individual workplace factors, such as formal rank (Fuchs et al., 2019). In contrast, how contextual factors may shape creative self-evaluations has remained under-explored (cf. Zhou et al., 2017). Of particular relevance in light of current globalisation and migration trends is the language context in which individuals are creative: Individuals are increasingly confronted with having to work in multicultural and multilingual settings. Recent research has acknowledged the role of multicultural experiences for creative potential and output (e.g., Leung et al., 2008; Puente-Díaz et al., 2020), and the role of foreign language use for creative performance in verbal (Geenen et al., 2022; Haans & van Witteloostuijn, 2018) and nonverbal tasks (Nothelfer, 2020; Stephan, 2017). Still, the impact of foreign language use on creative self-evaluations, as well as how the use of a foreign language may specifically affect individual bias in those creative self-evaluations, has remained unexplored.

To facilitate communication within multilingual work environments, organisations have increasingly adopted English as their common corporate language, which is a non-native language for many employees (e.g., Ehrenreich, 2010; Frederiksson et al., 2006; Tietze & Dick, 2013). In this case, even individual work—such as the preparation of meetings and presentations—requires that individuals act and think in a foreign language. Using a foreign language—even for individuals with advanced language skills—may have profound effects on individuals' decision-mak-

ing, behaviour, communication, and overall handling of the requirements of their jobs (cf. Brannen et al., 2014; Costa et al., 2014; Hayakawa & Keysar, 2018; Keysar et al.; Urbig et al., 2020; Urbig et al., 2016). These findings lead us to expect that foreign language use also affects the extent to which individuals may be biased when evaluating their own creative performance.

We conducted an experimental study (N = 86 working professionals) to empirically examine creative self-evaluations of actual creative performance and to test whether the use of a foreign language affects the creative self-evaluation bias. In doing so, this study contributes to the literature on creative self-evaluations, individual creativity, and foreign language in international business. First, we add to a nascent stream of literature that explores creative self-evaluations of actual creative performance, as opposed to global creative self-evaluations (i.e., self-evaluations of overall creative ability and skill; Kaufman, 2019). Second, to our knowledge, this study is the first to examine foreign language as a contextual factor that may influence creative self-evaluations. Third, we contribute to the important debate on the use of self-reported creativity measures as reliable and valid reflections of actual creativity (Kaufman, 2019; Kaufman et al., 2016; Reiter-Palmon et al., 2012; Silvia et al., 2012), by suggesting that creative self-evaluations are biased and thus possibly not a reliable measure of creativity. Finally, we are able to corroborate nascent results showing the adverse effects of foreign language use for verbal individual creative performance (Geenen et al., 2022; Haans & van Witteloostuijn, 2018).

Theory and Development of Hypotheses

Individual Creativity: A Cognitive Load Perspective

Creativity is often characterised as the generation of ideas, products, or processes that are both novel and useful (Amabile, 1988; Amabile & Pratt, 2016; Runco & Jaeger, 2012). One important precondition for individual creativity is the engagement in cognitive processes (Karwowski et al., 2016; Kurtzberg & Amabile, 2001; Oldham & Cummings, 1996). Cognitive load theory (Pollock et al., 2002; Sweller, 1994; Sweller & Chandler, 1994) postulates that cognitive resources are finite, possibly inducing cognitive load (Baddeley, 2003; Chen & Chang, 2009). When tasks are difficult and require many cognitive processes simultaneously, cognitive overload can emerge (Norman & Bobrow, 1975; Plass & Kalyuga, 2019).

Creativity demands that individuals break out of their intuitive thought processes and mental routines and combine existing and new knowledge in order to derive creative ideas (Ritter et al., 2012; Sassenberg et al., 2017; Stephan, 2017). Recent literature proposes that creativity relies on a combination of spontaneous and controlled cognitive processes (Beaty et al., 2015; Heinonen et al., 2016; Sowden et al., 2015). Yet—given that engaging in idea-generation processes requires cognitive effort—how do individuals evaluate their own creative performance?

Creative Self-evaluation Bias

Individuals engage in self-evaluation processes as a means to understand themselves and regulate behaviours, performance, and self-views (Taylor et al., 1995). Maintaining positive self-views by means of positively evaluating one's own performance is a central human tendency (Anderson et al., 2012; Epley & Dunning, 2000; Jordan & Audia, 2012; Kruger & Dunning, 1999; Simons, 2013). It plays a crucial role for an individual's future ability and motivation to perform (Moore & Schatz, 2017).

However, the bias in self-evaluations seems to differ across individuals, depending on actual performance. Specifically, low performers are more likely to overestimate their performance, whereas high performers are more prone to underestimate their performance. This bias is known as the *unskilled but unaware* bias (cf. Urban & Urban, 2021b) or the Dunning-Kruger effect (Kruger & Dunning, 1999). While statistical observations of this type of self-evaluation bias may be confounded by the better-than-average effect and regression toward the mean (Gignac & Zajenkowski, 2020; Krueger & Mueller, 2002), its applicability and validity have been empirically illustrated in various domains, such as classroom exams (Ehrlinger et al., 2008; Schlösser et al., 2013), knowledge-based tests (Ehrlinger & Dunning, 2003), learning tasks (DiFrancesca et al., 2016; Sanchez & Dunning, 2018), tournaments (Ehrlinger et al., 2008), and cognitive reflection tasks (Coutinho et al., 2021; Pennycook et al., 2017). Interestingly, gender appears to influence the size of the effect: In particular, Berger et al. (2020) show that among low-skilled workers, overestimations of their own performance are greater among men than among women. In addition, their findings suggest that such gender-dependent differences in self-assessment may have profound implications for important outcome variables such as individuals' willingness to enter into competitions (e.g., for leadership positions), which can result in, for example, severe under-entry of high-skilled women—unless clever design of the competitive setting (e.g., focal random selection) is applied to eliminate the adverse entry effects of such gender-influenced biases. Recent studies show general support for this type of self-evaluation bias in the domain of creative idea generation as well (Pesout & Nietfeld, 2021; Urban & Urban, 2021b).

