Predictors of Successful Completion of the Master of Physician Assistant Studies in the Netherlands

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Purpose The selection of applicants for the Master of Physician Assistant Studies program in the Netherlands is nationally regulated. The minimum criteria are 2 years of experience in health care and a bachelor's degree in nursing or allied health care. However, when students lack the requisite degree, entering a physician assistant (PA) program is possible through an additional assessment process that includes a test of cognitive ability and personality traits. Since 2004, a national registry has tracked all PA students into their employment setting. An evaluation of Master of Physician Assistant graduates who processed through both portals, traditional and alternative, was compared for validation of criteria.

Methods The success rate of PA students with a bachelor's degree was compared with the success of the cohort that completed the alternative assessment. Descriptive statistics and Pearson's chi square statistics were applied to ascertain differences between the 2 cohorts.

Results From 2004 to 2014, there were 1241 students enrolled in a PA program in the Netherlands; 184 nurses and nurse anesthetists were enrolled through the alternate pathway. Of the cohort with an assessment, 167 of 184 students (91%) graduated. Of the group with a prerequisite bachelor's degree, 944 students graduated (89%). Differences were considered negligible.

Conclusions It seems that the nondegree alternative assessment of PA education is a reliable predictor of program completion. Because the nondegree alternative assessment is a national standard screening test, it was decided that there is no need to change the admission procedure for PA applicants.

INTRODUCTION

In 2003, 2 universities in the Netherlands inaugurated an accredited Master of Physician Assistant (MPA) program.[1] As of 2017, there were 5 accredited Master of Science physician assistant (PA) programs and approximately 1200 PAs deployed in various roles throughout the country. Physician assistants are permitted by law to perform medical tasks, prescribe medication, and be directly reimbursed for their services. The government funds all 5 PA programs, in which 185 students were enrolled in 2017.

Master of Physician Assistant applicant requirements include a bachelor's degree in health care, at least 2 years of experience with direct patient care, and an employment contract as a student with a health care institution such as a hospital or specialty clinic. In addition, the Dutch ministry of health provides a financial incentive to those hospitals or health care institutions that employ a PA student. The public cost of each student in the 2017 program was a little over €100,000 (2015 euros), and the tuition for each student was approximately €5000 (2015 euros). Admission to a PA program in the Netherlands is regulated by law.[2]

While there is consensus about which bachelor's degree is appropriate for a PA-program track, some nurses (including nurse anesthetists) have completed vocational training and are certified but may not hold a bachelor's degree. For this group, an assessment instrument was developed, as an alternative means of entry to an MPA program, to evaluate whether nurses have adequate competencies for the rigor of a PA education program. The assessment contains 2 tests: one is a capacity test and the other one focuses on personality traits.

A capacity test is considered a good predictor of successful completion of an education. Validation and reliability scores are high, and the scores of the participants have a high correlation with their education level.[3,4] The aim of the capacity test is to estimate one's intellectual level and ability to learn. The emphasis is on determining the level of capabilities; specifically, the scores on the abstraction tests are taken into consideration. In addition, a practical fact-finding exercise assesses problem analysis skills and judgment.

The second part of the assessment consists of a personality test (derived from the Big Five personality test). This test consists of 240 statements that assess relevant traits considered essential for predicting the student's learning attitude and potential.[5] Accumulated evidence shows that, to overcome study difficulties, students need to have the emotional stability to adapt to performance pressure along with a high degree of conscientiousness in fulfilling their PA role. Another component of the personality test determines whether the applicant has the self-discipline to be able to complete the PA program.[5] The outcome of this component is a profile of the 5 most important personality aspects of the student (the "Big Five"):

1. Extraversion
2. Agreeableness
3. Conscientiousness

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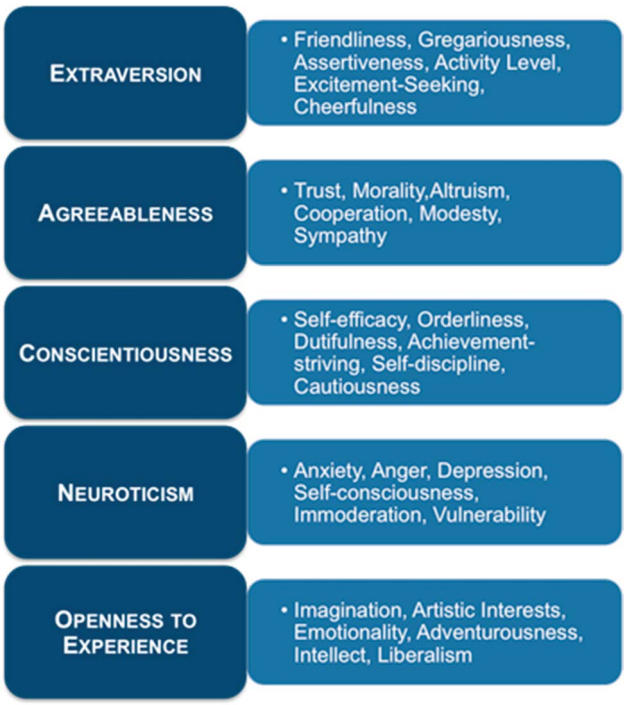

Figure 1. Subordinate personality traits or facets. Each of the Big Five personality traits is made up of 6 facets or sub-traits. These can be assessed independently of the trait that they belong to. See more at: http://www.psychometric-success.com/personality-tests/personality-tests-big-5-aspects.htm#sthash.qWT3rAVW.dpuf

4. Neuroticism
5. Openness to experience

A large body of research shows that the conscientiousness trait is consistently associated with academic achievement.[6,7] The research of Kappe and Van der Flier[8] showed that conscientiousness is an important predictor of achievement in higher education. The conscientiousness factor includes subscales such as self-discipline and achievement-striving (Figure 1).

