Personality and Individual Differences 106 (2017) 183–189

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Measuring non-cognitive predictors in high-stakes contexts: The effect of self-presentation on self-report instruments used in admission to higher education

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ARTICLE INFO

Article history:
Received 17 August 2016
Received in revised form 2 November 2016
Accepted 7 November 2016
Available online 12 November 2016

Keywords:
Self-presentation
Self-report measures
Validity
High-stakes testing
Selection
Admission
Higher education

ABSTRACT

Non-cognitive constructs such as personality traits and behavioral tendencies show predictive validity for academic performance and incremental validity over and above cognitive constructs. Therefore, non-cognitive predictors are increasingly used in admission procedures for higher education, typically measured using-self-report instruments. It is well known that self-report instruments are sensitive to self-presentation, especially in high-stakes contexts. However, remarkably few studies investigated the effect of self-presentation on predictive validity. The effect of self-presentation in applicants to an undergraduate psychology program was studied using a repeated measures design. Respondents completed self-report questionnaires measuring non-cognitive predictors of academic performance before admission to the program, and again after admission. Scores were compared between contexts, as well as predictive validity, incremental validity, and potential hiring decisions. Results showed differences in scores between contexts on all scales, attenuated predictive validity for most scales, attenuated incremental validity when scores obtained in the admission context were used, and effects on admission decisions. In conclusion, validity results based on scores measured in low-stakes contexts cannot simply be generalized to high-stakes contexts. Furthermore, results obtained in a high-stakes context may result in self-presentation irrespective of whether participants are informed that their scores are used for selection decisions or not.

1. Introduction

Non-cognitive characteristics such as personality and work styles are the most commonly assessed constructs in personnel selection (Ryan et al., 2015). With the increasing interest in using non-cognitive predictors in admission procedures to higher education in addition to cognitive predictors, this industry is expanding to the educational field (e.g. Kyllonen, Lipnevich, Burrus, & Roberts, 2014; Kyllonen, Walters, & Kaufman, 2005; Schmitt, 2012). Research has shown that non-cognitive predictors such as personality traits, motivation, and self-regulation are associated with academic performance and show incremental validity over and above cognitive predictors (e.g., Richardson, Abrahams, & Bond, 2012). Furthermore, non-cognitive measures are also used to predict broader outcomes than GPA, like job performance, leadership, and interpersonal skills (Lievens, 2013; Schmitt, 2012). The most common method to assess non-cognitive predictors is through self-report questionnaires. However, many studies have shown that self-report questionnaires are susceptible to self-presentation behavior (Viswesvaran & Ones, 1999). Very few predictive validity studies of non-cognitive admission instruments have been conducted with *actual* applicants. Data are usually collected for research purposes in low-stakes contexts, where the occurrence of self-presentation behavior is less common than in high-stakes selection contexts.

Self-presentation behavior can be intentional (impression management) or unintentional (self-deception; e.g., Paulhus, 1991; Pauls & Crost, 2004). Since it is difficult to distinguish these two kinds of behavior and we often do not know whether response distortions were deliberate or unconscious, we chose to use the neutral term self-presentation. Self-presentation in self-report questionnaires used for college admissions is rarely investigated. Furthermore, in both the educational literature and in the personnel selection literature there are very few studies that use the recommended (e.g., Ryan & Boyce, 2006) repeated measures design, actual applicants, and representative criterion data (for an exception see Peterson, Griffith, Isaacson, O'Connell, & Mangos, 2011). When self-report questionnaires are used for selection purposes it is important to have an understanding of the size of self-presentation effects on predictor scores, and whether self-presentation behavior affects the validity of predictor scores in operational settings. The aim of this study was to fill this gap and to investigate self-presentation

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http://dx.doi.org/10.1016/j.paid.2016.11.014
0191-8869/

in non-cognitive questionnaires in a sample of actual college applicants, using a repeated measures design.

1.1. Some findings in the literature

1.1.1. Studies in personnel selection

Many studies concerning self-presentation in self-report instruments have been conducted in the context of personnel selection. In summary, these studies indicated that self-report instruments can easily be faked when respondents are instructed to do so (Viswesvaran & Ones, 1999). Furthermore, in their meta-analysis, Birkeland, Manson, Kisamore, Brannick, and Smith (2006) concluded that applicants showed self-presentation behavior in actual high-stakes selection on all Big Five personality constructs, with the largest effect sizes for Conscientiousness and Emotional stability. Also, there were individual differences in the extent of self-presentation behavior (McFarland & Ryan, 2000; Rosse, Stecher, Miller, & Levin, 1998), which affects the rank-ordering of applicants and influences hiring decisions (Hartman & Grubb, 2011; Rosse, Stecher, Miller, & Levin, 1998). Applicants who show self-presentation tend to rise to the top of the rank order, which can negatively affect the utility of the selection procedure, especially when selection ratios are low (Mueller-Hanson, Heggestad, & Thornton, 2003).

