Performing well in an evaluative situation: The roles of perceived competence and task-irrelevant interfering thoughts

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Abstract
This research expands on previous research by arguing and demonstrating that high perceived competence buffers the detrimental effects of an evaluative situation. In Study 1 (n = 75, 38.7% male), the situation (evaluative vs. non-evaluative) and perceived competence (high vs. low) were manipulated, whereas in Study 2 (n = 42, 33.3% male), perceived competence relied on naturally occurring differences in perceived competence. The results of Study 1 indicate that people may underachieve in an evaluative situation. More importantly, in Study 2 it was demonstrated that such an evaluative situation had only a negative effect on test performance among individuals low in perceived competence. The occurrence of task-irrelevant interfering thoughts during task completion accounted for this inimical effect of an evaluative situation on test performance among these individuals.

Keywords: Achievement, anxiety, worry, stress, confidence

People’s intellectual accomplishments are clearly products of stable internal forces, such as giftedness and innate talent. However, this does not necessarily mean that temporary, situational factors are unimportant predictors of task performance. For example, Aronson and Steele (2005) have demonstrated that performance impairment may be caused by a stereotype threat, that is, the risk of fulfilling a negative stereotype about one’s group (e.g., Steele & Aronson, 1995). Examples of other situational factors that appeared to affect test performance include native language, time pressure, negative bogus feedback from a personality test, achievement goals, and praise for being smart rather than effort praise (e.g., Baumeister, Twenge, & Nuss, 2002; Mueller & Dweck, 1998; Sternberg & Grigorenko, 2001; Van Yperen, 2003). Similarly, a host of studies have demonstrated that evaluation anxiety is linked to performance decrements in real-word situations, particularly in the academic domain (e.g., Hembree, 1988; Wine, 1982; for a review, see Zeidner & Matthews, 2005).

In general, the basic premise of these studies is that environmental conditions or contexts (e.g., assessment exercises, tests, exams, athletic contests, social situations) evoke anxiety whether or not moderated by individual difference variables. However, it has not been shown that relative to a non-evaluative situation, an evaluative situation of and in itself
may affect test performance through anxiety. Rather, scores on anxiety inventories are typically correlated with assumed process or outcome variables (e.g., Cassady & Johnson, 2002; Elliot & McGregor, 1999), whereas in experimental research, differences between high and low anxious participants are examined (e.g., Carver, Peterson, Follansbee, & Scheier, 1983). This present research expands on previous research by showing that relative to a non-evaluative situation, an evaluative situation of and in itself may affect test performance.

An evaluative situation is a context in which individuals have the prospect of personal evaluation. Such a situation may keep performance efforts channeled toward the normative standards that eventuate in high levels of performance. On the other hand, in an evaluative situation, concerns about normative evaluation, social comparisons, and competition may evoke evaluation anxiety, and consequently, distract individuals from a focus on doing what is necessary to complete the task successfully (for a review, see Zeidner & Matthews, 2005). In their influential paper, Liebert and Morris (1967) proposed that evaluation anxiety consists of two primary components. The first component of test anxiety, emotionality, represents the physiological and affective elements of the anxiety experience that emerge directly from autonomic arousal. Emotionality, such as an accelerated heart rate or jittery nerves, has been shown to have little, if any, deleterious effect on performance (Deffenbacher, 1980). In contrast, the second component is worry, or cognitive concern about one's performance level and its implications for the self, which has consistently been shown to undermine performance, presumably by interfering thoughts that reduce the cognitive resources available for processing and performing the task (Deffenbacher, 1980; Sarason, 1984). Therefore, it seems reasonable to posit that exposure to an evaluative situation undermines test performance through task-irrelevant interfering thoughts, that is, a presumed manifestation of worry.