This self-evaluation bias entails that, on the one hand, individuals who are low performers overestimate their actual performance due to a lack of ability to judge actual performance (Dunning et al., 2003; Kruger & Dunning, 1999; Schlösser et al., 2013). Presumably, the skills needed for high performance are also those that enable individuals to understand and recognise what constitutes high performance. In this sense, low performers carry a dual burden (cf. Schlösser et al., 2013): They lack the skills to perform well and are then unable to recognise the (relative) inferiority of their performance (Dunning et al., 2003; Kruger & Dunning, 1999; Schlösser et al., 2013).

On the other hand, high performers show a tendency towards underestimation (Dunning et al., 2003; Kruger & Dunning, 1999; Schlösser et al., 2013). Dunning et al. (2003) argue that these high-performing individuals also carry a burden—that is, the inability to recognise the uniqueness and (relative) superiority of their performance. Arguably, the tendency to underestimate performance derives from a comparison that individuals draw from their own and others' performances (Dunning et al., 2003; Kruger & Dunning, 1999; Schlösser et al., 2013). Specifically, high performers tend to believe that others will outperform them, which induces false modesty (Dunning et al., 2003).

In terms of creativity, this effect suggests that individuals who significantly under- or overperform on creative tasks are especially unlikely to precisely evaluate their performance. Thus, we expect that low (high) performers will show a tendency to overestimate (underestimate) their actual creative performance. Therefore:

H1: Creative self-evaluations are biased, such that high (low) performers underestimate (overestimate) their actual creative performance.

Actual Creative Performance and Foreign Language Use

Cognitive resource investment is a precondition for individual creative performance (Karwowski et al., 2016), and simultaneous task processing increases cognitive load. Based on *cognitive load theory* and *dual-process accounts*, we argue that simultaneously processing a foreign language (compared to a native language) *and* generating creative ideas will have adverse effects on actual creative performance.

Dual process accounts originate from (neuro-) psychology, which identifies two generic systems of cognitive processes (e.g., Evans, 2008; Evans & Stanovich, 2013; Kahneman, 2003). System 1 includes processes that are unconscious, spontaneous, rapid, and mostly automatic. These types of processes are often carried out intuitively and do not rely on substantial working memory capacity (Evans & Stanovich, 2013). System 2 processes are conscious, slow, deliberate, and controlled. They rely heavily on cognitive resources and, therefore, exert more pressure on an individual's working memory (Evans & Stanovich, 2013; Kahneman, 2003; Sloman, 1996; Stanovich & West, 2000).

When using a native language, cognitive processes tend to be generally more intuitive and emotionally driven (Keysar et al., 2012). These processes become more deliberate and controlled when individuals use a foreign language (Abutalebi, 2008; Volk et al., 2014), even when they are rather proficient in that language (Keysar et al., 2012; Oganian et al., 2016). The increased difficulty of information processing alongside linguistic disfluency elicits more System 2 processes (Alter & Oppenheimer, 2009), inducing cognitive load (cf. Hadjichristidis et al., 2017). Consequently, foreign language processing depletes cognitive resources (Keysar et al., 2012; Volk et al., 2014).

In line with recent empirical evidence, we posit that foreign (as opposed to native) language processing distracts individuals from a creative task, ultimately decreasing creative performance (Geenen et al., 2022). Mind wandering (e.g., Baird et al., 2012; Dijksterhuis & Meurs, 2006), daydreaming (Baer et al., 2021; McMillan et al., 2013), and flexible thinking (Baas et al., 2015) are beneficial to creative performance, especially the fluency of idea generation benefits from experiential thinking styles (Norris & Epstein, 2011; Sowden et al., 2015). However, these cognitive processes are System 1 processes, which we expect will be more difficult to carry out as well in a foreign than in a native language. To the extent that this greater strain on mental capacity may lead to the allocation of fewer cognitive resources to the actual creative task, we expect a reduction in task performance:

H2: Individual creative performance is higher in a native language context than in a foreign language context.

Creative Self-evaluation Bias and Foreign Language Use

Drawing on the effort heuristic (Kruger et al., 2004) and self-evaluation theory (e.g., Taylor et al., 1995), we propose that individuals using a foreign (rather than native) language will be more prone to overestimate their actual creative performance, even though this performance is lower than that of individuals working in a native language.

First, creativity requires individuals to be willing and motivated to engage in creative processes (Karwowski & Beghetto, 2019; Ng & Lucianetti, 2016; Sternberg, 2003). Individuals actively decide to invest effort to generate creative ideas. As Inzlicht et al. (2018, p. 1) put it: "Effort is both costly and valued". Effort is perceived as a strong quality signal (Kruger et al., 2004). That is, if individuals have invested more effort in performing a task, they are likely to consider the quality of the performance outcome as higher, regardless of whether this is actually the case (Alicke & Sedikides, 2009; Kruger et al., 2004). Thus, individuals who actively decide to allocate effort towards idea generation will acknowledge this effort investment when evaluating creative performance (cf. Zhou et al., 2017). Therefore, individuals who use a foreign language probably overestimate their actual creative performance because they likely invested even more mental effort towards creative idea generation than individuals using a native language.

Second, individuals may see a more serious threat to their positive self-views when using a foreign language. Foreign language use is arguably associated with greater uncertainty in terms of performing the task at hand. When evaluating oneself in such a situation, the experience is likely to trigger a desire for self-enhancement (Sedikides, 1993; Sedikides & Gregg, 2008; Taylor et al., 1995). Simultaneously, individuals are likely to experience a heightened need to self-protect against negative self-views by exaggerating positive aspects and minimising their own possible shortcomings (Alicke & Sedikides, 2009). In sum:

H3: Foreign language use increases the self-evaluation bias of creative performance, such that the discrepancy between actual creative performance and self-evaluations of creative performance is larger in a foreign than in a native language context.

