Antecedents of baccalaureate exam anxiety: testing a model of structural links by path analysis

Viorel Robu*, Anișoara Sandovici

Faculty of Psychology and Educational Sciences, Petre Andrei University, 13 Grigore Ghica Vodă Street, 700400 Iași, Romania

Abstract

Due to its importance for an individual’s education and professional career, the baccalaureate is a source of stress for many high school students. The study aimed to test a model of the links between baccalaureate anxiety, test anxiety (as a situation-specific dispositional trait), attitude toward school, and attitude toward baccalaureate. Several measuring instruments were used. The testing of working hypotheses was performed by path analysis using AMOS 16.0. The results were discussed in the context of the school counsellors’ work with the students experiencing evaluative situation-related stress. Some suggestions for the improvement of test-related stress management are also presented.

© 2012 Published by Elsevier B.V. Selection and/or peer-review under responsibility of PSIWORLD2011

Keywords: Baccalaureate exam anxiety; Attitude toward baccalaureate exam; Attitude toward school; Test anxiety

1. Introduction

For several years, in Romania, the results of the baccalaureate exam along with the average grade for the four years of high school represent one of the criteria needed for the admission to higher education. Due to its importance for an individual’s educational background and professional career, the baccalaureate is a source of stress for many high school students.

Anxiety is one of the most frequent and pervasive reactions to psychological stress experienced by an individual (Zeidner, 1998). As a situation-specific personality trait, test anxiety refers to the individual’s disposition to react with extensive worry, intrusive thoughts, mental disorganization, tension, and physiological arousal in various evaluative situations (Spielberger et al., 1976; Spielberger & Vagg, 1995; cited in Zeidner, 1998). The baccalaureate represents a particular test situation, which is associated with

* Corresponding author. Tel.: +4-023-221-5190; fax: +4-023-221-5190.
E-mail address: robuviorel_upa@yahoo.com.
high pressure because poor results at this exam might become an obstacle to young people’s efforts to continue their education and to achieve the professional status to which they aspire. As an indicator of baccalaureate-related stress, anxiety is a psychological condition which is experienced by many high school students.

Test anxiety was related with fear of failure, fear of negative assessment and high levels of achievement motivation (Zeidner, 1998). These psychological dispositions are likely to appear in students who show a positive attitude toward school and toward learning (Morrell & Lederman, 1998). McCoach and Sigele (2003) set forth a multidimensional perspective for the measurement and the interpretation of attitudes toward school and identified four facets: the students’ academic self-perception, the attitude toward teachers and classes, the orientation toward school success and motivation/self-regulation. Therefore, the relationship between baccalaureate anxiety and attitude toward school is of interest for the field of educational psychology.

Using structural equation modelling, this study aimed to test a recursive model of the causal relationships between attitude toward school, attitude toward baccalaureate, test anxiety (as a situation-specific dispositional trait), and baccalaureate anxiety. The first three variables were introduced into the model as antecedents of baccalaureate anxiety.

2. Method

Participants. A number of 248 adolescents – students in the grades nine to twelve in four secondary education institutions based in Iași – filled out the scales used in order to measure the variables which were of interest for the study. There were 111 girls and 137 boys. The mean age of students was 16.7 (SD = 1.2).

Instruments. The attitude toward school was measured with a Romanian version of Attitudes Toward School – Denver Youth Survey (Dahlberg, Toal, Swahn & Behrens, 2005). The scale included five items measuring attitude toward school (e.g., homework, teachers’ opinions). Students were asked to check, on a four-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree), the response that corresponded best to their beliefs. The total score can range from 5 to 20. Higher scores reflect a more positive attitude toward school. Internal consistency in the present study was satisfactory (α = .46).

In order to measure the attitude toward baccalaureate among high school students, a 16-item scale with a Likert-type response format ranging from 0 (strongly disagree) to 4 (strongly agree) was designed. The items (e.g., “The baccalaureate exam should be removed because it is useless” or “The baccalaureate exam should be treated with responsibility because it is a very important stage in every student’s career”) were formulated so as to measure the students’ perceptions of the baccalaureate exam that they have to pass upon completing high school. The scale score (ranging from 0 to 64) was computed by summing the scores on items. The higher the scores, the more positive was considered the attitude toward baccalaureate. Internal consistency was .74.