Over the span of 10 years (2004–2014), a total of 1241 students entered a PA program in the Netherlands—184 through the alternate assessment track. The research question was as follows: Is the assessment tool a reliable predictor for completing an MPA?

METHODS

The test, conducted nationwide by an independent psychologist, took a half day to complete and was supervised and interpreted by certified psychologists. During this evaluation day, the students took the capacity test, filled in the questionnaire, and were interviewed for about an hour by a psychologist. Both the tests and the interview were conducted on an individual basis.

Each year, from 2004 to 2014, the 5 Dutch PA programs collected the following data:

1. Number of enrolled students
2. Number of enrolled students through the assessment track
3. Number of dropouts
4. Number of assessment-track dropouts, including the reasons for stopping

A comparison was undertaken using descriptive statistics and a Pearson's chi-square test to see if there was a difference between the 2 tracks in PA graduation success rate.

RESULTS

In the 10-year span, 1241 students entered a PA program. During this same period, 1111 students (89.5%) successfully completed the program, and 130 students (10.5%) withdrew. In the group of students who entered with the requisite criteria (who were not required to undergo the alternative assessment), 944 students (89%) graduated. Of the group of 167 students who were assessed under the alternative track, 91% successfully completed the program (Table 1).

Post hoc, 3 reasons were identified why 17 students who were alternatively assessed did not finish the PA program:

1. Intellectual capacity (3 students): Three students dropped out because of failing the written examinations administered in the program. There were no signals in their assessment report that indicated possible difficulties regarding cognitive capacities.
2. Personality inventory (4 students): Four students dropped out because they reported a feeling of uncertainty in their job, avoiding some situations, or not having the right attitude toward work. In the personality profile, these students scored low on extraversion and dominance, high/moderate on neuroticism traits, and low/moderate in ambition. Previous research has found that a high score for neuroticism can predict lower academic achievement in stressful situations.[7] More dominant and extraverted individuals are typically more proactive and assertive, which oftentimes can positively affect academic achievement where the criterion entails teamwork.[7]
3. Private circumstances (6 students): Six students dropped out due in part to personal reasons. The impact of private factors may be related to their personality traits profile.
4. Unknown (4 students): No identifying reasons are available for why 3 students stopped the program (missing data). One student died during the program.

The success rate on the entrance exam of candidates for the alternative track assessment rose from 50% in the early years to

Table 1. Comparison of Master Physician Assistant Tracks (2004–2014)

	Alternative Assessment		No Assessment		Total
Graduated	167	91%	944	89%	1111
Did not graduate	17	9%	113	11%	130
Total	184	100%	1057	100%	1241

Pearson's chi-square test: $X^2 = 0.3521$, $P = .553$

60% in more recent years. We believe that this slight uptick could be due to a more adequate selection of potential candidates for the assessment track. None of the students who failed the assessment started the PA program.

DISCUSSION

The strength of this study is that it included all of the applicants for all the PA programs in the Netherlands. Another advantage is that the construction of the assessments helped us to define the important aspects in the selection of students. Based on the results, it seems that this alternative assessment strategy may be a reliable test for identifying those most likely to succeed in a PA program. Only 3 students of 184 had problems with the written examinations, considered a low false positive score (<2%). The number of false negative scores is unknown.

A weakness of this study is that we only took the capacities of the student into account and not the results of the personality questionnaire, which may be an indicator of the student's capacity for clinical learning. Under discussion is whether these outcomes should lead to a "go" or "no-go" decision because 4 students ceased their PA program education most likely due to personality traits. These students' profiles showed an overall lack of "conscientiousness," "assertiveness," and "emotional stability." Comparison is difficult, though, because we know nothing about the personality traits of the students who entered the PA program via the bachelor's degree route.

One ethical question that arose from this evaluation is whether it is more difficult for students using an alternative assessment to get accepted to a PA program than it is for students with a completed bachelor's degree. If this is the case, then a potential inequality is created, meaning that this strategy could be in violation of the law, which states that every candidate has an equal chance to enroll in a program.[2]

A weakness of this study is that we do not know the number of false negative scores. Another point of consideration is the cost; the assessment costs about €800 and is paid for by the hospital or specialty clinic.

CONCLUSION

The reasons why students fail to earn a graduate degree in PA studies in the Netherlands vary. The main reasons are personal circumstances, followed by predictive personality traits. In this study, the lack of intellectual capacity (the ability to process complex reasoning) was identified in only 3 cases. For intellectual capacities, conducting an assessment, as an alternative to a bachelor's degree, seems to be a reliable predictor as to whether a student will graduate from a PA program. Over a 10-year period of observation, no significant difference between the 2 tracks was seen. As a first evaluation of the value of screening, this study points up the need for more research that involves personality traits and personal circumstances in both groups.

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