However, this may be particularly true among individuals low in perceived competence. Similar to individuals without evaluation stress, those in an evaluative situation perceiving a high likelihood of obtaining satisfactory self-evaluations (i.e., those high in perceived competence), cognitive interferences with test performance may not occur, or at least to a lesser degree (e.g., Elliott & Dweck, 1988; Farr, Hofmann, & Ringenbach, 1993). For them, an evaluative situation may be perceived as a challenge rather than a threat, and accordingly, may keep their performance efforts channeled toward the normative standards, so that performance impairment is less likely to occur. Hence, it was hypothesized that high perceived competence buffers the detrimental effects of an evaluative situation. That is, in an evaluative situation, task-irrelevant cognitions and low test performance were anticipated only among low competent individuals (see Figure 1). Two studies were conducted in which the evaluative situation was fostered experimentally. In Study 1, perceived competence was also manipulated, whereas in Study 2 this variable relied on naturally occurring differences in perceived competence.

Figure 1. Research model.
Study 1

Method

Participants

Participants were 75 students (38.7% male) from a university and several professional schools and institutes in the Netherlands, including the Departments of Medicine, Psychology, Mathematics and Physics, Education and Health, Economics, and Technology. The participants were recruited during first-year lectures, and were paid five euros (approximately six US dollars) for their participation. Four participants were excluded from the data analyses because they were accurately suspicious about the purposes of the experiment or they had previously participated in a similar experiment. The ages of the participants ranged from 18 to 24 years ($M = 19.7, SD = 1.55$). Random assignment to the experimental conditions was blocked on sex. Sex differences were explored, but the results could not be qualified by higher-order interactions with sex as an additional predictor variable.

Procedure

When participants arrived at the laboratory, they were seated at a computer that guided them through the experiment. Participants read that they were going to participate in a research project on the assessment of verbal skills, and that the experimenters were interested in how users feel about the test. They were informed that there were two similar versions of the test (henceforth referred to as Version 1 and Version 2). Bogus information was presented to optimize the attainment value of the test.

Efforts were also made to ensure that all participants were highly confident about their capacity to acquire verbal skills. *All the participants* read that verbal skills are only partly acquired from “mother nature” and that, in large part, verbal skills can be learned. They were also informed that working on this test had a positive influence on verbal skills, and accordingly, that they had the opportunity to develop valuable skills and competencies that might be helpful in their studies, work, and daily lives. If participants underperformed (e.g., those in the evaluative situation), it would be known that low confidence in the malleability of verbal skills was *not* the cause (cf., Elliott & Dweck, 1988).

Two parallel versions of Van Dijk and Tellegen’s (1994; see also Van Yperen, 2003) Verbal Skills Test were used, each of which consisted of three modules: Synonyms, Analogies, and Categories. An example of the Synonyms module is “Press the number of the word that has the same meaning as the word PROVISIONS: (1) advertisement; (2) clairvoyance; (3) furniture; (4) garbage; (5) stock.” In the Analogies module, the participants had to figure out how the first word related to the second word. Next, they had to find the word that had the same relationship to the third word. For example, WOLF-SHEEP, CAT: (1) hedgehog; (2) kitten; (3) mouse; (4) tiger; (5) dog. In the Categories module, the same six categories followed each pair of words. The participants had to press the number of the category that matched the pair of words. For example, AIRPLANE-TRAVELING: (1) identical; (2) opposite; (3) kind; (4) part; (5) cause; (6) means. Each module of Version 1 was introduced using three sample items. A 40-second time limit was set for each module; participants started a module by pressing the “enter” key, and time was displayed at the bottom of the computer screen. The participants received ongoing and accurate performance information. That is, after each module (including sample items), the participants received their genuine absolute scores.
After Version 1 was completed, normative feedback was provided to manipulate participants’ levels of perceived competence (cf., Carver & Scheier, 1998; Forster, Grant, Chen Idson, & Higgins, 2001; McClelland, Atkinson, Clark, & Lowell, 1953). The individualized characteristics of the fictitious norm group were (1) “male” in the case of male participants, and “female” in the case of female participants; (2) participant’s age plus 0.8 years as the mean age of the norm group; (3) level of education that matched the participant’s educational level. The participants were informed that, relative to their norm group, their performances on Version 1 of the Verbal Skills Test was among the best (vs. worst) 30%, and that their scores suggested that the quality of their verbal skills in comparison to those of similar others was good to excellent (vs. weak to bad). Immediately after the perceived competence manipulation, the participants responded to the measure of perceived competence.

