

Milosh Raykov

University of Malta

ORCID: <https://orcid.org/0000-0002-0612-2872>

Victor Martinelli

University of Malta

ORCID: <https://orcid.org/0000-0002-0121-4444>

Evaluation of a Classroom Anxiety Scale for Secondary-School Students

ABSTRACT: School-related anxiety is a frequent phenomenon that affects many students at all levels of education. To reduce students' school-related anxiety, teachers need valid, reliable diagnostic instruments that examine its various forms. The primary objective of this study was to evaluate a new instrument, Classroom Anxiety Scale (CAS), to estimate the incidence of school-related anxiety among secondary students, and to examine the relationships between student demographic characteristics and school-related anxiety. The results show that students experience intensive anxiety related to tests/exams and public speaking, while a smaller number experience anxiety related to writing tasks and group work. They also show that the Classroom Anxiety Scale (CAS) has satisfactory metric characteristics.

KEYWORDS: classroom anxiety, secondary school, gender, age, psychometric evaluation

Kontakt:	Milosh Raykov milosh.raykov@um.edu.mt Victor Martinelli victor.martinelli@um.edu.mt
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INTRODUCTION

Adolescence is a crucial stage of life, bringing biological, physiological and psychological challenges. Anxiety disorders are frequently associated with social problems that can predispose adolescents to school absenteeism, low self-esteem and poor self-concept (Grills-Taquechel, Fletcher, Vaughn and andStuebing, 2012; Ingul andand Nordahl, 2013). These usually result in public health concerns, potentially leading to poor academic performance (Al-Gelban, 2007). While poor school achievement can result from excessive anxiety, it can itself cause anxiety, low self-esteem, depression and other affective symptoms, creating a self-perpetuating cycle (Mazzone et al., 2007).

School anxiety is one of the most common categories of anxiety experienced in middle childhood (Ahlen, Breitholtz, Barrett and Gallegos, 2012). It is a “discomfort reaction associated with unpleasant emotions and a state of distress occurring in response to school tasks or situations that are perceived as threatening to self worth” (Rappo, Alesi and Pepi, 2017, p. 466). According to Vasey, Crnic and Carter (1994), anxiety is characterized by “an anticipatory cognitive process involving repetitive thoughts related to possible threatening outcomes and their potential consequences” (p. 530). The same authors define classroom anxiety as

a state of uneasiness which accompanies somatic indicators (emotionality) and a focus on anticipated future threat(s) to achievement and/or reputation (cognitive worry) for assessed situations in which a performance is measured, judged, and compared to a particular standard of excellence (p. 349).

Students perceive many activities in school as stressful because they usually include an element of examination or assessment (Putwain, 2007). The notions of worry, stress and anxiety are well established in the fields of health, organizational and educational psychology (Putwain, 2007). The relationship between anxiety and performance may be traced back to the work of Yerkes and Dodson (1908), who identified that anxiety had a negative impact on students. Lowe et al. (2008) developed a biopsychosocial model to explain how intelligence, study skills and academic self-efficacy combine with situational or interpersonal variables to determine

the degree of anxiety that children experience. Low levels of anxiety are considered facilitating, while higher levels are considered debilitating. This estimation is based on a curvilinear relationship between test anxiety and performance, but this relationship is not universally accepted (Putwain, 2008).

In researching this subject, the authors reviewed many parallel, if not synonymous, terms to describe the anxiety experienced in academic evaluative environments or contexts. The terms used included “test” (McDonald, 2010), “examination” (Browne and Cantelo, 2017), “evaluation” (Zeidner and Matthews, 2005), “performance” (Huberty, 2009), “school” (Rappo, Alesi, and Pepi, 2017), and “classroom anxiety” (Horwitz, Horwitz, and Cope, 1986). All these terms appear to be referring to very similar constructs: they all relate to emotionality and cognitive worry that students experience in school (Sotardi, 2018). The term “anxiety” focuses on the stress outcome or reaction in response to a situation. “Anxiety” refers to the differences between students’ predispositions to experience a situation as anxiety-provoking. Moreover, “anxiety is situation-specific, or context-defined ... [and] has a clearly mapped out domain, consisting of the worry and emotionality components” (Putwain, 2007, p. 213). Denscombe (2000) notes that students use the term “stress” to describe external pressure from teachers and parents.