Impact of Foreign Language Proficiency and Anxiety on Creative Self-evaluation Bias

When considering individuals working in a foreign language, we expect that the tendency to overestimate one's own actual creative performance depends on one's level of foreign language proficiency. Whereas individuals with high foreign language proficiency achieve high effectiveness in task performance (Presbitero, 2020), individuals with low proficiency likely face many different challenges when thinking and acting in a foreign language. Lower proficiency induces a higher demand for attention regulation (Volk et al., 2014), such that less proficient speakers are distracted from the actual task (Hao et al., 2015). However, because less proficient individuals are more likely to be distracted by foreign language processing (Hao et al., 2015), they will have to invest more effort than highly proficient individuals do to reach a certain level of creative performance. Assuming that individuals rely on invested effort as a quality indicator in their self-assessments (Alicke & Sedikides, 2009; Kruger et al., 2004), less proficient individuals presumably will overestimate their actual performance to a greater extent than highly proficient individuals will. Further, individuals who lack the skill to complete a difficult task well also appear to be less well equipped with the necessary skill set to give unbiased evaluations of their performance, and they tend to be overconfident in their performance in general (Kruger & Dunning, 1999; Pesout & Nietfeld, 2021). In turn, individuals with higher proficiency are likely better able to perform a creative task in a foreign language. Due to their superior language skills, we expect that they will be less inclined to give biased creative self-evaluations because they are better able to assess their creative performance in a foreign language than less proficient individuals. Therefore:

H4: Foreign language proficiency reduces the self-evaluation bias of creative performance, such that the discrepancy between actual creative performance and creative self-evaluations shrinks.

For some individuals, foreign language use can trigger feelings of foreign language anxiety, defined as "the feeling of tension and apprehension specifically associated with second language contexts, including speaking, listening, and learning" (MacIntyre & Gardner, 1994: 284; see also Horwitz et al., 1986). Individuals with higher foreign language anxiety are likely to encounter a more emotionally negative and self-threatening experience when working in a foreign language. These individuals have a stronger need to feel good about themselves (Campbell & Sedikides, 1999; Taylor et al., 1995) and may strive more intensively to self-protect against their own

shortcomings (Alicke & Sedikides, 2009; Sedikides, 2020) relative to individuals who experience the situation as less threatening. Campbell and Sedikides (1999) show that the greater the self-threat is perceived to be, the more prone individuals are to self-enhance; in our case, such self-enhancement would likely entail inflating creative self-evaluations.

At the same time, from a cognitive load perspective, feelings of foreign language anxiety will put additional strain on one's cognitive system (Meinhardt & Pekrun, 2003). More anxious individuals have more "off-task" thoughts (MacIntyre, 2017; Sellers, 2000), and foreign language anxiety diverts attention away from task-related and towards self-related cognition (Horwitz et al., 1986; MacIntyre, 2017). Individuals with high levels of foreign language anxiety are at higher risk of performing poorly because anxiety inhibits information retrieval, information processing, and communication abilities (MacIntyre, 2017), which can have potentially detrimental consequences for (creative) task performance (cf. Chen & Chang, 2009; Presbitero, 2020). As they have to overcome a greater mental burden to achieve high levels of creative performance, individuals with high foreign language anxiety need to invest more effort to perform well—an effect that is likely to further aggravate the tendency of individuals with high foreign language anxiety to inflate creative self-evaluations.

H5: Foreign language anxiety increases the self-evaluation bias of creative performance such that the discrepancy between actual creative performance and creative self-evaluations increases.

Experimental Study

Sample and Procedure

A total of 101 (46.5 % female (N = 47); M_{age} = 34.88 years; SD_{age} = 13.52) working professionals from various industries participated in this experimental study. Drawing on prior research, we assumed a moderate to large effect size for H1 and moderate effect sizes for H2–H5 would specify a desired probability of error for a type I error α of 5 % (e.g., Gruener, 2019) and a conventional target power of.80 (e.g., Cohen, 1992; McIntosh, Fowler, Lyu, & Della Salla, 2019). We used G*Power for the corresponding sample size calculations (available upon request from the authors). Based on the resulting minimum sample sizes for testing our hypotheses, we deemed our sample to be small but likely sufficient to detect the predicted effects (with H5 representing the most critical hypothesis in terms of sample size requirements).

We varied the language context, with German (English) as the native (foreign) language, excluding participants whose native language was not German and those who were bilingual in German and English (N = 86; 48 % female [N = 41]; M_{age} = 34.64 years; SD_{age} = 13.68).

The study had three parts: (1) a pre-survey (German), (2) an experiment (random assignment to either German or English), and (3) a post-survey (German). To ensure the anonymous matching of all three components across participants, we employed self-generated identification codes (e.g., Kearney et al., 1984; Schnell et al., 2010).

The pre-survey collected data on sociodemographic characteristics, English language proficiency, and foreign language anxiety. Approximately one week later, the experiment took place. We temporally separated the elicitation of the sociodemographic and language-related variables from the actual experiment (e.g., Urbig et al., 2016) to reduce the potential of common method variance of self-report data (Podsakoff et al., 2012). We randomly assigned each participant to work on various creative tasks either in English or in German ($N_{English}$ = 41; N_{German} = 45). For reasons of consistency, the instructor in the native (foreign) language context spoke only German (English) and gave identical experimental instructions (i.e., identical content in each language). Immediately after the experiment, participants filled out the post-survey, which included an evaluation of their creative task performance.

Measures

Independent and Dependent Variables. *Foreign language* captures the experimental manipulation of the language treatment with a dummy (0 = native; 1 = foreign).