Next, the participants were reminded that they would be completing Version 2, which was of the same difficulty level as Version 1. In the evaluative situation, the participants got the prospect of a personal evaluation at the end of the session in a meeting attended by all participants who had completed the test in the same session. In the non-evaluative situation, it was emphasized that they would not be given feedback on their performance on Version 2 because reliable norms for this particular version were not yet available.

Immediately after they had completed Version 2, the participants responded to the cognitive interference questionnaire. Finally, they completed the manipulation checks, and were carefully debriefed and thanked.

**Measures**

**Manipulation checks.** At the end of the session, participants indicated whether they had been informed that their scores on Version 2 would be compared to those of others, and that the experimenter would present the results after the session. In addition, they were asked whether they had been informed that verbal skills can, in large part, be learned and that working on the Verbal Skills Test would have a positive influence on their verbal skills. These checks were followed by a seven-point response-scale ranging from (1) “I am absolutely certain that I was informed” to (7) “I am absolutely certain that I was not informed.”

As a check on the perceived competence manipulation, participants responded to the following question: “The results of Version 1 suggest that the quality of your verbal skills in comparison to similar others is ...” Response categories (five-point scale) ranged from (1) weak to bad to (5) good to excellent. Furthermore, immediately after the perceived competence manipulation, the participants responded to the following five items, which were presented in random order (cf., Van Yperen, 2006): (1) Do you feel able to attain a high score in a similar test? (2) Do you think you would do well in a similar test? (3) Did you feel competent when you were working on Version 1? (4) Did you feel stupid when you were working on Version 1 (reversed item)? (5) How do you estimate your chances of getting a good score in a similar test? The first four items were followed by a five-point scale, ranging from (1) not at all to (5) very much. The anchors of the last item ranged from (1) very low to (5) very high. Items were averaged to create an index for perceived competence. Cronbach’s alpha was 0.78.

**Dependent variables**

*Actual performance* is the total score on the three modules of each version of the Verbal Skills Test, which are parts of an intelligence test developed for high school students by Van Dijk.
and Tellegen (1994; see also Van Yperen, 2003). The three modules are Synonyms, Analogies, and Categories (see procedure). Each module of the original test consists of 24–30 items, increasing in difficulty. To create two alternate forms of the test, each module was split up into two parts: the odd numbers constituted Version 1 and the even numbers Version 2.

Task-irrelevant cognitive interferences were assessed using the scale developed by Sarason, Sarason, Keefe, Hayes, and Shearin (1986). The Task-Irrelevant Interference Questionnaire obtains self-reports of task-irrelevant interfering thoughts immediately after performance on a task, for example, “I thought about something that happened earlier today.” The general stem was, “How often did the following thought occur to you while working on Version 2 of the Verbal Skills Test?” Response categories ranged from (1) never to (5) very often. The presentation of the items was randomized. Cronbach’s alpha was 0.74.

Results

Manipulation checks

A 2 (Situation: evaluative vs. non-evaluative) × 2 (Perceived competence: low vs. high) analysis of variance (ANOVA) indicated that the manipulations were successful. The participants in the evaluative and non-evaluative situations largely confirmed, and denied, respectively, that they had been given the description of the evaluative situation, $F(1, 71) = 101.05, p < 0.001, \eta^2 = 0.59$ ($M_{ev} = 2.37, SD = 2.60$ vs. $M_{nonev} = 6.32, SD = 0.97$). The main effect of perceived competence and the interaction were not significant ($p$’s > 0.60).

