

Thesis of Doctoral (PhD) Dissertation

The appearance of school anxiety among high-school students

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THE AIMS OF THE DISSERTATION

The core notion presented in this thesis is anxiety which emerges in the lives of students usually in a non-pathological way, it can be regarded rather as a normal personality related problem (B. Trefil, Herskovits, 2013). Anxiety is basically a mechanism that is completely adaptive as a part of the accommodation and development of the personality and only in the presence of certain circumstances can become problematic. On the one hand our goal is to shed light on the shadowy side of anxiety in school context, on the other hand we would like to have an insight on its brighter side that formerly received not much scientific attention, however as an energizing factor it can have an important role in successful performance.

In the *theoretical framework* we review the evolution of the concept of anxiety: beginning with its philosophical roots, the main approaches of psychology (for example psychodynamic, trait-theory and humanistic approach) and finishing with the introduction of the cognitive theory. In the next part of the discussion we describe the most important characteristics of adolescents' (the age group that we dealt with) anxiety in the frames of Ericson's psychosocial developmental theory so we orient the focus to school work. The effects of anxiety emerging in school context can be captured especially in performance settings which are strongly connected to experiences of success and failure.

Subsequently we turn our attention to the discussion of the *different forms of school anxiety* including non-specific school anxiety, context depending forms of anxiety and also content based or subject anxiety which is one of the main topics of our discussion. We introduce the most important cognitive theories concerning the often investigated test anxiety, furthermore we present the most common forms of subject anxiety (for example mathematical and foreign language anxiety, e.g.: Cassidy, 2010). The different general methods of coping and effective techniques - involving success and failure management - specifically aimed to handle test and subject anxiety, are introduced at the end of the chapter.

In addition we highlight the relationship of *anxiety and talent* hence high performance is especially important for gifted students. We describe the place and role of anxiety from a theoretical point of view (e.g.: Gagné, 2008) and also with the help of empirical research data (e.g.: Bagdy et al., 2014). In this description the intrapersonal factors that in interaction with anxiety shape performance behaviors, are also taken into consideration. These are perfectionism (e.g.: Frost et al., 1990; Silverman, 1999; Adelson, 2007), self-concept (e.g.: Bóta, 2002;

Páskuné, 2013a), self-efficacy (e.g.: Bandura, 1997; Zimmerman, Cleary, 2006; Kiss, 2009), and motivation (e.g.: Kozéki, Entwistle, 1986; Deci, Ryan, 2000; Stoeber et al., 2009).

In the second, *empirical* part of the thesis we introduce our investigations which were aimed to gain knowledge about school anxiety beyond the well-known facts about test and state-trait anxiety. We present three corresponding studies that were carried out during 2013 and 2014.

In the first study we investigated subject anxiety that emerges specifically in school because scientific data had suggested that this form of anxiety can be differentiated from test and trait anxiety. A pilot study for the Subject Anxiety Inventory that we had adapted, was carried out in order to get to learn the characteristics/functioning of the scale. We aimed to identify the two hypothesized factors, to differentiate between the emotional/affective, physical and cognitive symptoms of subject anxiety and to interpret these from the view of content (for example mathematics, English or chemistry).

In the second study our objective was to employ the Subject Anxiety Inventory on a larger sample of high-school students. Similarly to the first study, our primary goal was to gain experiences relevant for the future practical use of the scale. Another purpose of the study was the validation/verification of the formerly identified factors and applying the aleatory differences to the measures. Furthermore the factors that in interaction with anxiety influence the estimation of perceived school success were also taken into consideration. We investigated the role of important intrapersonal factors like self-concept, self-efficacy and success attribution.

The purpose of *the third study* was the more nuanced understanding of the former results in order to be able to interpret school anxiety from further different aspects. We carried out focal group interviews among high-school students to identify the object of anxiety. We also aimed to highlight the facilitating and inhibiting impact of anxiety on performance as it is reflected in the subjective opinions of students. Furthermore we aimed for a more profound understanding of the effects of those intrapersonal characteristics that probably have influence on this process. Here we considered the presence and activating impact of motivation and perfectionism.