We measured *creative self-evaluations* (or *self-evaluation of creative performance* [SCP]; α =.813) using three items (self-ratings from 1 = "not at all" to 5 = very): creativity in all tasks altogether (Karwowski et al., 2020; Pretz & McCollum, 2014), and usefulness and originality of their responses to the tasks. We used the mean of these three items as the construct value (its correlation with the factor score is 1). For subsequent comparisons of participants' relative positions on the self-evaluation scale to the actual creative performance, we used their ranks (equivalent to the percentile rank scores) (similarly, see, e.g., Pennycook et al., 2017).[1]

We used three tasks to measure *actual creative performance* (ACP). Two of them were taken from Mainberger's (1977) test of divergent thinking. First, for the *funny comparisons* task[2], participants were asked to provide as many comparisons between two objects (e.g., candle and oven) as possible within 60 seconds. Second, for the *picture guessing* task[3], participants were presented with two incomplete pictures

1 Equal values get the same (lower) rank value, and the next higher rank value is derived from the number of equal values below it. For example, if the three smallest SCP values are 1, 1, and 1.33, the corresponding rank values are 1, 1, and 3; if the four smallest SCP values had been 1, 1, 1, and 1.33, the corresponding rank values would have been 1, 1, 1, and 4.

2 The funny comparisons task is comparable with Wallach and Kogan's (1965) similarities test, which Pesout and Nietfeld (2021) recently used to assess verbal creative performance in university students.

3 The picture guessing task is comparable to Wallach and Kogan's (1965) line meaning test.

and asked to write down within 45 seconds what the pictures could represent if they were to be completed. We followed Mainberger's (1977) evaluation scheme to retrieve fluency scores and excluded ideas that were not useful or applicable to the tasks. Third, we used the *unusual uses* task from Schoppe's (1975) verbal creativity test. Participants were asked to find as many unusual uses as possible for an empty tin can and a simple string within 60 seconds. We followed Schoppe's (1975) evaluation scheme to calculate fluency scores (i.e., the number of relevant ideas).

Two specifically trained raters independently analysed participants' responses. Inter-rater correlations exceeded.84 for all tasks, indicating highly consistent ratings (Stemler, 2004). To obtain a construct score for ACP, we added the three fluency scores. (An alternative is to first transform the fluency scores to z-scores for each task separately and then average them so that each task is weighted equally [Pesout & Nietfeld, 2021]; its correlation with the sum of the three fluency scores is.998). For subsequent comparisons to the self-evaluation measure, we transformed them into ranks.[4]

To investigate over- and underestimations of actual creative performance, we calculated the *self-evaluation bias* (i.e., response bias; Pesout & Nietfeld, 2021; Schraw, 2009). As mentioned previously, we transformed both measures into rank scores, which are equivalent to percentile rank scores (Pesout & Nietfeld, 2021), and subtracted the ranked actual creative performance from the ranked creative self-evaluations. (An alternative would have been to difference the z-scores at the construct level: z-score of the construct value of creative self-evaluation minus z-score of the construct value of actual creative performance; its correlation with the difference of percentile ranks is.977.) It should be noted that this operationalisation of over- and underestimation is based on a relative scale within a population and thus lacks an absolute scale, which can hardly exist. Self-assessment, in our case, is considered accurate if the rank scores of both scales (SCP and ACP) match (e.g., if the person with the third-highest creative performance in the sample also gave the third-highest self-assessment of creative performance). If, on the other hand, the most creative person has, for example, only the seventh-highest self-assessment, this is a bias of −6 and thus a (relative) underestimation of the person's own performance. A case of overestimation occurs if, for example, the person with the fourth-worst creative performance has a rank value of 14 in the self-assessment; the bias would then be 10. An absolute measure, on the other hand, would have to perform a translation from values of one scale to values of the other (i.e., it would have to specify the maximum number of creative ideas across the three creativity tasks, for example, the self-assessment "not at all creative" would be justified or accurate). Such translations from one scale to the other are ambiguous, which is why, in line with the approach discussed in the literature, we resorted to the relative measure.

4 We applied the same logic in forming ranks in case of ties as for creative self-evaluations.

We measured *English language proficiency* (α =.97) with an eight-item self-report scale (from 1 = "very poor" to 8 = "as my mother tongue"), adapted from Costa et al. (2014). The scale asked for the level of proficiency in the dimensions of speaking, listening, writing, and reading. We also included a measure of *objective foreign language proficiency* using a "fill-in-the-blanks" English text from the C-Test (2007). To measure objective proficiency, we summed up the number of correctly filled-in blanks, with 20 being the highest achievable score.

We measured *foreign language anxiety* with ten items of a self-report scale (from 1 = "strongly disagree" to 7 = "strongly agree") from Gargalianou et al. (2016), adapted to an imagined professional work (rather than classroom) setting, consistent with our study context. All ten items were phrased with reference to English as the focal foreign language.

Control variables. As *gender* might be associated with a tendency to self-enhance (e.g., Barber & Odean, 2001; Berger et al., 2020; Huang & Kisgen, 2013), specifically in the context of creativity (e.g., Grosser et al., 2021), and as men and women might differ in creative performance (Baer & Kaufman, 2008; Guo, 2019), we control for this effect (0 = male; 1 = female). We also include *age*, as it may affect creative idea generation (e.g., Wu et al., 2010) and the ability to judge creative performance (Urban & Urban, 2021b).

The more committed individuals are to a creative task, the more effort they may exert, which could also possibly influence self-evaluations. We measured *task commitment* (α =.79) as a potential covariate, adapting an eight-item self-report scale (from 1 = "disagree" to 7 = "agree") originally designed to measure goal commitment (Hollenbeck et al., 1989; Klein et al., 2001).

Results

Table 1 presents descriptive statistics and bivariate Pearson correlation coefficients of all variables included in the following analyses by subsample (German vs. English). Regarding the original (construct) values of ACP and SCP, we note that there is a reasonable amount of variance in both conditions. Although no one in the native-language group reported very poor performance (the minimum is 2, not 1), the standard deviation in both conditions is comparable to that of task commitment, although the latter was measured on a 7-point and SCP only on a 5-point scale. Regarding ACP, the maximum value is approx. 2.5 (native-language group) to 6 (foreign-language group) times the corresponding maximum value, and the standard deviation is between one-fourth (native-language group) and one-third (foreign-language group) of the corresponding average score. This is also a consequence of corresponding substantial variances at the level of the three measured values per construct. Thus, although our operationalisation of self-assessment bias is based on rank scores rather than the original ACP and SCP scores, we can assume

that this measure does not generate variance that is not included in the baseline data.