INCIDENCE OF SCHOOL-RELATED ANXIETY

Children with secure attachment to caregivers are likely to develop high-quality relationships with their teachers. This is likely to affect their academic self-concept positively, possibly resulting in better emotional regulation (Ramsdal, Bergvic and Wynn, 2015). Overall, anxiety levels typically increase with age, arguably with girls scoring higher than boys. Generally, tests and evaluation situations pose a significant source of concern and anxiety to a considerable proportion of children (McDonald, 2001). As students progress through their education, they typically sit for more tests and assessments, and with these come expectations of good performance. With increasing age, students develop better insight into their skills as test-takers and receive keener feedback on their progress (McDonald, 2001). Al-Gelban (2007) identified considerable levels of depression, anxiety and stress in a representative group of Saudi adolescents, with 48% exhibiting some form of anxiety.

Both King et al. (1989) and Ollendick, King and Frary (1989) noted that Australian and American 15- to 18-year-olds’ fear of failing a test increased with age. In Northern Ireland, fear of examinations constituted the most prevalent worry (Gallagher and Miller, 1996). Estimates of the prevalence rate of test anxiety among school-age children have varied widely (Zeidner, 1998). Hill and Wigfield (1984) reported that 10% of children experience test anxiety, while King and Ollendick (1989) reported incidence rates of 10% to 30%. Turner, Beidel, Hughes, and Turner (1993) found that the prevalence of high test anxiety among African-American elementary schoolchildren to be around 41%. Tramonte and Willms (2010), in their study conducted in Canada, found that about 55% of students experience some degree of school right.

Similarly, Leonard et al. (2015), who conducted their study in the U.S., reported that about 49% of students experienced considerable stress daily and 31% felt somewhat stressed. Hutchings (2015) reported an even higher rate of 68% among U.K. students who had taken their Standard Achievement Tests. This study also found that a large proportion of students (22%) in the previous year had sleeping difficulties because of test-related stress

The results of the studies reported are subject to cultural, societal and temporal variables because they were conducted in different countries at different times in students' lives. Moreover, they assessed different types of school-related anxiety. However, the considerable convergence among them suggests that it would be reasonable to expect a third of children to experience significant levels of school-related stress during their scholastic careers.

GENDER DIFFERENCES

The literature review also found that among students, girls have higher levels of overall school-related test anxiety than boys (Cassady and Johnson, 2002). Leonard et al. (2015) found significant gender differences regarding school-related stress. According to this study, 60% of girls reported school-related stress, in contrast to 41% of boys. The incidence of moderate levels (32%) of stress was similar in both groups. In a recent study, Kareemi (2016) assessed differences in the levels of experienced stress across the genders through the administration of the Beck Anxiety Inventory to 600 secondary-school students. He administered this test to 300 boys and 300 girls matched for age and a broad measure of socioeconomic status. This study confirmed findings from many previous studies indicating that girls experience significantly higher anxiety than their male counterparts.

Most studies in this domain have found that adolescent girls more frequently suffer school-related anxiety than boys (Birmaher et al., 1997; Freudenthaler, Spinath and Neubauer, 2008; Steinhausen, Müller and Winkler, 2008). Cassady and Johnson (2002) explain this difference by saying girls have higher levels of emotionality and tend to express their feelings more often than boys. Bodas and Ollendick (2005), who examined cross-cultural differences in expression of test anxiety, found that such differences may reflect the degree to which girls and boys are ready to admit their test anxiety (Bodas and Ollendick, 2005).