Construct validity is also often affected by self-presentation; instruments measuring the Big Five often yield a sixth 'ideal employee' factor in applicant samples, with high loadings for items that describe desirable personality dimensions (Klehe et al., 2012; Schmit & Ryan, 1993). In addition, based on the literature it is difficult to draw a clear conclusion about the effect of self-presentation on predictive validity (Morgeson, Campion, Dipboye, Hollenbeck, Murphy, & Schmitt, 2007a, 2007b). Based on a meta-analysis correcting scale scores for social desirability, Ones, Viswesvaran, and Reiss (1996) concluded that self-presentation does not affect predictive validity, while other studies did find attenuating effects of self-presentation or test-taking motivation on predictive validity (e.g., O'Neill, Goffin, & Gellatly, 2010; Peterson, Griffith, Isaacson, O'Connell, & Mangos, 2011). However, an important observation is that studies that found an attenuating effect mostly used between-subjects designs with an honest condition and a faking condition, whereas studies that found no effect mostly used one-sample designs and controlled non-cognitive scores for scores on a social desirability scale. Peterson et al. (2011) found that scores on a social desirability scale were not related to applicant faking, so results based on this approach may have underestimated the effect of self-presentation on predictive validity (Griffith & Peterson, 2008).

1.1.2. Studies in educational selection

Many individual studies and meta-analyses have shown that scores on non-cognitive predictors can predict academic performance and have incremental validity over and above cognitive tests scores and high school GPA. In their meta-analysis, Richardson, Abrahams, and Bond (2012) found correlations around $r = 0.30$ between college GPA and Conscientiousness, procrastination, academic self-efficacy, and effort regulation, and correlations of $r \geq 0.50$ between college GPA and performance self-efficacy and grade goal. Such results promote the use of non-cognitive predictors in admission decisions (e.g., Kappe & van der Flier, 2012), and supplementing cognitive tests with non-cognitive questionnaires for admission or matching purposes is increasingly popular (e.g., Kyllonen, Walters, & Kaufman, 2005; Kyllonen, Lipnevich, Burrus, & Roberts, 2014; Schmitt, 2012). However, most predictive validity studies were not conducted in actual admissions contexts, but used volunteers for whom the stakes were low. The question is whether results of such studies can be generalized to high-stakes admission contexts. The literature on assessing non-cognitive predictors, either in personnel selection or in educational selection, does not provide an answer to this question. Furthermore, results based on personnel selection samples may not generalize to educational selection samples. Several studies have found a positive relationship between cognitive ability and self-presentation score inflation (e.g. Tett, Freund, Christiansen, Fox, & Coaster, 2012; Pauls & Crost, 2004). Given the above average cognitive ability of applicants to higher education they may show more score inflation than applicants in a personnel selection context.

In a study using respondents who were instructed to fake, self-presentation attenuated the predictive validity of GPA for a situational judgment test measuring study-related behavioral tendencies (Peeters & Lievens, 2005). Similar results were found for Big Five personality constructs (Huws, Reddy, & Talcott, 2009), except when an ipsative scoring format was used (Hirsh & Peterson, 2008). However, these studies may overestimate the extent and effect of self-presentation because respondents who were instructed to fake tend to show more score inflation then actual applicants (Birkeland et al., 2006). The only study that used actual applicants instead of instructed self-presentation and a repeated-measures design was Griffin and Wilson (2012). In a sample of medical school applicants, they found higher scores in the high-stakes context than in the low-stakes context for all Big Five personality scales except for Agreeableness. Almost two-thirds of the applicants had higher scores in the selection context than in the research context on at least one subscale, and scores on the Conscientiousness scale showed the largest mean difference between the two settings. However, effects on predictive validity were not examined in this study.

1.1.3. Aim of the present study

So, in spite of the large body of literature about self-presentation, we still do not know if and to what extent self-presentation behavior affects predictive validity in operational contexts. As noted by Peeters and Lievens (2005), results based on participants who were instructed to fake may show the results of a worst-case scenario rather than realistic outcomes. Therefore, the main aim of this study was to investigate the effect of self-presentation on the predictive validity and incremental validity of non-cognitive predictors using actual applicants, using a repeated measures design. The Big Five personality traits, procrastination tendencies, perceived academic skills and academic competence, and grade goal were measured using self-report Likert-format questionnaires. We examined (1) to what extent self-presentation behavior occurred, (2) the effect of self-presentation on the predictive validity of the self-reported non-cognitive predictors, (3) the effect of self-presentation on the incremental validity of the self-reported non-cognitive predictors, and (4) the effect of self-presentation behavior on potential admission decisions and criterion performance of admitted applicants. Agreeableness, Neuroticism, Extraversion, and Openness tend to show no or small relationships with academic performance (Richardson et al., 2012), so they were not included in analyses involving predictive validity, incremental validity, or admission decisions, but we did study if self-presentation behavior occurred on these predictors.

2. Method

2.1. Respondents and procedure

All applicants to an undergraduate psychology program at a Dutch university in the academic year 2014–2015 were invited to complete several questionnaires before admission tests were administered and admission decisions were made. We refer to this measurement as the admission context. The applicants were informed that the aim of filling out these questionnaires was to measure non-cognitive constructs that were related to academic performance, but that their scores would not be used in admission decisions and were collected for research purposes only. Standard instructions for filling out the questionnaires were provided to the respondents. Five months later, after the start of the academic year, all students who completed the questionnaires before admission and who enrolled in the program could voluntarily participate in filling out the questionnaire a second time for course credit. Participants were told that the second administration of the questionnaires