The test of H1 requires a classification of subjects according to their actual creative performance (cf. Kruger & Dunning, 1999; Pesout & Nietfeld, 2021). As the sample is relatively small, we decided to split it into quartile groups ("ACP group") (e.g., Pesout & Nietfeld, 2021; Teo et al., 2022; Tremayne et al., 2022), with an average group size of just over 20 (note that these are the same regardless of whether one uses the quartiles of the initial scale of ACP or the rank values)[5].

The ACP group serves as the factor in an analysis of covariance (ANCOVA), with the self-evaluation bias as the dependent variable and gender, age, and task commitment as covariates. The average self-evaluation biases in the four ACP quartiles (ascending order) are 21.5, 4.05, –11.48, and –32.5, in line with the hypothesised direction. The ACP group is significant ($F = 22.92$; $p < .001$; partial $\eta^2 = .47$), as is task commitment ($F = 14.22$; $p < 0.001$; partial $\eta^2 = .15$). The average bias in the group of low performers (first quartile: 21.5) is significantly higher than 0 ($T = 4.18$; $p < .001$), whereas the average bias in the group of high performers (fourth quartile: –32.5) is significantly lower than 0 ($T = -5.45$; $p < .001$), in full support of H1.

An alternative operationalisation of high and low performers would be the median split, leading to a comparison of two groups of just above 40 participants. A median split would necessarily classify each participant as a low or high performer, thus including those in the middle, and would tighten the conditions for a significant difference. In that additional analysis, the ACP group (by median split) is significant ($F = 44.70$; $p < .001$; partial $\eta^2 = .36$). The average bias in the group of low performers (12.98) is significantly higher than 0 ($T = 3.46$; $p < .001$), whereas the average bias in the group of high performers (–21.26) is significantly lower than 0 ($T = -4.93$; $p < .001$), which also fully supports H1. Thus, both alternatives for identifying low and high performers lead to the same conclusion, indicating a robust finding[6].

5 Anticipating H2, we would expect these groups to be populated differently by the two experimental groups, with higher (lower) numbers of subjects working in foreign language in the lower (higher) quartiles (and vice versa for subjects working in native language), which is actually the case: The relative frequencies of the first (second, third, fourth) quartile are 46.3 % (19.5 %, 19.5 %, 14.6 %) in the foreign-language group and 6.7 % (28.9 %, 33.3 %, 31.1 %) in the native-language group.

6 As among low-skilled workers, overestimations of their own performance are greater among men than among women (see the section entitled "Actual Creative Performance and Foreign Language Use"), we add an ANCOVA that includes an interaction between ACP group and gender; however, this interaction remains nonsignificant, and the effect size is negligible ($F = .233$; $p = .873$; partial $\eta^2 = .009$).

Table 1. Descriptive Statistics and Bivariate Correlations

		Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9
						English subsample (N = 41)								
1	Gender	.44	.50	0	1	1	.06	.04	−.36*	−.39*	.30†	.11	−.08	−.11
2	Age	28.02	10.74	18	56		1	−.26	−.16	−.08	.03	−.06	−.09	.02
3	TC	4.67	0.91	2.50	6.00			1	.18	.09	−.01	.27	.48**	.19
4	SEP	4.49	1.27	1.29	6.43				1	.48**	−.60***	.18	.33*	.12
5	OEP	13.24	3.97	3.00	20.00					1	−.38*	.16	−.03	−.19
6	FLA	3.86	1.17	1.80	6.20						1	−.38*	−.32*	.10
7	ACP	20.40	7.20	6	38							1	.36*	−.53***
7a	ACP1	7.26	2.50	2	16									
7b	ACP2	8.27	3.12	2	15.5									
7c	ACP3	4.88	2.57	0	11									
8	SCP	2.84	.87	1	5								1	.57***
8a	SCP1	2.78	1.13	1	5									
8b	SCP2	2.95	.92	1	5									
8c	SCP3	2.78	1.01	1	5									
9	SE bias	2.24	31.06	-62	65									1

		Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9
German subsample (N = 45)														
1	Gender	.51	.51	0	1	1	.18	−.14	−.38**	−.16	.57***	.07	−.19	−.21
2	Age	40.67	13.38	20	60		1	.03	−.40**	−.45**	.30*	.10	.13	.01
3	TC	4.77	.83	3.13	6.13			1	.34*	.30*	−.28†	.13	.35*	.22
4	SEP	3.34	1.53	1.00	6.29				1	.74***	−.85***	.02	.09	.08
5	OEP	8.60	6.48	0.00	20.00					1	−.58***	.11	.03	−.03
6	FLA	4.40	1.50	1.10	7.00						1	.02	−.15	−.18
7	ACP	26.09	6.14	17.5	40.5							1	.02	−.65***
7a	ACP1	8.24	1.96	4.5	13									
7b	ACP2	10.01	2.29	5	15.5									
7c	ACP3	7.83	3.49	1	16.5									
8	SCP	3.15	.72	2	5								1	.72***
8a	SCP1	3.11	.83	2	5									
8b	SCP2	3.27	.78	2	5									
8c	SCP3	3.07	.91	2	5									
9	SE bias	-81	57	-9.96	31.06									1

Note: Gender (0 = male, 1 = female), TC = task commitment, SEP = subjective English proficiency, OEP = objective English proficiency, FLA = foreign language anxiety, ACP = actual creative performance (sum of three fluency scores), SCP = self-evaluations of creative performance (average of creativity in all tasks together, usefulness, and originality), SE bias = the difference between SCP (rank scores) and ACP (rank scores), where values above (below) 0 indicate overestimation (underestimation), and values close to 0 indicate higher accuracy of evaluation; sd = standard deviation, min = minimum, max = maximum; † p <.1; * p <.05; **, p <.01; ***p <.001.