CONSEQUENCES OF SCHOOL ANXIETY

School-related anxiety is a frequent phenomenon that affects a large proportion of students at all levels of education (Anyamene, Nwokolo and Azuji, 2016; Mercieca, Mercieca and Raykov, 2015). It is a significant source of stress among students worldwide. Academic stress arises from anticipated potential academic failure and is a significant issue among secondary students (Deb, Strodl and Sun, 2014). Sotardi (2018) contends that evaluation anxiety is a function of its assessment-related antecedents,

experiences and consequences relevant to various educational contexts. In short, despite some positive, mobilizing effects, school-related anxiety significantly decreases quality of life and the academic achievement of students and often contributes to early leaving of education and training (Deloatch, Bailey, Kirlik and Zilles, 2017).

Anxiety symptoms, prevalent in childhood and adolescence, can be implied by interfere with general well-being, social life, academic performance and development of social skills. High levels of school anxiety are detrimental to students because of the negative effect on their bodily and emotional well-being and on their ability to achieve their potential. Moreover, sub-clinical levels of anxiety in children and adolescents are associated with a poor sense of well-being and may eventually predispose the sufferer to mood disorders and substance-use disorders in the long term. Anxiety symptoms are associated with impairment of memory and cognitive functions and can contribute to poor school performance, maladaptive behavior and academic failure (Mazzone et al., 2007). In the short term, anxious children and adolescents are likely to have limited career options and even increased suicide ideation and attempts (Teubert and Pinquart, 2011). Negative experience with learning, perception of course load, poor time management and family issues may contribute to the complex interplay of factors contributing to students' level of anxiety. Generally speaking, there is a negative correlation between school anxiety and academic performance (McDonald, 2001).

On the other hand, the effect of anxiety may be mitigated by perception of scholastic activities. If teachers can put children and adolescents at their ease and present assessment experiences more positively, interpreting them as formative experiences, then the fear of failure may be mitigated. Tinley (2018) makes a case for using information students offer during such assessments to be used with them, not against them – to guide them toward their best achievement selves. Unsupervised playgrounds, problems with friends, bullying and peer pressure may all lead to a degree of school anxiety. Learning difficulties such as dyslexia may also lead to a degree of anxiety that, left unchecked, could lead to severe consequences like school refusal and depression. Teachers and parents should tackle school anxiety early because the longer it persists, the more profound it becomes. Parents could adopt many strategies to mitigate their children's school anxiety, but teachers can be even more effective because school anxiety occurs at school, not in the home. To reduce school anxiety, teachers of younger children may adopt a flexible start time for a particular child, adopt a buddy system and praise the child for the effort to complete work (Young Minds, 2019).

Strategies with adolescents include, but are not limited to, extra time and warnings before transitions; preferential seating; frequent checks for understanding; not requiring them to read aloud or work at the board in front of the class; extended time for tests; breaking down assignments into smaller pieces; and modifying tests and homework (Hurley, 2018). On a different level and with older students, Firmin and Proemmel (2008) suggested that helping them see connections between their education and their future, making subjects more interesting, adopting technology

to enhance student experiences, using student exercises and demonstrations, and holding additional sessions and tutorials may all reduce school anxiety. Educators use their insight and acumen to identify those who are at risk of developing school anxiety. However, their perception and level of understanding of the anxious period in the lives of the people they work with may be enhanced and, indeed, improved if they can use valid, reliable and economical diagnostic tools. Such tools as exist for exploring an individual's level of anxiety are often a precondition for efficient educational and psychological intervention.