Test Anxiety Inventory (Spielberger, 1980) was used to measure test anxiety as a specific disposition related to evaluative situations. The TAI is a 20-item self-reported scale. Respondents are asked to rate, across a four-point Likert-type scale ranging from 1 (almost never) to 4 (almost always), how frequently they experience specific symptoms of anxiety in various test situations. The TAI total score can vary from 20 to 80. High scores on the TAI indicate a prominent dispositional anxiety in test situations. Internal consistency for the Romanian version of TAI was good (α = .90).

Baccalaureate anxiety was measured with a 20-item scale (e.g., “The thoughts about the baccalaureate exam make me lose my sleep” or “I am not worried when I think that I am going to pass the baccalaureate exam”). The measure was set on a four-point Likert-type scale ranging from 1 (almost never) to 4 (almost always). The scale score (ranging from 20 to 80) was computed by adding the scores on all items. The
higher the scores, the more pronounced is the anxiety toward baccalaureate. The α reliability coefficient was .87 indicating a good internal consistency.

3. Results

Gender and grade differences. Compared with boys, girls showed significantly higher mean values for baccalaureate anxiety, $M_{\text{girls}} = 46.54, M_{\text{boys}} = 41.94, t(246) = 3.54, p < .001, \text{Cohen's } d = .46$, attitude toward baccalaureate, $M_{\text{girls}} = 47.54, M_{\text{boys}} = 43.21, t(246) = 4.90, p < .001, \text{Cohen's } d = .63$, attitude toward school, $M_{\text{girls}} = 15.36, M_{\text{boys}} = 13.75, t(246) = 6.05, p < .001, \text{Cohen's } d = .76$ and test anxiety, $M_{\text{girls}} = 44.19, M_{\text{boys}} = 37.92, t(246) = 4.63, p < .001, \text{Cohen's } d = .59$. As all the variables included into the model showed significant differences by student gender, path models were analyzed both for the whole sample, and separately for boys and girls.

The students’ grade had no significant effect on baccalaureate anxiety, $F(3, 244) = .45, p > .05, \eta^2 = .005, \text{Cohen's } f = .07$, attitude toward baccalaureate, $F(3, 244) = 1.60, p > .05, \eta^2 = .01, \text{Cohen's } f = .10$, attitude toward school, $F(3, 244) = .94, p > .05, \eta^2 = .01, \text{Cohen's } f = .10$ and test anxiety, $F(3, 244) = .56, p > .05, \eta^2 = .006, \text{Cohen's } f = .07$. Nevertheless, for all measured variables mean values showed a downward trend from the ninth to the twelfth grade.

Path analysis. In order to estimate the unstandardized and standardized values of path coefficients, we used the maximum likelihood technique. The direct and indirect effects (via attitude toward the baccalaureate or test anxiety) of attitude toward school on baccalaureate anxiety were computed. The fit of the model with the data was estimated using GFI (goodness-of-fit index), AGFI (adjusted goodness-of-fit index), NFI (normed fit index), CFI (comparative fit index), and RMSEA (root mean square error of approximation). According to Byrne (2010), GFI and AGFI close to 1.00, NFI and CFI higher than .95, and RMSEA lower than .05 indicate a good fit of the model.

For the whole sample, the hypothesized model showed a satisfactory fit to the data, with GFI close to 1.00, AGFI greater than .90, NFI and CFI greater than .95, and RMSEA slightly greater than .05. The attitude toward school had a significant effect both on attitude toward baccalaureate and test anxiety (see Figure 1). On other hand, test anxiety had a significant effect on baccalaureate anxiety. The attitude toward school had no significant direct effect on baccalaureate anxiety. Also, no significant effect of the attitude toward baccalaureate on baccalaureate anxiety was observed. The indirect effect of attitude toward school (via attitude toward baccalaureate or test anxiety) on baccalaureate anxiety was significant (unstandardized path coefficient = .80, $p < .001$). Due to the violation of one out of the four conditions recommended by Frazier, Tix and Barron (2004), the mediating role of the attitude toward the baccalaureate on the causal relationship between attitude toward school and anxiety toward baccalaureate was not supported. However, the test anxiety has mediated the relationship between attitude toward school and baccalaureate anxiety.

