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Self-reported cognitive failures: A core self-evaluation?

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ABSTRACT

The cognitive failures questionnaire (CFQ) measures the self-reported frequency of everyday mistakes and represents the tendency to make everyday mistakes. The present research pursues an alternative interpretation of the CFQ, namely the tendency to evaluate one's worth and functioning in a pessimistic way. Study 1 shows that the self-reported frequency of daily mistakes is related to a pessimistic self-evaluation of task performance. Study 2 shows that CFQ has considerable overlap with a construct that represents the self-evaluation of one's general worth and functioning, namely core self-evaluations. It is discussed what these results mean for the applicability of the cognitive failures questionnaire as an indication of the tendency to make mistakes.

1. Introduction

Unintended errors are often major problems in daily life. They tend to interrupt work and leisure activities (Keith & Frese, 2008), and repairing these errors can be time consuming and frustrating. Mistakes may also turn into accidents and even lead to disabling injuries or deaths (Reason, 1990). When individuals are questioned regarding everyday failures, they typically differ in their reported daily-error frequency. A group of researchers has proposed that this variability is the result of a cognitive propensity toward making mistakes (Broadbent, Cooper, FitzGerald, & Parkes, 1982), and that such an error-related disposition can be identified by self-report.

These ideas formed the basis for a self-report instrument to measure this disposition, namely Broadbent's cognitive failures questionnaire (Broadbent, Broadbent, & Jones, 1986, 1989; Broadbent et al., 1982). Research has provided evidence that this instrument correlates with self-reported and otherwise registered errors and accidents (Klein, 2006; Wallace & Chen, 2005; Wallace & Vodanovich, 2003), and that individuals who are more vulnerable to stress and burnout tend to report a higher frequency of everyday mistakes in work settings (Matthews, Coyle, & Craig, 1990; van der Linden, Keijsers, Eling, & van Schaijk, 2005).

The present research pursues a supplemental interpretation of the CFQ construct, namely that it represents a general poor self-view which is reported via the frequency of daily mistakes. Broadbent was aware of such a supplemental interpretation of CFQ, and stated that the self-report of a high error-rate may represent "merely a poor self-image or lack of confidence", and added that if this were true such a self-report would as such not relate to "a true impairment of function" (Broadbent et al., 1986, p. 286). More generally, individuals that nourish a general pessimistic self-evaluation of their worth and functioning may report a higher frequency of everyday mistakes which results in high CFQ scores.

To test this interpretation of the cognitive failures construct, we conducted two studies. In the first study, the CFQ measure is studied in relation to self-reported performance on a pursuit-tracking task that urged participants to minimize inevitable errors. In line with the idea that CFQ taps negative self-evaluations, we expected that CFQ would predict self-reported performance even when actual performance in the task is controlled.

The second way to link the reported frequency of everyday mistakes to self-evaluation is to compare CFQ to the general construct of core self-evaluations (CSE, Judge, Van Vianen, & De Pater, 2004). Our second study consequently investigated relations between CSE and CFQ measures. The CSE construct pertains to a basic, fundamental appraisal of one's worthiness, effectiveness, and capability as a person. It concerns a broad, latent, higher-order trait indicated by four well established traits in the personality literature. The traits, self-esteem (Harter, Sternberg, & Kolligian, 1990), self-efficacy (Bandura, Rumsey, Walker, & Harris, 1994), emotional stability (Watson, 2000) and locus of control (Rotter, 1966), are viewed as different ways in which CSE is realized. Since, a high CSE score indicates a general high self-worth, the alternative interpretation of CFQ will find support in a negative relationship between CFQ and CSE. An interpretation of this type is congruent with findings showing that persons who score high on a sub-dimension of CSE – neuroticism – claim to make more errors than stable individuals

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(Merckelbach, Muris, Nijman, & de Jong, 1996; Muris & Merckelbach, 1995).

2. Study 1

The present study tested whether the score on CFQ is related to the self-evaluation of task performance using a pursuit-tracking task. More specifically, if CFQ reflects a general view of low self-worth and functioning, individuals who score high on CFQ will evaluate their own performance as lower than individuals that score low on CFQ even when task characteristics like difficulty and actual task performance are controlled for.

In the context of Study 1, the CFQ measure was not necessarily expected to relate to the level of actual task performance. The reason for this is that everyday mistakes tend to pertain to occasional slips during otherwise skillful performance (Broadbent et al., 1982; Wallace & Vodanovich, 2003). This means that the tendency to make mistakes does not necessarily need to surface in a maximum performance context like our laboratory study but rather is expected to surface in typical everyday contexts.

2.1. Participants

Sixty-eight undergraduate students (58 females) from Maastricht University participated for course credits. Participants' average age was 23 years (SD = 4.1 year), and they all had normal or corrected-to-normal vision. Every participant gave informed consent before commencing the test session.