APPLIED METHODS

The *working definition* of the core notion of the investigations, namely *subject anxiety* (Richardson, Suinn, 1972; Ashcraft, 2002; Baloglu, Kocak, 2006; Cassady, 2010; Attri, Neelam, 2013) is complex. On the one hand it is important that anxiety can be interpreted as a learned emotional response (for example excitement/agitation and stomach ache) to a specific school-subject. In this emotional response the perceived source of danger can be the learning/performance situation, the inner characteristics of the subject, the personality or teaching methods of the teacher or the personal traits of the student. Usually it occurs in the school, but everyday situations can also activate this kind of anxiety, and it influences the learning and performance abilities of the person.

One aim of our empirical investigations was to become able to form a more detailed picture of school, especially subject anxiety. In order to reach this goal we developed and employed an inventory/scale for measuring subject anxiety. Our further important purpose was to understand those intrapsychic and contextual factors more profoundly that in interaction with anxiety influence performance behaviors in school. The chosen and applied methods serve these objectives.

Study I.

The research was carried out in February 2013, the participants were the student of two high-school classes ($N = 64$). For testing our hypotheses we employed the following questionnaires:

- *Subject Anxiety Inventory*

The Inventory consists of 40 statements which were formed based on our formerly developed and used Mathematical Anxiety Scale (MSzMT, Nótin, 2011; Nótin, Páskuné, Kurucz, 2012). The school-subject that arouses anxiety was discretionary, we had not given any options. Then the following statements had to be assessed in regard of that chosen subject. The items can be divided into two hypothetical subscales: (1) Emotional and physical symptoms (20 items); (2) Cognitive items: attitudes, attributions, and beliefs (20 items). At the end of the inventory there are further questions about the person's attitudes toward the school-subject, and we ask participants to finish an open-ended sentence and to indicate their actual subject preference.

- *State Anxiety Inventory (STAI-State Subscale)*

In the often used State Anxiety Subscale there are 20 items/statements which aim to tap the current state of the respondent (Sipos, Sipos, Spielberger, 1988a).

- *Trait Anxiety Inventory (STAI-Trait Subscale)*

This subscale also contains 20 items to measure the general state of the participant, in other words the typical level of anxiety (Sipos, Sipos, Spielberger, 1988a).

- *Test Anxiety Inventory (TAI-H)*

The scale measures the experienced anxiety level of students in the given (for example oral exam, test) performance setting. The 20 items can be listed into two subscales: (1) Worries and (2) Emotionality (Sipos, Sipos, Spielberger, 1988b).

Study II.

The study was carried out between September and October 2013 among 9-10. grade students of ten high-schools located in nine different cities ($N = 486$). The test battery consisted of the following measurements/scales:

- *Student Self-Efficacy Scale*

This scale that was developed for this study measures the students' sense of self-efficacy in school. We formulated our items based on the contents of two scales (Bandura, Barbaranelli, Caprara és Pastorelli, 1996; Bandura, 2006; Muris, 2001). The scale can be divided into two subscales: (1) School Self-Efficacy and (2) Self-Efficacy Outside the Classroom. The items of the School-Efficacy subscale can be ordered in three factors: self-efficacy related to activity, to relationship and to self-regulation.

- *Personal Subscale of the Tennessee Self-Concept Scale*

Measuring one segment of self-concept the Personal Self-Concept Subscale assesses the contentment with personal capabilities, abilities and with personality characteristics (for example self-confidence, willpower and perseverance) that are responsible for activating these abilities and capabilities (Dévai, Sipos, 1986).

- *Success Attribution Scale*

The scale maps students' implicit notions about intelligence and performance. The items are the following: (1) The Relationship between Effort and Success, (2) The Link between Time-Input and Success, and (3) The Assumed Relationship between Effort and Intelligence/Talent.

Three of the statements refer to the existence, three to the lack of this assumed relationship (Páskuné, 2002).

- *Subject Anxiety Inventory*

The measurement of subject anxiety that had been adapted in the 1. Study was implemented also in the 2. Study (see above).

- *Background Questionnaire*

Participants answered personal background questions anonymously. We asked for information about their own high-school, hometown, sociocultural background and academic performance.

Study III.