STUDY OBJECTIVES AND METHODOLOGY

To reduce student school-related anxiety, teachers need valid, reliable diagnostic instruments that examine different forms of school-related anxiety. The Classroom Anxiety Scale (Sotardi, 2018) is a new instrument in a series of such measures intended to measure the incidence of school-related anxiety among secondary-school students. The primary objective of this study was to examine the structure and reliability of this sort of scale and its suitability for application in local schools. Other objectives were to evaluate a new instrument, to estimate the incidence of school-related anxiety among secondary-school students, and to examine the relationships between student demographic characteristics and classroom-related anxiety. The study aimed to increase awareness of school-related anxiety among teachers and other professionals, as well as to provide a diagnostic instrument that teachers and other educators can use to improve teaching quality and learning conditions.

METHOD

Participants

The study applied a cross-sectional exploratory approach based on a short paper-and-pencil scale to examine the extent and forms of school anxiety experienced by secondary-school students. Upon obtaining approval from the institutional research ethics committee, the central school administration and parents, the Classroom Anxiety Scale was distributed among Year 7 to Year 11 students attending four randomly selected public secondary schools.

The target group of this study was secondary-school students, since research shows that a large number of students at this stage of education experience school-related anxiety. About 460 students were invited to participate in this voluntary and anonymous study, conducted in February and March 2019. In total, parental consent was obtained from the parents or guardians of 298 students, more than 60% of those invited.

Measures

To collect data, this study applied a paper-and-pencil instrument, the Classroom Anxiety Scale (CAS), which examines school-related anxiety in various academic evaluative contexts (Sotardi, 2018). The four subscales consist of tests/exams, writings, public speaking and group work-related anxiety. Each of the four subscales contains three items, such as „I feel anxious whenever I need to sit for a test or exam” (test/exam anxiety), “I feel anxious whenever I need to submit written work” (writing anxiety), “I feel anxious whenever I am asked to make a short speech in class” (public speaking anxiety) and “I feel anxious whenever I need to work on a group project” (group work-related anxiety).

All items were scaled on a seven-point Likert-like scale starting with „strongly agree” (1) and ending with “strongly disagree” (7), with lower numbers indicating higher levels of classroom-related anxiety. The entire instrument and all four subscales have satisfactory internal consistency. Sotardi (2018) found satisfactory internal consistency (Cronbach’s coefficients α) for all four subscales: .77 for test/exam anxiety, .77 for writing, .84 for public speaking and .76 for group work-related anxiety, as well as a stable structure of this instrument and high loadings of all items included in this short version.

Statistical analysis

The data analysis was designed to answer the study’s research questions and to achieve its research objectives. Selected statistical techniques were also determined by the type of data collected for this study. Exploratory techniques (percentages, means and standard deviations) were used to inspect data and describe the extent of the various forms of classroom-related anxiety reported by secondary-school students. The analysis also included inferential statistics techniques (t-tests and analysis of variance) to compare the levels of various manifestations of classroom anxiety among students of different ages and genders. Levels of statistical significance are indicated in the following way: *** = $p < .001$, ** = $p < .01$, * = $p < .05$, ^{ns} = not significant.

In addition, the study used exploratory factor analysis to determine the factors behind the observed variables. Exploratory factorization was performed with different extraction (principal axis factoring) and Varimax rotation methods to examine the structure of the observed variables and to check the stability of the obtained results (Field, 2009). The Classroom Anxiety Scale was evaluated for construct validity using confirmatory factor analysis to assess the comparability of factors identified in a recent study conducted in New Zealand among first-year undergraduates (Sotardi, 2018), with our results obtained from a sample of secondary school students.

The internal consistency of the four subscales was determined by Cronbach’s Alpha coefficients, commonly used for reliability measurement (Field, 2009; Cortina, 1993) and suitable for analysis of Likert-type data (Gliem and Gliem, 2003). The descriptive, inferential and exploratory analyses were conducted with application of procedures using SPSS package (IBM SPSS Statistics, IBM Corp., USA), while the

confirmatory factor analysis was performed with the CFA module from the open-source package jamovi for statistical data analysis (The jamovi project, 2019).