In a similar vein, the participants in the low and high perceived competence conditions confirmed that their results in Version 1 suggested that their verbal skills were weak to bad, or good to excellent, respectively, $F(1, 71) = 890.28, p < 0.001, \eta^2 = 0.93$ ($M_{low} = 1.16, SD = 0.37$ vs. $M_{high} = 4.71, SD = 0.61$). The main effect of Situation and the interaction were not significant ($p$’s > 0.80). Furthermore, relative to the participants in the low perceived competence condition, those in the high perceived competence condition were higher in perceived competence, $F(1, 71) = 9.32, p < 0.01, \eta^2 = 0.12$ ($M_{low} = 3.04, SD = 0.63$ vs. $M_{high} = 3.44, SD = 0.55$).

Furthermore, across all conditions ($p$’s > 0.20), the participants confirmed that they had been told that verbal skills can, in large part, be learned and that working on this test would have a positive influence on their verbal skills ($M_{total} = 2.04, SD = 1.47$).

Dependent variables

The hypothesis states that high perceived competence buffers the detrimental effects of an evaluative situation. That is, in an evaluative situation, task-irrelevant cognitions and low test performance were anticipated only among low competent individuals (see Figure 1). Hence, a 2 (Situation: evaluative vs. non-evaluative) × 2 (Time: 1 and 2) mixed model ANOVA was conducted, which revealed a strong learning effect, $F(1, 71) = 18.60, p < 0.001, \eta^2 = 0.21$. Overall, participants’ performances increased from $M = 19.03, SD = 4.04$ at Time 1 to $M = 20.83, SD = 3.96$ at Time 2, so that the average gain score was $M = 1.80, SD = 3.67$. The significant interaction between Time and Situation, $F(1, 71) = 4.21, p < 0.05, \eta^2 = 0.06$, indicated that particularly individuals in the non-evaluative situation improved. Specifically, individuals in the evaluative situation performed worse than their counterparts in the non-evaluative situation; the gain scores were $M_{ev} = 0.95, SD = 3.12$ and $M_{nonev} = 2.68, SD = 4.01$, respectively. The two-way
interaction between Time and Perceived Competence, and more importantly, the predicted three-way interaction, were not significant ($p’s > 0.69$). Thus, in an evaluative situation, the participants, including those low in perceived competence, performed worse than their counterparts in the non-evaluative situation, but no difference was observed within the evaluative situation. That is, in an evaluative situation, low competent individuals did not perform worse relative to their high competent counterparts so that the hypothesis was not supported with regard to test performance.

The results of a 2 (Situation: evaluative vs. non-evaluative) $\times$ 2 (Perceived competence: low vs. high) ANOVA with task-irrelevant thoughts as dependent variable did not provide support for the hypothesis either. Specifically, the interaction between situation and perceived competence on intrusive, task-irrelevant thoughts during task completion was not significant, $F(1, 71) = 0.04$, ns. Both main effects were not significant either ($p’s > 0.12$) so that task-irrelevant thoughts during task completion did not account for the observed inimical effect of an evaluative situation on test performance.

**Study 2**

The results of Study 1 suggest that an evaluative situation may have a negative impact on test performance. However, no evidence was obtained that task-irrelevant interfering thoughts mediates this effect, and, more importantly, the results provide no support for the research model (see Figure 1). Specifically, no evidence was obtained that high perceived competence buffers the deleterious effects of an evaluative situation on test performance through task-irrelevant cognitions. However, the experimental manipulations of perceived competence may not have been powerful enough to moderate the deleterious effects of an evaluative situation on test performance. The perceived likelihood of obtaining satisfactory self-evaluations that individuals bring to a situation is obviously more stable and internalized than an experimental manipulation, and therefore, may protect individuals better against the deleterious effects of an evaluative situation. Hence, in Study 2, the measure of perceived competence relied on naturally occurring differences in perceived competence rather than an experimental manipulation. This was the only, though crucial, difference between both studies.