In our third study we employed focus group interviewing (Síklaki, 2006; Vicsek, 2006; Barbour és Kitzinger, 1999) a method during which in the form of a group talk a theme can be disclosed with the help of a list of theme-focused questions. This method openly uses information arising from in-group interactions and this way primarily qualitative data can be gathered. While formulating the questions we decided to employ half-structured interview (Vicsek, 2006) which concerned the topics of motivation, perfectionism, perceived academic performance, experienced anxiety and performance related emotions in success and unsuccessful situations in the case of all of the six student groups ($N = 46$).

RESULTS

Study I.

Hypothesis 1

The Subject Anxiety Scale that was adapted to measure the different forms of subject anxiety is a reliable instrument and can display the emotional, physical and cognitive symptoms.

Results:

The statistical analysis confirms that the Subject Anxiety Scale (TTSZ) can be divided into two factors, that is the hypothesized “Emotional-Physiological” and “Cognitive Symptoms”

factors can be distinguished in the scale. During the analysis it was an important step that from the original 40 items we left out 3-3 items of each factor because they showed lower/weaker relation to the given factor. Another major/significant result is that the reliability indices of the scale are adequately high after omitting the weak items meaning that this scale can be an appropriate measure of the components of subject anxiety.

Hypothesis 2

Subject anxiety can not be identified by state, trait or test anxiety, but it is related to them being all of them objects of anxiety measurement from different aspects. In other words subject anxiety can be interpreted as a specific form of school anxiety.

Results:

Based on the results of validity analysis the anxiety assessed by the Subject Anxiety Inventory is not comparable to trait, state or test anxiety. Correlation values indicate that the scale indeed measures anxiety but a specifically school-subject connected form of it. It is worth noting that the correlation of TTSZ with other anxiety scales implies that the items of the Cognitive Scale as well as the Emotional-Physiological Scale fit well in the concept the we formulated during the scale development process. These two scales explore all those symptoms that supposedly occur during dealing with the anxiety arousing subject.

Hypothesis 3

In the Subject Anxiety Scale the free choices between school-subjects will be in line with the observations in the scientific literature, namely students will mostly mark mathematics, and other natural science-subjects as the most anxiety arousing ones.

Results:

According to our results, mathematics stands out from the crowd of other subjects because almost half of the students indicated that mathematics evoked the most anxiety. This way our hypothesis was partially supported as from the array of natural science–subjects that based on scientific data we assumed to appear, only biology and chemistry were mentioned in a rather negligible rate. One explanation for this phenomenon can be that respondents could only choose

one school-subject, and so they entered the most problematic one (for example mathematics). Maybe other subjects cause them the same amount of trouble, but they did not have to opportunity to indicate it.

Hypothesis 4

Students explain their anxiety mostly with personal internal factors (like traits, characteristics, abilities) but also factors of the social environment (the expectations of the teacher, comparison with classmates) will be often mentioned.

Results:

We can conclude that participants were prone to search for the reasons of their anxiety in themselves (Internal Causes) and in the case of subject anxiety they were not so likely to project their problem on their environment (External Causes). The perceived weak abilities, the low levels of self-assurance or the negative attitudes toward the subject can be mentioned here. If the student considers him/herself as the cause of anxiety this perception can have a negative impact on self-efficacy on that field of subject and on the self-concept of the student which in turn can lead to lower motivation and with time to lower performance.

Study II.

Hypothesis 5

In the Subject Anxiety Inventory students will label mathematics and other nature science-subjects as the ones that arouse the most anxiety. Furthermore the 40 items of TTSZ can be clearly divided into emotional, physical, and cognitive symptoms which jointly compose the construct of subject anxiety.

Results:

The majority (56%) of the participants experience anxiety related to “real subjects” among which mathematics, physics, chemistry, geography and also biology as natural science-subjects are highlighted. This result suggests that we face a serious problem in the field of secondary education. Moreover we revealed the further aspects of the Subject Anxiety Inventory.

One is the division in three subscales: (1) Subject related thoughts, (2) Learning and performance related thoughts and (3) Anxiety symptoms. The employment of this division can be reasonable if we want to form an extensive/comprehensive picture about a particular student group. The other possibility is the seven fold classification: Attitude, Utility/Usefulness, Difficulties, Uncertainty, Worry, Physical, and Emotional Symptoms. This division is advised to use in those cases when a differentiated approach to a student's problem is needed for example when the student regularly does not prepare for the class or permanently underperforms.