2.2. Material

2.2.1. Cognitive failures questionnaire (CFQ)

We employed a translation of the English CFQ (Broadbent et al., 1982) into a Dutch version (Muris & Merckelbach, 1995). The questionnaire consists of 25 items such as "Do you drop things?" or "Do you forget appointments?" or "Do you fail to notice sign posts on the road?" A participant rates the personal frequency during the past months of such everyday errors from 'Very often' (4) to 'Never' (0). Close examination of the inventory has revealed separate dimensions of cognitive failures (Matthews et al., 1990), but has also shown the highest internal consistency when employed as a single dimension (Broadbent et al., 1982; Merckelbach et al., 1996; Merckelbach, Muris, & Rassin, 1999). Internal consistencies (Cronbach α) of CFQ as a single dimension ranged from 0.75 to 0.81, and it showed a significant test–retest correlation of 0.80 (Broadbent et al., 1982; Merckelbach et al., 1996). Cronbach α for the present data was 0.89.

2.2.2. Tracking task

To perform the tracking task, a participant in the present study sat in front of a 17 in. computer monitor positioned approximately at a 50 cm distance. Participants spatially matched the mouse pointer, presented as a cross hair, to the surface of a moving cursor consisting of an open rectangle. The cursor followed a predictable path and bounced back from the inner sides of the 10×8 cm rectangular area in the center of the computer screen. A trial lasted 20 s and the total number of excursions of the mouse pointer from the cursor area was measured. Task difficulty was manipulated by target surface size which differed about 600 pixels between difficulty conditions, 1600 pixels (low difficulty), 1024 pixels (medium difficulty), 400 pixels (high difficulty). Participants first performed 10 trials in each difficulty condition.

Participants' performance measure, namely the number of tracking errors, was averaged across trials per difficulty condition. Upon completing the ten trials of a difficulty condition, participants rated their performance on a visual analog scale (VAS) ranging from 0 to 10.

2.3. Results and discussion

2.3.1. Descriptive statistics

The CFQ scores ranged from 0.44 to 3.6 with a median value of 1.64 for the used sample of 68 individuals. Table 1 provides an overview of mean values and correlations of the performance and rating measures as a function of difficulty condition and CFQ scores.

To investigate whether CFQ scores predicted self-rated performance over and above task characteristics (i.e. actual performance and task difficulty), we ran a hierarchical regression analysis for each difficulty level as well as an integrated multilevel analysis. Results for the hierarchical regression analyses are provided in Table 2. As indicated by Table 2, CFQ added to the prediction of self-rated performance at all three levels of difficulty and the regression coefficient for CFQ was also significant in all analyses.

To corroborate the results of the regression analyses, we also ran an integrated multilevel analysis (Pinheiro & Bates, 2000; Raudenbush & Bryk, 2002) with performance at the three difficulty levels nested in persons. Difficulty was centered at the average level (coding: high difficulty = 1, average difficulty = 0, low difficulty = −1). The CFQ score was included as a level-2 predictor. Results of this analysis are presented in Table 3 and depicted in Fig. 1. As indicated by Table 3, the multilevel analysis yielded similar results as the separate analyses for each difficulty level. Again, CFQ significantly added to the prediction of self-rated performance and the coefficient for CFQ remained significant when controlled for tracking performance.

3. Study 2

Results from study 1 suggested that individuals scoring high on CFQ may nurture a general pessimistic view towards their own worth and functioning. The present study pursued this idea further and tested whether CFQ could be subsumed under the established construct of core self-evaluations. (Judge, Erez, Bono, & Thoresen, 2002; Judge, Erez, Bono, & Thoresen, 2003). For that purpose we ran three analyses. First, since a high score on CFQ is expected to portrait an individual's pessimistic core self-evaluations, CFQ scores should negatively correlate with CSE scores. Second, we also examined whether CFQ could possibly be integrated into the CSE construct. This would mean that CFQ is another construct that taps the broad and general core self-evaluations construct in addition to the already established indicators of CSE (locus of control, self-esteem, generalized self-efficacy, and neuroticism). To examine this hypothesis, we applied confirmatory factor analysis to contrast a model that treated CFQ as a second-order factor of CSE with a model that treated CFQ as an independent dimension. These analyses were closely based on the analyses originally conducted to test their theoretical ideas regarding the CSE construct (Judge et al., 2002; Judge et al., 2003). Finally, we were also interested in the association between CFQ and other CSE constructs. To examine to what degree CFQ reflected the other traits constituting CSE, namely self-esteem, emotional stability, general self-efficacy and locus of control, we studied how the contribution of these traits to the variance explained in the CFQ construct.

3.1. Method

3.1.1. Participants

University students ($N = 215$), of which 156 were female, volunteered to participate for course credits.