To test H2, we perform an ANCOVA with language use (foreign vs. native) as a factor and the (originally scaled) ACP as a dependent variable, again with gender, age, and task commitment as covariates. The results reveal a statistically significant effect of language use ($F(1, 81) = 10.42$; $p = .002$; partial $\eta^2 = .114$), indicating that actual creative performance in the foreign language is significantly lower than in the native language (20.40 vs 26.09; see also Table 1). Therefore, across the three creativity tests, the creative performance is, on average, a good 20 % lower as a consequence of foreign language use. (Task commitment also has a significant influence with $F(1, 81) = 3.89$; $p = .05$; and partial $\eta^2 = .046$.) These results support H2.

Consistent with the test logic of H1 and H2, we perform an ANCOVA to test H3 with the same covariates as before but using language use as the factor and self-evaluation bias as the dependent variable. In conjunction with H1, we find that the ACP groups are populated differently by the two experimental groups. When we perform an analogous quartile grouping using SCP, we find that the frequency distributions are more similar across the two language groups: The relative frequencies of the first (second, third, fourth) SCP quartile are 39.0 % (24.4 %, 24.4 %, 12.2 %) in the foreign-language group and 24.4 % (22.24 %, 37.8 %, 15.6 %) in the native-language group. These results point towards a stronger self-evaluation bias in the foreign-language group. Although this influence is only marginally significant ($F (1, 81) = 3.41$, $p = .068$), it does exhibit a non-negligible effect size (partial $\eta^2 = .04$). We therefore infer tentative support for H3.

Although we do not offer an empirical explanation for this greater self-evaluation bias as a result of foreign language use, we argue that this result did not occur because of a lack of face validity of the SCP measure: One could argue that the bias exists because the SCP measure simply does not capture the type of creativity skills needed to complete the creativity task (non-native speakers need to be objectively more creative in a foreign language to find answers to the creativity tasks). We measured the SCP with three items (see the "Measures" section): creativity in all tasks altogether, usefulness of responses, and originality of responses. Only the first item represents a global assessment and could thus include the potentially necessary linguistic creativity, which is not included in the other two items (because usefulness and originality do not refer to linguistic creativity in terms of face validity). However, the mean scores of the three items hardly differ (in particular, the mean score of the first item is not higher; see Table 1). For this reason, the finding is not likely to be an artefact of an insufficient SCP measure and thus does not provide an explanation for the self-evaluation bias.

Because foreign language proficiency (both subjective and objective measures) and foreign language anxiety, both measured metrically, correlate significantly (see Table 1), we test H4 and H5 in separate (linear) regression analyses. Hereby, we use the full sample and include, as in the previous analyses, gender, age, and task commitment as covariates, plus the dummy for language and its interaction with

the predictor mentioned in the respective hypothesis (as the native language condition is coded with 0, the interaction of language with the predictor in question expresses its effect in the foreign language condition and therefore corresponds to the hypothesised effect).

We start with the null model that contains just the covariates and the language dummy (see model 1 in Table 2). This model reaches an R^2 of.103, which serves as a benchmark to calculate the [partial] effect sizes f^2 for the various predictors. This [partial] effect size can be calculated according to the formula (Selya et al., 2012): $f^2 = (R^2[\text{model including predictor}] - R^2[\text{benchmark model excluding predictor}]) / (1 - R^2[\text{model including predictor}])$.

To test the hypotheses, we first employ *subjective English proficiency* as a predictor. Table 2 presents the full results of the analysis. The interaction between language and subjective foreign language proficiency on self-evaluation bias, and therefore the influence of subjective foreign language proficiency on self-evaluation bias in the foreign language condition, remains nonsignificant (SEP × Language (model 2): B =.75; p =.850), with a negligible effect size f^2 of.001 (calculation according to Selya et al., 2012). Second, we include *objective English proficiency* as a predictor. Its influence on self-evaluation bias in the foreign language condition is marginally significant (OEP (model 3): B = –2.26; p =.074). If we correctly use a one-tailed t-test because of the directionality of the hypothesis (although this is done less often than not), the p-value is halved, dropping below the 5 % level. The effect size f^2 amounts to.042 and thus implies a small effect. The overall model is also significant (p =.033).

Regarding H5, the effect of foreign language anxiety on self-evaluation bias in the foreign language condition is nonsignificant (FLA (model 4): B = 4.20; p =.321), with a negligible effect size of f^2 =.014. While this finding suggests that the lack of significance is likely not due to the relatively small sample size, we still note that for testing H5, the actual sample size is somewhat smaller in comparison to the a priori calculated sample size than is the case for testing H1–H4.

Table 2. Impact of Foreign Language Proficiency and Anxiety on Creative Self-evaluation Bias

Model	1		2		3		4	
	B	p-value	B	p-value	B	p-value	B	p-value
Constant	-44.27	.058	-44.08	.060	-44.27	.054	-43.61	.061
	(22.98)		(23.14)		(22.69)		(22.99)	
Gender	-10.11	.133	-9.80	.159	-13.39	.053	-11.51	.095
	(6.67)		(6.90)		(6.82)		(6.81)	
Age	.13	.639	.13	.634	.13	.648	.13	.631
	(.28)		(.28)		(.27)		(.28)	
TC	7.17	.067	7.07	.074	7.57	.051	7.16	.067
	(3.86)		(3.91)		(3.81)		(3.86)	
Language	13.81	.068	10.48	.586	43.45	.018	-2.47	.891
	(7.48)		(19.14)		(17.98)		(17.94)	
SEP × Language			.75	.850				
			(3.98)					
OEP × Language					-2.26	.074		
					(1.25)			
FLA × Language							4.20	.321
							(4.21)	
R^2	.103		.104		.139		.115	
Adj. R^2	.059		.048		.085		.059	
F-Ratio	2.337		1.855		2.576		2.069	
Sign. of F-ratio	.062		.112		.033		.078	
N	86		86		86		86	

Note: Gender (0 = male, 1 = female); TC = task commitment; Language (0 = native, 1 = foreign); SEP = subjective English proficiency; OEP = objective English proficiency; FLA = foreign language proficiency; outcome variable: Self-evaluation bias = the difference between SCP (rank scores) and ACP (rank scores); B = unstandardised regression coefficients, standard errors are shown in parentheses; analyses are based only on foreign language subsample.