Hypothesis 6

Contents that compose school-subject anxiety are in correlation with the investigated intrapersonal factors such as personal self-concept, school self-efficacy, success attribution, and perceived academic performance.

Results:

According to statistical analysis the direction of the relationships are in line with our expectations, that is higher levels of school-subject anxiety is accompanied by somewhat lower sense of self-efficacy, more negative self-concept and a lower perceived performance. At the same time it can be concluded that subject anxiety has no relation to success attribution. Furthermore the observed correlations are weaker than the expected because while the statements in the Subject Anxiety Inventory concern one problematic subject, the other measurements assess the student's implicit impressions in a rather general way (personal self-concept, school self-efficacy, perceived academic performance).

Hypothesis 7

A typical pattern can be perceived between the reasons of anxiety indicated by the students and the following factors: gender, type of school, subject marked as anxiety-arousing, perceived academic performance/achievements, personal self-concept, school self-efficacy, and the items of the questionnaire.

Results:

There was a difference in the reasons of the two sexes: girls, compared to boys believed more that the appearance of anxiety was an outcome of their inner characteristics. In relation to the school-type students who were attending a secondary grammar school were more inclined to explain the symptoms of anxiety with the characteristics of the teacher, with classmates or with problems of adaptation to the learning situation than students enrolled in vocational and specialized schools. While students of vocational schools usually mentioned outward reasons, students attending specialized schools were more prone to mention inner reasons of anxiety.

From the array of marked subjects mathematics, P.E. and other subjects, and biology stood out which co-occurred with characteristic patterns of causes. In relation to perceived academic performance there was no difference between the types of mentioned reasons, no matter how the student evaluated his/her performance. However those, who identified the reasons for anxiety outside themselves thought that they were better students. In the case of school self-efficacy and personal self-concept we found no evidence of differences between the students.

As for the symptoms of subject anxiety, students who explained anxiety with inner characteristics related to the given subject in a more positive way and considered it as more useful for the present as well as for the future. They also evaluated the learning and performance situation somewhat more negatively and as a consequence they could get along harder in the acquisition of the subject and experienced uncertainty at the same time. Furthermore students, independently from the reasons of anxiety, experienced almost the same amount of worries, and unpleasant physical and emotional symptoms.

Study III.

Hypothesis 8

In relation to motivations for learning the majority of students in the control as well as the “talent care” classes will mention the driving/motivating power of future, and perfectionism will only appear in connection with concrete school-subjects and activities.

Results:

According to our results there were only a few differences between the representations about motivation and perfectionism of the control and “talent care” (AJTP) students. AJTP

students highlighted the role of work and rewards which established their efforts in the field of learning and performance. In several cases the lack of effort and as a consequence of perseverance problems the lack of pursuit for outstanding performance occurred.

Hypothesis 9

Anxiety in performance settings emerges at the same frequency in the case of control and AJTP students. The characteristics of the task-situation arouse anxiety more often in the control group and among them excitement/agitation is a more common symptom.

Results:

The members of AJTP classes, compared to the control group, reported less anxiety during school work, although if they did, they rather mentioned falling into a negative emotional state/negative state of mood, and they showed avoiding behaviors. Among the members of the control group it was more typical to experience anxiety during oral exams, and performing in front of the class caused them more inconvenience. Moreover, beside the agitation, the appearance of mental blocks can be more characteristic to them and fidgeting can be a distracting symptom.

Hypothesis 10

In both groups similar explanations for the relationship of anxiety and performance will appear, only the positivity of these interpretations will differ: students of the talent program will mention more positive contents compared to the control group.

Results:

There were no explicit differences in the explanations for the relationship of performance and anxiety between the control and AJTP students. Only in the case of several answers were small differences observable: for example in the experience of positive states and in the appearance of concentration control students were better.

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List of publications related to the dissertation

Hungarian book chapter(s) (4)

1. **Nótin Á.**: Tantárgyi szorongás kérdőív alkalmazása középiskolában.
In: II. Országos Alkalmazott Pszichológiai PhD Hallgatói Konferencia : előadáskivonatok [elektronikus dokumentum]. Szerk.: Kővágó Pál, Vass Zoltán, Vargha András, Károlai Gáspár Református Egyetem, Budapest, 120-133, 2014.
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Hungarian scientific article(s) in Hungarian journal(s) (2)

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List of other publications

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