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Theme: **10JJ** Selection for admission to Medicine

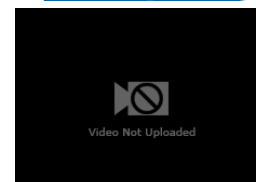Rating: **3.0**/5 (1 vote cast)

Abstract Title

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Selection of Medical Students and non-cognitive skills: A national, longitudinal written-test validation study

Authors: Claudio Barbaranelli (1)
Gabriele Cavaggioni (1)
Maria Grazia Strepparava (2)
Andrea Lenzi (1)
Giuseppe Familiari (1)

Institutions: (1) Sapienza University of Rome, Rome, Italy
(2) Milano-Bicocca University, Milan, Italy

BACKGROUND

Universities worldwide use entry tests to assess both the cognitive and 'non-cognitive' skills of undergraduate medical-school (UMS) applicants (1). In Italy, current UMS assessment procedures test applicants' cognitive skills only. These tests are partly focused on curricular topics (such as physics, biology, chemistry and mathematics), and partly on extracurricular mental abilities (problem solving, verbal and numerical reasoning, reading comprehension). No attempt has been ever done in Italy to include, for UMS applicants, the assessment of non-cognitive dimensions such as personality, attitudes, motivations, interests.

Aims of the research

The main aim of this research was to investigate the impact on the academic and professional outcomes of different non-cognitive dimensions measured on medical school students.

The recognition of the importance of these characteristics would eventually lead to a better recognition and assessment of the aptitude the candidates show regarding medicine academic career as well as professional career.

This would eventually lead to a better selection of the applicants, a selection where curricular-"in role" skills and knowledge are supplemented by "extra-role" non-cognitive dimensions.

In our opinion, this integrated approach would help not only the quality of academic training, contributing, among others, to the decrease of the drop-out and then of the latency between the end of high school and the entrance in the work-market, but also to the improvement of the quality of the profession. Non-cognitive "extra-curricular" skills are in fact an essential part of the medical professional capabilities (2).

It was longitudinal in design, examining participants at different stages of their undergraduate careers.

SUMMARY OF WORK

The Italian Permanent Conference of Medical School Directors promoted this research (3) to validate a multi-dimensional instrument capable of identifying non-cognitive MS success predictors. The research involves six public Universities from the South (Palermo-Caltanissetta, and Foggia), Centre (Rome and Chieti) and North of Italy (Milano and Pavia). The research follows a longitudinal design, where participants will be examined at different stages of their undergraduate careers, as well as followed two years after their graduation. In particular, 4-time-points will be considered during the medical school career.

Sample size and distribution for University

This questionnaire was administered to 919 Medical School fresh-men during the current year.

The following table presents a breakdown of the number of participants collected in the three regional zones.

NORTH				CENTER				SOUTH			
city	number of students enrolled in the first year	number of participants collected	%	city	number of students enrolled in the first year	number of participants collected	%	city	number of students enrolled in the first year	number of participants collected	%
MILAN*	142	131 SS (56 M, 75 F)	92.25	ROME **	206	182 SS (71 M, 111 F)	88.34	CALTANISSETTA*** PALERMO***	405	38 SS (12 M, 26 F) 108 SS (40 M, 68 F)	36.04
PAVIA	210	190 SS (72 M, 118 F)	90.47	CHIETI	222	199 SS (86 M, 113 F)	89.63	FOGGIA	80	71 SS (31 M, 34 F)	88.75

*Data from Milano Bicocca ** Data from Roma S. Andrea one Faculty *** Data pooled from the two universities