**Method**

**Participants**

Participants were 42 students (33.3% male) from the University of Groningen, the Netherlands, from the Departments of Medicine, Psychology, or Law. The participants were recruited during first-year lectures and were paid five euros (approximately six US dollars) for their participation. The ages of the participants ranged from 17 to 21 years ($M = 18.7, SD = 0.87$). The participants were randomly assigned to the experimental conditions, with males and females equally divided across the conditions. Sex differences were explored, but again, the results could not be qualified by higher-order interactions with sex as an additional predictor variable.

**Procedure**

The procedure for Study 2 was the same as that followed in Study 1. However, in contrast to Study 1, the participants received no (bogus) feedback on Version 1. The second
predictor variable, perceived competence, relied on naturally occurring differences in perceived competence.

Measures

The same task, measures, and manipulation checks were used as in Study 1. However, in Study 2, the manipulation checks were followed by a dichotomized response scale (Yes, I was informed vs. No, I was not informed). Cronbach’s alphas were 0.86 for perceived competence and 0.74 for the index of task-irrelevant cognitive interferences.

Results

Manipulation checks

In the evaluative situation, a majority (63.3%) indicated that they had been informed that their scores on Version 2 would be compared to those of others, and that the experimenter would present the results after the session. In the non-evaluative situation, all participants (100%) confirmed that they had not received that information. Furthermore, almost all the participants (97.6%) confirmed that they had been informed that verbal skills can be learned for a significant part and that working on the Verbal Skills Test had a positive influence on verbal skills.

Dependent variables

To examine whether particularly low competent individuals perform poorly in an evaluative situation (see Figure 1), a 2 (Situation: evaluative vs. non-evaluative) × 2 (Perceived competence: centered scores lower vs. higher than zero) × 2 (Time: 1 and 2) mixed model ANOVA was executed. As in Study 1, this analysis revealed a strong learning effect, \( F(1, 38) = 24.13, \ p < 0.001, \ \eta^2 = 0.39 \). Overall, participants’ actual performances increased from \( M = 18.69 (SD = 3.97) \) at Time 1 to \( M = 21.64 (SD = 3.51) \) at Time 2, so that the average gain score was \( M = 2.95 (SD = 4.02) \). Most importantly, the predicted three-way interaction between Situation, Perceived competence, and Time was significant, \( F(1, 38) = 3.97, \ p < 0.05, \ \eta^2 = 0.10 \) (all other effects: \( p > 0.29 \)). As predicted, an additional analysis indicated that in an evaluative situation, the participants low in perceived competence performed worse on Version 2 (\( M = 19.92, SD = 3.06 \)) relative to their counterparts in one of the other three conditions (\( M = 22.33, SD = 3.48 \); \( t(40) = 2.10, p < 0.05 \)). Thus, as predicted, in an evaluative situation, only individuals low in perceived competence performed poorly on the test, so that it can be concluded that high perceived competence buffered the detrimental effect of an evaluative situation on test performance.1

To test whether interfering, task-irrelevant thoughts mediated this effect (see Figure 1), three relationships between the target variables had to be demonstrated to establish a basis for testing mediation (Baron & Kenny, 1986). As reported above, the first requirement was met, that is, a link between the predictor variables (i.e., situation and perceived competence) and the outcome variable (i.e., test performance). The second requirement is that the predictor variables affect the mediator. A 2 (Situation: evaluative vs. non-evaluative) × 2 (Perceived competence: centered scores lower vs. higher than zero) ANOVA with task-irrelevant cognitions as dependent variable produced the expected interaction effect, \( F(1, 38) = 10.57, \ p < 0.01, \ \eta^2 = 0.22 \). This interaction effect qualified the main effect of Situation, \( F(1, 38) = 5.52, \ p < 0.05, \ \eta^2 = 0.13 \). The main effect of Perceived competence
was not significant \((p=0.17)\). Follow-up analyses revealed that, relative to the other participants \((M=1.05, SD=0.11)\), particularly individuals low in perceived competence in the evaluative situation reported high levels of task-irrelevant interfering thoughts while working on Version 2 of the Verbal Skills Test, \(M=1.41, SD=0.53, t(37.35)=3.60, p<0.001.\)  