RESULTS AND DISCUSSION

Results of our descriptive analysis (Table 1) demonstrate that students most intensively experience anxiety related to tests/exams and public speaking. Significantly fewer students experience anxiety related to writing tasks and group work. These results indicate that less frequent forms of teaching, such as group work, should be used more often not to mention that students (as I've found this semester) enjoy them more – which maybe a result of decreased anxiety.

Table 1. Average intensity of classroom anxiety

	Mean	SD
Test/Exam Anxiety		
I feel anxious whenever I need to sit for a test or exam.	2.9	1.74
I worry I will “go blank” when I start a test or exam.	2.9	1.91
In general, sitting for a test or exam makes me tense and uneasy.	3.1	1.78
Writing Anxiety		
I feel anxious whenever I need to submit written work.	4.4	1.97
I worry that my spelling and writing is not good enough.	4.1	1.97
Submitting written work makes me feel nervous.	4.4	2.06
Public Speaking Anxiety		
I feel anxious whenever I am asked to make a short speech in class.	3.2	2.15
I worry that I will forget information during my speech.	2.9	1.97
Speaking in public makes me panic.	3.5	2.25
Group Work Anxiety		
I feel anxious whenever I need to work on a group project.	4.9	2.02
On group projects, I worry that my classmates will not work well together.	4.0	2.08
Submitting a group assignment makes me feel tense and nervous.	4.6	1.97

As Table 2 shows, this study found significant differences between students of different ages in regard to the total School Anxiety Score ($F=3.230$, $p < .013$) and even greater differences on the test/exam-related anxiety score ($F=5.623$, $p < .001$). The results demonstrate that older students in higher grades demonstrate greater school anxiety, probably because of more frequent assessments and preparation for final examinations at the end of secondary education.

Table 2. Student age and classroom anxiety

	N	Test/Exam Anxiety	Writing Anxiety	Public Speaking Anxiety	Group Work Anxiety	Total Score
Year 7	51	3.6	4.5	3.7	4.7	4.1
Year8	101	3.0	4.2	3.0	4.5	3.7
Year9	45	3.0	4.5	3.6	4.9	4.0
Year10	44	2.9	4.4	3.1	4.2	3.7
Year11	33	2.0	3.9	2.8	3.9	3.2
<i>F-test</i>	274	5.623***	0.799^{n.s.}	1.897^{n.s.}	2.125^{n.s.}	3.230**

The study has also found significant differences between boys and girls regarding some forms of classroom-related anxiety. As Table 3 shows, there are significant differences between boys and girls regarding the test/exam-reacted anxiety ($t\text{-test} = -2.931, p < .004$) and public speaking anxiety ($t\text{-test} = -2.820, p < .005$).

Table 3. Gender differences regarding classroom anxiety subscales

Classroom anxiety subscales	Female			Male			T-Test		
	N	Mean	SD	N	Mean	SD	t-test	d.f.	Sig.
Test/Exam	170	2.7	1.54	102	3.3	1.57	-2.931	270	.004
Writing Anxiety	170	4.3	1.75	102	4.2	1.82	.358	270	.720
Public Speaking	170	2.9	1.88	102	3.6	1.94	-2.820	270	.005
Group Work	170	4.4	1.75	102	4.4	1.65	.310	270	.757
Total CAS Score	165	3.6	1.28	100	3.8	1.26	-1.591	263	.113

Furthermore, the results demonstrate that girls consistently show higher anxiety in these domains, as measured by all items from the subscales of the Classroom Anxiety Scale mentioned above (see Table 4).