Discussion

Summary of Main Results and Research Contributions

The goal of this study was to foster an understanding of creative self-evaluation bias and to specifically focus on how foreign language use may affect the extent to which individuals are biased in their creative self-evaluations—an increasingly important topic in light of globalisation and migration. To that end, we built on research on individual creativity, cognitive psychology, self-evaluation, and international business.

Our experimental study revealed that individuals' creative self-evaluations are generally biased, such that individuals with comparatively poor (high) actual creative performance overestimated (underestimated) their creativity. This corroborates existing research on creative self-evaluations (Pesout & Nietfeld, 2021) and suggests that individuals who perform far below or far above average are particularly unable to accurately assess their own creativity—with potentially far-reaching adverse effects for future actual creative performance. Those who overestimate their creative performance may not find it necessary to invest in further developing their creative skill set, while those who underestimate their creative performance may not feel confident enough to engage in future creative idea generation to the fullest possible extent. Biased creative self-evaluations may thus threaten individuals' creative performance and, thereby, of organisations as a whole (cf. Moore & Schatz, 2017; Vancouver et al., 2008). Further, foreign language use adversely affected actual creative performance: Individuals working in a foreign language generated significantly fewer ideas than individuals working in their native language, corroborating prior research (Geenen et al., 2022). In addition, considering our data tentatively supported H3, we conclude that self-evaluation bias indeed tended to be more pronounced in a foreign-language than in a native-language context. This suggests that the use of a foreign language does not necessarily create a greater need for self-enhancement via better creative self-evaluations in all individuals. Further, we found support for the supposition that higher objective foreign-language proficiency reduces creative self-evaluation bias by possibly allowing for better-informed judgements of whether performance is adequate and, thus, more accurate self-evaluations. In this respect, it is particularly interesting that from among the two foreign-language proficiency measures employed, objective foreign-language proficiency is generally not confounded by biases in terms of self-assessment, unlike subjective foreign-language proficiency.

Contrary to our expectations, we did not find a significant effect of foreign language anxiety. While we cannot fully rule out the possibility that sample size might have played a part, we consider this unlikely, given the negligible effect size, which is much smaller than expected based on prior research (e.g., Geenen et al., 2022). In fact, we had expected a larger effect size, given that self-evaluations (and self-evaluation biases) arguably constitute more emotionally charged outcome variables

than externally assessed actual (creative) performance. Furthermore, prior linguistic research on self-evaluations in a foreign language context (e.g., MacIntyre et al., 1997) suggests a pivotal role of anxiety. Why did we not observe the expected effect? One possible explanation rests on prior research showing that foreign-language use is associated with reduced emotionality in general, which thus suggests that "affective processing may be weaker in a foreign language than in a native language" (Caldwell-Harris, 2015: 214; see also related studies, e.g., Hayakawa et al., 2017; Ivaz et al., 2019). While this account is not uncontested (cf. Geipel et al., 2015), it points towards the possibility that using a foreign language may, on the one hand, introduce foreign language anxiety as an emotional influence in its own right in foreign language contexts. Yet, at the same time, emotions generally associated with self-evaluation bias may be weakened, resulting overall in the observed effect. Whether this is indeed the case and the possible underlying precise mechanisms are issues for future research.

In sum, the findings of this study contribute to research on creative self-evaluations, individual creativity, and foreign language in international business. First, we contribute to the nascent literature on self-evaluation bias, specifically in the domain of creativity (Pesout & Nietfeld, 2021; Sidi et al., 2020; Urban & Urban, 2021b). In doing so, we respond to a recent call for more research focused on self-evaluations of ill-defined tasks (Puente-Díaz et al., 2021; Sidi et al., 2020). Creative tasks—such as divergent thinking tasks—require individuals to find numerous creative solutions to a new problem (Sidi et al., 2020), a highly prevalent type of task requirement in many organisations (Berg, 2016; Fuchs et al., 2019; Mueller et al., 2018). We extend this stream of research by showing that creative self-evaluation bias also holds true in a foreign-language context.

Second, we contribute to research on (global) self-evaluations of creativity by investigating foreign-language use as a contextual factor. To date, scholars have identified effects of gender (Grosser et al., 2021; Pesout & Nietfeld, 2021) and creative self-concept (Grosser et al., 2021) on creative self-evaluation bias, whereas contextual factors have remained relatively underexplored. We specifically focus on foreign language use because individuals are increasingly often faced with having to work in a multilingual setting. Our study hints at a varying effect of foreign language use on the creative self-evaluation bias, which differs across performance groups. However, we require more in-depth understanding of how and when foreign language use affects the ability to judge one's own creative performance. It is important to understand for whom foreign language use poses a threat and for whom it may be beneficial. Individuals with high creative self-efficacy or a distinct creative personal identity, for example, may be better able to overcome the possible challenges associated with foreign language use because creativity is highly important to them.

Third, we contribute to the ongoing debate on the validity and reliability of self-rated creativity as a measure that truly reflects creativity (Kaufman, 2019; Kaufman et al., 2016; Silvia et al., 2012). We show that creative self-evaluations are biased, independent of the language context in which actual creative performance occurs. Some studies rely on self-rated or self-evaluated creativity as a measure of individual creativity (cf. Ohly et al., 2006; Puryear, 2015; Snyder et al., 2019), which could possibly indicate that findings obtained using such measures may reflect biased levels of creativity. Future research may, therefore, find it particularly worthwhile to include self-assessed creative performance measures as well as actual assessments.