For girls, the model fitted to the data poorly ($\chi^2 = 7.81, df = 1, p < .01, \text{GFI} = .96, \text{AGFI} = .66, \text{NFI} = .92, \text{CFI} = .95, \text{RMSEA} = .24$). Due to the poor fit, the estimated model has no practical implication. Unlike the model for girls, the one for boys showed an excellent fit to the data ($\chi^2 = 0.55, df = 1, p > .05, \text{GFI} = .99, \text{AGFI} = .98, \text{NFI} = .99, \text{CFI} = 1.00, \text{RMSEA} = .00$). The effects were similar to those of the whole sample. Thus, the direct effect of attitude toward school on baccalaureate anxiety was not significant (unstandardized path coefficient = -.006, $p > .05$). Also, the attitude toward baccalaureate had no significant effect on baccalaureate anxiety (unstandardized path coefficient = .04, $p > .05$). Only test anxiety had a significant effect (unstandardized path coefficient = .67, $p < .001$).
The attitude toward school had a significant effect on attitude toward baccalaureate (unstandardized path coefficient = 1.49, \( p < .001 \)) and test anxiety (unstandardized path coefficient = 1.08, \( p < .001 \)). Also, the indirect effect of attitude toward school on baccalaureate anxiety was significant (unstandardized path coefficient = .78, \( p < .001 \)). As with whole sample, only test anxiety was a mediator of the relationship between attitude toward school and anxiety toward baccalaureate.

4. Discussion and conclusion

Girls showed significant higher mean values than boys, both for attitude toward school and attitude toward baccalaureate. The girls’ more positive attitude toward school was convergent with the data reported in the studies carried out in other countries (Darom & Rich, 1988; Morrell & Lederman, 1998). Lupart, Cannon and Telfer (2002) stated that both girls and boys are likely to show a positive attitude toward school, but the girls’ attitude seems to be associated with love of learning while that of boys seems to reflect their preference for socialization.

Moreover, girls had significantly higher scores both on test anxiety (as a dispositional trait related to evaluative situations) and baccalaureate anxiety. The data were convergent with those reported in other studies (Spielberger, 1980; Zeidner, 1998). The results could be explained by many variables, such as: test-related sensitivity, which seems to be stronger among girls, the different socialization patterns of boys and girls and the increased proneness of girls to express the symptoms of anxiety that they experience (Zeidner, 1998).

Although grade had no significant effect on the high school students’ attitude toward school and baccalaureate, the slightly more negative attitude toward school among older students was consistent with the data reported by other authors (Morrell & Lederman, 1998).

Both for the whole sample of high school students, and for boys, the data showed a significant effect of dispositional test anxiety on baccalaureate anxiety. The relationship seems to be natural if we take into account that the baccalaureate is a test situation which involves high stakes for a young people’s future.
education and professional career. However, neither the attitude toward school nor the attitude toward baccalaureate had a significant effect on baccalaureate anxiety. The positive attitude toward school is related to higher levels of success expectancy among adolescents and higher levels of motivation to prepare thoroughly for the challenges which involve the assessment of their own performance (Morrell & Lederman, 1998). A multidimensional approach of attitude toward school (see McCoach & Siegle, 2003) could clarify the role which this variable plays in the etiology of anxiety related to various testing situations (such as the baccalaureate exam).

Fear of written tests and oral examinations, as well as fear of other situations involving the evaluation of personal performance is a psychological state frequently encountered by students. Test anxiety represents a key variable in relation with the emergence and/or the maintenance of unfavourable effects concerning school adjustment, such as: poor school performance, fear of school or negative attitude toward school and learning (Zeidner, 1998).

In our opinion, the manner in which students cope with the baccalaureate-related stress depends on the success and failure at other exams and tests important for their education, on certain personality traits (such as emotional stability as a cluster of traits). Also the characteristics of school environment, as well as the involvement and support of parents are important. In order to alleviate the students’ symptoms of test anxiety or to prevent them, it is necessary the acquisition of some effective strategies that can facilitate the management of the dysfunctional emotions that emerge before or during various test situations. Moreover, students should be advised on the optimal learning strategies, as well as on acquisition of effective study skills and techniques. Studies showed that the combination of the study-skills training and behavioral techniques, such as systematic desensitization or relaxation training, seems to be more effective than either form of treatment in reducing evaluative situations-related anxiety (Zeidner, 1998).

References


