Burnout, learning and self-esteem at school: an empirical study.

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Abstract It is assumed that the level of school performance increases if the student has a good idea of self-esteem as well as his abilities, capabilities and skills in general. This paper investigates the relationship between level of self-esteem and school performance. The study, related to a survey conducted on a group of students aged from eight to thirteen, also aims to understand if the level of burnout of teachers influences the self-esteem and school performance of students. The causal relationships among the variables are investigated through a structural equation model (SEM).

Key words: self-esteem, burnout, item response theory, learning, structural equation model, school, evaluation.

Introduction

In this work the attention is devoted to define a holistic measure of human competence for a better evaluation of the quality of learning. The investment in human capital is the guarantee of economic and social growth of each country. Thus, Education needs urgent and major changes to promote the growth of a critical and creative thinking in both students and teachers. Therefore, it is of primary importance to invest on developing the skills of subjects starting from primary schools. In this paper it is assumed that the competence can be measured by learning and self-esteem and that exists a dual relationship between these variables (Ceccatelli & Di Battista, 2012). The authors also assume that the level of burnout of the teachers can affect both self-esteem and learning of the students. The paper is organised as follows. In section 1 we discuss the data while in section 2 we provide details about the questionnaire validation. In

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section 3 we introduce the conceptual model through a structural equation model and, finally, section 4 concludes the paper with a brief discussion.

1 The data

The empirical survey is conducted on a group of 520 students attending the Schools of Catignano and Civitella Casanova (Pescara, Italy), consisting of primary and secondary schools (first grade) on one site. Information on the quality of learning, on the level of self-esteem of the students and on the level of burnout of the teachers are obtained through three sets of questionnaires. The first one, devoted to measure the ability of students about learning of Italian, Mathematics and English, is administered by a set of multiple-choice test on an e-learning platform. The level of self-esteem is used by the Italian version of the Test Multidimensional of self-esteem (TMA – Bracken, 2003), that analyzes six dimensions of self-esteem: *personal relationships, scholastic success, environment capability, sensibility, family life* and *sense of self-mobility*. Each of these dimensions is observed through a set of 25 items measured on a four-point Likert scale. The assessment of self-esteem has great significance because it enables to have a picture of the ways in which the subjects relates to each other. Finally, the Maslach Burnout Inventory test (BMI - Maslach and Jackson, 1981), is used to measure the level of Burnout of teachers. This questionnaire consists of 22 items that estimate, on a six-point Likert scale, the three different aspects of *emotional exhaustion, depersonalization* and *personal fulfilment*.

2 Measuring School Performance through IRT

The Item Response Theory (IRT) adopts explicit models to estimate the probability of each possible response to a test. Thus, it is a probabilistic test theory that derives the probability of each response as a function of the latent traits (Baker, 2001). In this research we suggest to use the IRT approach to mutually examine the level of student performance, the level of difficulty of the items and also the guessed answers. The difficulty of the items is determined in relation to the probability of the best students to correctly answer the questions and the performance level of each respondent is determined with respect to the probability of responding correctly to questions of varying difficulty. In this research we use a dichotomous model for correct/incorrect responses and apply the three-parameter logistic model (3PL- Baker, 2001)

$$P\left(S_{ij} = 1 \middle| \theta_j, a_i, b_i, c_i\right) = c_i + (1 - c_i)\frac{\exp[a_i(\theta_j - b_i)]}{1 + \exp[a_i(\theta_j - b_i)]} \qquad (1)$$

where, S_{ij} represents the *score* of student *j* on the item test *i*, θ_j is the ability *of examinee*, a_i is the *discrimination parameter*, b_i is the *difficulty parameter* and the asymptote c_i is the *pseudo-guessing parameter* that incorporates the fact that on multiple choice exams even the worst performers ($\theta i \rightarrow -\infty$) will sometimes guess correctly. The most interesting part is *exp($a_i(\theta_j$-b_i)* that predicts the probability of a

correct response from the interaction between the individual ability θ and the item parameter b.

3   The measure of competence by Structural Equation Model

The competence is a latent concept which is defined as a combination of knowledge, skills and attitudes. All individuals need to know their own level of competences for personal fulfillment, active citizenship and social inclusion.
A conventional approach used to estimate latent variables from a set of observed variables which we feel are likely to be indicators of the former, is that of using a confirmatory structural equation model (SEM - Bollen, 1989). This model has been widely used to examine the number of latent constructs underlying the observed responses and to evaluate the adequacy of individual items or variables as indicators for the latent constructs they are supposed to measure. As a such, it is expected that a SEM should be useful to investigate the relationships between levels of self-esteem and school performances as well as to understand if the level of burnout of teachers influences the self-esteem and school performance of children.
A structural equation model is first characterised by the following two measurement equations:

$$Y = \Lambda_y \eta + \varepsilon \qquad\qquad X = \Lambda_x \xi + \delta, \qquad (2)$$

where Y and X are n_y and n_x-dimensional vectors of endogenous and exogenous variables, respectively, Λ_y and Λ_x are (n_y,q) and (n_x,p) matrices of loadings, η and ξ are q and p-dimensional latent variables, and finally, ε and δ are n_y and n_x-dimensional zero mean error terms. The model completes with the definition of the structural equation (3) modelling the interaction among the latent variables η and ξ:

$$\eta = B\eta + \Gamma\xi + \zeta \qquad\qquad (3)$$

where B and Γ are (q,q) and (q,p) regression parameter matrices and ζ is a q-dimensional zero mean error term. For our case study, due to the flexibility in model specification, a variety of models can be conceived. Here we propose a simple model whose path diagram is shown in Figure 1. Our conceptual model suggests that the six dimensions: personal relationships, scholastic success, environment capability, sensibility, family life and sense of self mobility (Y_4-Y_9) are supposedly results of the latent variable namely η_2, the self-esteem; the three skill: scores Italian, Mathematics and English (Y_1-Y_3) are results of η_1, the learning ability. Finally, it is also supposed that the emotional exhaustion, depersonalization and personal fulfilment (X_1-X_3) are results of the latent variable ξ_1, the burnout. The arrows in the diagram are free parameters of the model to be estimated and denote the full relationships among the variables.
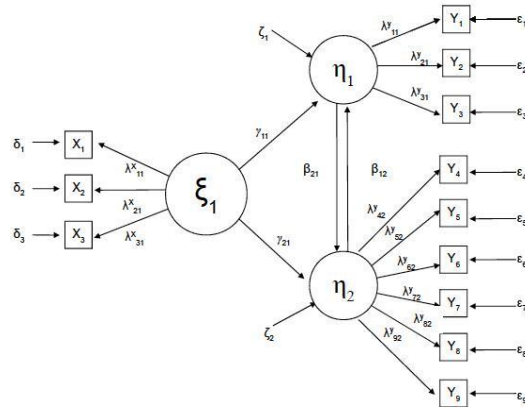
Figure 2: Path diagram
 of the conceptual model

Conclusions

In this paper we have proposed a conceptual model for a research which is still in progress. This research is distinguished by the identification of an integrated system of statistical tools for the assessment of competence in education. For a holistic view of the student, together with school performance we have also considered the self-esteem and the level of burnout of teachers. To study the interaction among these latent traits we have elicited a path diagram inside a structural equation model.
The effectiveness of this model will be tested in an extended version of this draft.

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