The third condition for a mediational model is a link between the mediator and the dependent variable. The partial correlation between cognitive interferences and performance (Version 2), controlling for initial differences in performance (Version 1) was \(r=-0.28, p<0.05.\)

If these three conditions for mediation are met, it should finally be tested whether the predictor variables exert no effect upon test performance when cognitive interferences are controlled. Rerunning the 2 (Situation: evaluative vs. non-evaluative) × 2 (Perceived competence: centered scores lower vs. higher than zero) × 2 (Time: 1 and 2) mixed model as an ANCOVA with task-irrelevant cognitions as the covariate, revealed that the three-way interaction was no longer significant, \(F(1, 37)=1.00, p=0.32.\) As predicted, these results suggest that perceived competence moderates the effect of an evaluative situation on cognitive interferences, and next, on test performance (see Figure 1). That is, particularly low competent individuals in an evaluative situation performed poorly on the Verbal Skills Test through task-irrelevant interfering thoughts while working on the test.

**Discussion**

Considering that some form of normative evaluation is apparent and even necessary in many settings, such as the workplace, sports, and school, it is important to know the conditions that decrease the tendency to under-achieve in evaluative situations. The findings of Study 1 suggest that, relative to a non-evaluative situation, an evaluative situation may indeed impair test performance. More interestingly, the results of Study 2 suggest that the high perceived competence that individuals bring to situation buffers this effect. That is, only among individuals low in perceived competence, an evaluative situation had a negative impact on test performance. Furthermore, the occurrence of task-irrelevant interfering thoughts during task completion accounted for this inimical effect of an evaluative situation on test performance among these individuals.

An intriguing question is why naturally occurring differences in perceived competence moderated the link between the evaluative situation and test performance (Study 2), whereas the manipulation of perceived competence did not show this effect (Study 1). It is important to note that the bogus feedback provided in Study 1 had the intended effect, that is, participants largely confirmed the nature of the feedback they had received, and the valence of the feedback had a corresponding effect on participants’ levels of perceived competence. However, the feedback manipulations in Study 1 were apparently not powerful enough to produce levels of perceived competence that were as low and as high as the naturally occurring differences observed in Study 2. In Study 2, the difference in perceived competence between the two groups that were created afterwards \((M_{\text{low}}=2.77, SD=0.52\) vs. \(M_{\text{high}}=3.76, SD=0.39)\) was much greater than the difference in means of the groups in Study 1 that received low and high competence information which intentionally distorted their naturally occurring levels of perceived competence \((M_{\text{low}}=3.04, SD=0.63\) vs. \(M_{\text{high}}=3.44, SD=0.55)\). Possibly, only naturally occurring, internalized, and undistorted high levels of perceived competence may buffer the negative effects of an evaluative situation.
It has been proposed that distracting, task-irrelevant thoughts may explain why individuals who are low in perceived competence tend to underachieve in evaluative situations (e.g., Sarason, 1984). Indeed, relative to the other participants in Study 2, individuals low in perceived competence reported higher levels of task-irrelevant thoughts during task completion which was accompanied with relatively poor performances on the Verbal Skills Test. In contrast, individuals high in perceived competence may have perceived the evaluative situation as a challenge rather than a threat because of the high attainment value of the test combined with high performance expectations. Indeed, several influential motivation theorists suggest that expectancy and value are two main determinants of motivated action (e.g., Atkinson, 1964; Eccles, 2005; Vroom, 1964). That is, the anticipated satisfaction that comes from performing well in an evaluative situation combined with the high subjective likelihood of future success determines a person’s motivation to expend effort on an activity and to persevere when confronted with difficulties.