4-time-points				Follow up
time 1 At the beginning of the medical school (during the first year of enrollment).	time 2 At the beginning of the third year of the course	time 3 At the end of the fourth year of the course	time 4 At the end of the sixth year of the course / degree	Two years after graduation
To the participants a self-report questionnaire containing the following scales will be administered: Motivations and Expectations adapted from Hagström & Kjellberg (4) Self-efficacy (6) Big Five (6) IRI Interpersonal Reactivity Index (7) SCL-90 (8) Life Satisfaction and Positivity (9) The questionnaire is completed by an information sheet related to socio-demographic variables. A semi-structured interview will be planned for those students who evidenced significant elements on the SCL-90 scale. It will be used to investigate the most critical areas submitted by the student and possibly guide the student towards transformative or, if necessary, therapeutic paths.	To the participants a self-report questionnaire containing the same scales measured at time 1 will be administered, with the inclusion of further ad-hoc items aimed at evaluating the perception of the quality of the academic course. Evaluation of indicators of academic success will be derived from exams grades. Again, interviews are planned for those students who evidenced significant elements on the SCL-90 scale	To the participants a self-report questionnaire containing the same scales measured at time 2 will be administered, with the inclusion of an instrument for the assessment of defense styles. The Defense Style Questionnaire (DSQ)(10) accesses defensive behavior by empirically evaluating conscious derivatives of defense and coping mechanisms in everyday life. The different styles can be more or less adaptive. Again, evaluation of indicators of academic success will be derived from exams grades. Interviews are planned for those students who evidenced significant elements on the SCL-90 scale	To the participants a self-report questionnaire containing the same scales measured at time 2 will be administered. Again, evaluation of indicators of academic success will be derived from exams grades. An optional outplacement interview is planned for those students who intend to do it.	A self-report questionnaire with indicators to assess satisfaction with the occupational and professional choices, occupational preparedness, and retrospective evaluation of the academic course.

SUMMARY OF RESULTS

This poster will refer to the data that we are collecting in this first year of the research. As we noted before to the participants were administered a questionnaire comprising personality and self-efficacy; psychological well-being; motivational and vocational factors; socio-demographic variables.
On the data collected this year we are planning to perform the following statistical analyses:

a) descriptive statistics to examine the distributions and the presence of univariate and multivariate outliers

b) multivariate analyses (exploratory factor analysis) for examining the dimensionality of the scales

c) reliability analyses (Cronbach alphas and item-total corrected coefficients) to examine the impact of measurement error

Focused analyses will be also performed on the SCL-90 scale for individuating those students presenting a profile that would suggest clues of psychological difficulties

 in order to address them to counseling interviews. Considering that the risk of psychotic break down has a peak at 24 years and the prodromes are also seen five years before onset, intervene in a population of students of the same age who have risk areas, is to contribute to the promotion mental health, combat stigma towards psychiatry and mental illness, and operate in the prevention.
At the beginning of the second year of course (November 2014 - February 2015) data from records of examinations were be available from the administrative services who manage students academic careers. Then it will be possible to analyze the differential impact of the questionnaire variables as well as of the grades obtained at the end of the high school and of the scores in the UMS assessment test on the grades obtained in the exams, as indicators of academic achievement. This analysis will be performed in the framework of structural equation modeling (11).

The 4-5 time points longitudinal data will allow the research group:

a) to identify different developmental trajectories on the variables that are object of study

b) to identify different clusters of developmental patterns

c) to identify the variable that act as protective and as risk factors regarding personal well-being as well as academic achievement

CONCLUSION

Validated scales for measuring extra-curricular dimension such as personality, motivation, attitudes, may act as predictors of the aptitudes of future medical students, and allows the study of their profiles and the assessment over the six years course, to identify risk and protective factors for their academic career as well as their professional development. The results, which compare changes in interpersonal and intrapersonal competencies during the students' careers, may be useful when selecting non-cognitive/extra-curricular constructs to be considered in national UMS tests.

TAKE-HOME MESSAGES

This initiative aims at changing the ways medical school applicants are assessed and selected in order to identify those who will become the kind of physicians best suited to practice in a dynamic healthcare environment. The integrated pre-validated items may be important predictors of attitudes of future medical students.

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