Fourth, we contribute to the nascent literature that examines the role of foreign language use for creativity, in particular, creative idea generation (Geenen et al., 2022; Geenen & Muehlfeld, 2017; Haans & van Witteloostuijn, 2018; Nothelfer, 2020; Stephan, 2017). We corroborate evidence of the detrimental effect of foreign language use on verbal creative idea generation (Geenen et al., 2022; Haans & van Witteloostuijn, 2018). Further, we add creative self-evaluation bias as a related outcome variable, which has not yet been explored in this literature. Future research may thus find it worthwhile to explore in more depth how the use of a foreign language may affect an individual's self-perception of creative performance.

Managerial Implications

Our results indicate that individuals seem to find it difficult to evaluate their creative performance. For example, high performers, who are highly valuable to organisations, fail to recognise the full extent of their own creative performance. If these high performers do not evaluate their actual performance as creative, they are less likely to share their ideas within their organisation (cf. Berg, 2016). To help them overcome this false modesty, organisations should try to provide honest and positive feedback on creative ideas where possible, thereby encouraging more positive self-evaluations of creative performance amongst high performers (cf. Urban & Urban, 2021a; Zhang et al., 2014).

Overall, individuals often do not fully understand what creativity entails and, therefore, fail to recognise it (Baas et al., 2015). Storme et al. (2014) show that clear definitions of each step of the creativity process, alongside examples of creative ideas, can help individuals gain a better understanding of what creativity is, ultimately allowing for less biased judgements. In this sense, for example, organisations should provide clear definitions of creativity and further invest in training to foster creative behaviours.

Finally, we show that individuals working within a foreign language context are less able to generate creative ideas. We observed this adverse effect for verbal creative tasks, suggesting that organisations may want to have employees perform (individual-level) tasks that require verbal creativity in a native language and postpone to a

subsequent stage translation of ideas into a possible common corporate language such as English.

Limitations and Future Research

This study has several limitations, which provide promising directions for future research. First, external validity concerns may arise in conjunction with the laboratory environment and specific tasks used in this study. We assessed responsive creativity (Unsworth, 2001) by presenting participants with several creative tasks and instructing them to generate ideas. Individuals were thus not autonomous in their creative engagement (Unsworth, 2001). As creativity is often intrinsically motivated and agentic (Amabile & Pratt, 2016; Karwowski & Beghetto, 2019), being presented with pre-specified tasks may hinder individual intrinsic creative task engagement. Future research should thus probe whether (foreign) language influences performance and self-evaluations in open and proactive creative engagement. In organisational settings, studies could, for example, focus on individual engagement in patenting or employee/idea suggestion systems as measures of self-driven creativity (e.g., Rigtering et al., 2019; Wilhelm et al., 2019).

Second, we acknowledge limitations associated with the measure of creative self-evaluation employed in this study. To test our hypotheses related to the self-evaluation bias, we employed a measure of creative self-evaluation that is based on each participant's perception of creativity, novelty, and usefulness of their overall creative performance. However, recent research has suggested that novelty and usefulness should be viewed as two separate dimensions of creativity (cf. Montag et al., 2012; Mueller et al., 2018; Zhou et al., 2017): Some scholars argue that idea novelty precedes idea usefulness (e.g., Diedrich et al., 2015; Zhou et al., 2017), which implies that idea novelty may be a prerequisite for idea usefulness. Moreover, the perception of idea novelty may have different antecedents than the perception of idea usefulness (e.g., Kaufman et al., 2013; Mueller et al., 2018). Thus, future researchers may find it worthwhile to explore facets of creative self-evaluations in a more nuanced way by separately viewing evaluations of novelty and usefulness.

Furthermore, the bias measure used in this study is based on a within-sample reference. Such an approach, while common in the literature (e.g., Pesout & Nietfeld, 2021), could, in principle, lead to artificially inflated interpersonal differences if individuals are sorted into groups by means of a ranking, differing only marginally in absolute terms. An out-of-sample reference, for example, based on meta-analyses of ACP in the employed tasks and corresponding self-assessments, would allow for addressing this concern. Such an approach would also still have produced a relative measure. However, in the absence of such meta-analyses, we consider our approach of using a within-sample reference as a suitable second-best option for two reasons: For one, we observe a quite substantial variance on both the dependent and independent variables, including the SCP scale and across language treatments, which

might alleviate concerns about inflated heterogeneity, and also, both measures used (difference of percentiles and differences of z-scores) essentially lead to the same results, suggesting that differences between individuals are not due predominantly to a specific (e.g., ranking-based) measure.

Third, throughout this study, we relied on cognitive load theory and dual-process accounts to argue that foreign language use to generate ideas induces a mental burden and cognitive processing in a foreign language occurs in a more deliberate, controlled, and effortful manner. However, we cannot directly test the underlying cognitive mechanisms of foreign language processing and how they affect creative performance and creative self-evaluations. To build on the studies that have conducted electroencephalography studies to gain a neuro-cognitive perspective on language processing (e.g., Abutalebi, 2008), creativity (e.g., Fink et al., 2009), and the Dunning-Kruger effect (e.g., Mueller et al., 2020), future research should combine these strands of literature to consider neuroscientific approaches to examining foreign language processing and its effects on creative performance and creative self-evaluations.

Finally, in addition to such research employing neuroscientific methods to dig deeper into the underlying mechanisms to add further depth, future studies might also seek to add breadth to the investigation of the issues studied herein. This seems particularly worthwhile, given the small size of the sample in this study, a limitation that resulted from us prioritising access to a relatively homogeneous sample of working professionals (all from Germany, all participating in an in-person setting). Alternative approaches would have consisted of, for example, using a larger sample of university students (e.g., Akkermans et al., 2010) or collecting data online. Yet, all approaches are associated with their own challenges (e.g., university students are subject to generalisability concerns voiced in the literature associated with an overreliance on a specific population; less controlled experimental settings are more likely with online data collection). Future research might thus seek to address the limitations associated with the size and nature of our specific sample by including larger samples, which would increase the power of the analysis, and by sampling participants from other countries and cultural and linguistic backgrounds, possibly even considering other frequently used foreign languages than English where possible (e.g., Mandarin). If the present study could inspire such future work, it would be to the benefit of the nascent literature at the intersection of management, language, and creativity.

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