An alternative explanation of the present results may be that low competent individuals in an evaluative situation sacrifice effort and learning because of a lack of confidence in their ability to learn. Following Elliott and Dweck (1988), however, all participants in the present study were informed that verbal skills can be learned and that working on the Verbal Skills Test has a positive influence on verbal skills. In both Study 1 and Study 2, almost all participants indicated that they had received this information, and there were no differences between the conditions in this respect. Accordingly, a perceived lack of ability to learn does not provide a plausible explanation for the present findings.

It is important to note that the present findings are promising, but inconclusive. Replications in various samples and applied contexts is necessary. In future studies, the experimental manipulation of perceived competence may be strengthened (see discussion above). Similarly, the manipulation of the evaluative situation may be improved. In Study 2, all participants (100%) confirmed that they had not received information about the planned comparison of their results on Version 2. However, in the evaluative condition, only 63.3% indicated that they had been informed that their scores on Version 2 would be compared to those of others. However, it should be noted that there is no reason to assume that the experimental manipulation of the situation in Study 2 was less successful than the one in Study 1 where the effect size ($\eta^2$) was 0.59, which is huge by the standards of social science research.4

In our achieving society (McClelland, 1961), many settings, such as the workplace, sports, and school, tend to be governed by competition and normative evaluation. The present results suggest that evaluative situations may produce cognitive interferences and impair performance. So, a relevant question for practitioners may be how to support employees, students, athletes, etc. in evaluative situations? First, it might be a good idea not to emphasize normative evaluation. Rather, the endeavors of practitioners should be directed towards developing task- and self-referenced competence through training and skill development, for example, by emphasizing evaluation more in terms of progress and effort, by defining success more in terms of progress and improvement, and by accepting errors or mistakes as part of the learning process (cf., Ames, 1992). This is more likely to result in people interpreting their previous performances positively, which may raise their levels of perceived competence (cf., Bandura, 1997). On the basis of the present findings, one may speculate that high perceived competence may lower the occurrence of cognitive interferences in an evaluative situation, and accordingly, mitigate performance decrements in such a context.
Notes

1 A regression analysis in which subsequent performance (Version 2) was regressed stepwise on initial performance (Version 1), the experimental manipulation (Situation: evaluative vs. non-evaluative), perceived competence (as a continuous variable), and their interaction, revealed identical results. That is, the expected interaction was significant, \( F_{\text{change}}(1, 37) = 4.37, p < 0.05, R^2_{\text{change}} = 0.09, f^2 = 0.10. \) Note that in regression analyses, effect sizes are expressed by \( f^2, \) and are computed on the basis of the percentage of explained variance (\( R^2 \) or \( R^2_{\text{change}} \); Cohen, 1988).

2 Regressing stepwise the measure of task-irrelevant cognitive interferences on the experimental manipulation (Situation: evaluative vs. non-evaluative), perceived competence as a continuous variable, and their interaction, also elicited the anticipated interaction effect, \( F_{\text{change}}(1, 38) = 4.30, p < 0.05, R^2_{\text{change}} = 0.09, f^2 = 0.10. \)

3 Similarly, rerunning the regression analysis (see Note 2) with task-irrelevant cognitive interferences as additional control variable, revealed that the significant interaction of the experimental manipulation and perceived competence on actual performance was no longer significant, \( F_{\text{change}}(1, 36) = 2.11, \) ns.

4 Cohen (1988, pp. 283–288) has provided some useful guidelines for interpreting effect sizes in the behavioral sciences. He characterized effect sizes around \( \eta^2 = 0.01 \) as “small,” around \( \eta^2 = 0.06 \) as “moderate,” and around \( \eta^2 = 0.14 \) as “large.”

References


