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Personality risk factors in assessing the reliability of the performance of operating personnel

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Introduction: The development of complex human-machine systems has led to greater demands on operators' skills, and has increased the importance of human error (Pribytkova et al, 2012; Vondráčková et al, 2017; Jian Ai Yeow, 2014). For this reason performance reliability, defined as operators' capacity to conduct essential work processes in a high-quality and timely manner (Bodrov, Orlov, 1998) has become a topical subject.

Objectives: This study concerns an investigation of subjective predictors of operators' reliability, namely personality risk factors (supported by the RFBR #19-013-00799).

Methods: Subjects: 67 operators and 69 engineers at a hydro-power station. Personality traits were assessed using Sobchik's verbatim Russian translation of the MMPI (Sobchik, 1990). Performance reliability was assessed using simple and complex sensorimotor reaction tests as standard procedures for the pre-shift assessment of operators.

Results: In the operators' group significant correlations (Spearman's test) were found between the level of quality of complex sensorimotor reactions and the level of such personal traits as impulsiveness and individualism: a higher manifestation of these traits was associated with a higher level of mistakes in conducting the pre-shift psychophysiological test ($p < 0.05$). With the engineers there was a significant link between the higher speed of simple sensorimotor reactions and higher optimism scores.

Conclusions: The results suggest that a tendency to behave spontaneously, and orientation to one's own needs, could be risk factors in terms of operator reliability. They also reveal the specifics of reliability predictors in different professions at the power plant.

Keywords: human factor error; performance; personality traits; operator's reliability

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The portuguese version of the big three perfectionism scale – further validation with adults from the general populationJ. Oliveira¹, A.T. Pereira², A. Araujo², C. Cabaços², J. Azevedo², F. Carvalho^{2*} and A. Macedo³¹Faculty Of Medicine, University of Coimbra, Coimbra, Portugal;²Institute Of Psychological Medicine, Faculty Of Medicine, University of Coimbra, Coimbra, Portugal and ³Institute Of Psychological Medicine, Faculty Of Medicine, University of Coimbra, Coimbra, Portugal

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Introduction: Both original Big Three Perfectionism Scale (BTPS; Smith et al. 2016), and the Portuguese version validated with a

sample of university students (Lino et al. 2018) evaluates three second-order factors (rigid, self-oriented and narcissistic perfectionism) and ten facets.

Objectives: To confirm the BTPS three-factors-ten-dimensions' structure in a sample of Portuguese adults from the general population.

Methods: A sample of 467 adults (70.7% females; Mean age=38.44±12.27; range: 25-82) answered the BTPS Portuguese version and other validated perfectionism measures (Multidimensional Perfectionism Scales from Frost and Hewitt & Flett; Self-Presentation Perfectionism Scale). To study the temporal stability a sub-sample of 132 participants completed the BTPS again after approximately five weeks. SPSS and AMOS software was used.

Results: The second order model presented an acceptable fit ($X^2/df=3.115$; TLI=.811; CFI=.825; RMSEA=.067). There was also evidence of a general factor comprising all the 45 items ($X^2/df=3.127$; TLI=.809; CFI=.823; [JA1] RMSEA=.068). The Cronbach alphas of the three factors ranged from $\alpha=.88$ to $\alpha=.92$; and facets had $\alpha > .70$ showing a total of $\alpha=.94$. Total and dimensional scores showed significant positive and moderate to high correlations with the other perfectionism measures and their test-retest correlation coefficients were $r=.85$ ($p < 0.001$).

Conclusions: This study confirms the validity and reliability of the Portuguese BTPS underlying three-factors structure. Additionally, we found, for the first time, that BTPS can also be validly and reliably used to measure a global perfectionism construct. It is our intention to develop a shorter version the Portuguese BTPS in the near future.

Keywords: adults; BTPS; Perfectionism; confirmatory factor analysis

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Big five personality traits prediction with AI

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Introduction: Openness, conscientiousness, extroversion, agreeableness and neuroticism are known as the Big Five personality traits (BFPT). They are theoretical building blocks of the personality and comprise wide and interconnected spectra. Artificial intelligence (AI) could help to grasp their complexity.

Objectives: To investigate whether AI could predict the BFPT from themselves.

Methods: Data from 2,697 questionnaires were analysed using an AI. The short form of the International Personality Item Pool was used to assess the BFPT. Four of the BFPT scores were employed to predict the fifth one and the procedure was repeated for all of them alternatively. The AI was conservatively tuned to maximize the one-way random intraclass correlation coefficient (ICC) between predicted and real values. Their Pearson's r was calculated too. The free and open source programming language R was used for all the analyses. Dataset source: Hansson, Isabelle; Berg, Anne Ingeborg; Thorvaldsson, Valgeir (2018), "Can personality predict longitudinal study attrition? Evidence from a population-based sample of older adults", Mendeley Data, V1, doi: 10.17632/g3jx8zt2t9.1

Results: Openness, conscientiousness, extroversion, agreeableness and neuroticism predictions obtained ICC of 0.219, 0.146, 0.306, 0.354, 0.121 and Pearson's r of 0.254, 0.149, 0.393, 0.446, 0.122 respectively. The results for extroversion and agreeableness were indicative of fair performance.