Table 4. Gender differences regarding items from classroom anxiety scale

	Female	Male	t-test
Test/Exam Anxiety			
I feel anxious whenever I need to sit for a test or exam.	2.7	3.19	-2.235*
I worry I will “go blank” when I start a test or exam.	2.61	3.32	-3.028**
In general, sitting for a test or exam makes me tense and uneasy.	2.93	3.44	-2.305*
Writing Anxiety			
I feel anxious whenever I need to submit written work.	4.36	4.37	-0.046
I worry that my spelling and writing is not good enough.	4.09	3.99	0.401
Submitting written work makes me feel nervous.	4.47	4.32	0.604
Public Speaking Anxiety			
I feel anxious whenever I am asked to make a short speech in class.	2.96	3.57	-2.272*

	Female	Male	t-test
I worry that I will forget information during my speech.	2.7	3.25	-2.258*
Speaking in public makes me panic.	3.16	4.02	-3.105*
Group Work Anxiety			
I feel anxious whenever I need to work on a group project.	4.86	4.87	-0.031
On group projects, I worry that my classmates will not work well together.	4.17	3.73	1.715
Submitting a group assignment makes me feel tense and nervous.	4.47	4.7	-0.923

Legend: Levels of significance, *** = $p < .001$, ** = $p < .01$, * = $p < .05$, ns = not significant.

Principal axis factorization was applied to determine the structure of the participants' classroom anxiety, and reliability analysis was used to determine the internal consistency of the identified factors. Exploratory factor analyses (principal axis factoring) identified four factors (Table 5) and a structure of responses similar to the structure of the original Classroom Anxiety Scale (Sotardi, 2018). The factor loadings ranged from .631 to .892, and the identified four factors explain 78% of the total variance. The reliability analysis revealed high internal consistency of all four subscales identified in this study.

Table 5. Eigen values and explained variance

	Eigenvalues	% of total variance	Cumulative % of explained variance
F1	5.011	41.7	41.7
F2	1.783	14.8	56.6
F3	1.574	13.1	69.7
F4	1.028	8.5	78.3

The first factor explains 41.7% of the total variance (Table 6), describes test/exam-related anxiety and has high internal consistency of the three items that define this factor (Cronbach's Alpha = .83). This factor is saturated with items that indicate students' anxiety caused by taking tests or exams and the cognitive block that results from the interaction of affective and cognitive functions.

The second factor is saturated with items related to writing anxiety, and this factor explains 14.8% of the total variance. The factor is saturated with items that describe students' anxiety when submitting written work and worry about their spelling and writing. The value of the Cronbach's Alpha coefficient is = .87 and indicates good internal consistency despite the small number of items.

The third factor identified in this study is related to public speaking anxiety and consists of items highly saturated with items that indicate students' anxiety or panic when they need to make a short speech in class, or their worry that they may forget information during a speech. The internal consistency of this factor was also very high (Cronbach's Alpha = .89) and this factor explains 13.1% of the total variance.

Table 6. Results of exploratory and confirmatory factorization of classroom anxiety scale

Test/Exam Anxiety	Exploratory factor analysis (factor loadings)				Confirmatory factor analysis (factor loadings)
	F1	F2	F3	F4	
I feel anxious whenever I need to sit for a test or exam			.727		0.733
I worry I will “go blank” when I start a test or exam			.709		0.769
In general, sitting for a test or exam makes me tense and uneasy			.790		0.875
Writing Anxiety					
I feel anxious whenever I need to submit written work		.799			0.881
I worry that my spelling and writing is not good enough		.631			0.706
Submitting written work makes me feel nervous		.892			0.905
Public Speaking Anxiety					
I feel anxious whenever I am asked to make a short speech in class	.848				0.874
I worry that I will forget information during my speech	.790				0.865
Speaking in public makes me panic	.792				0.849
Group Work Anxiety					
I feel anxious whenever I need to work on a group project				.649	0.710
On group projects, I worry that my classmates will not work well together				.743	0.709
Submitting a group assignment makes me feel tense and nervous				.792	0.854

Note: Extraction Method: **Principal Axis Factoring**. Rotation Method: **Varimax** with Kaiser Normalization.

The fourth factor extracted in this study is related to the anxiety caused by group work, manifested when a student needs to work on a group project or worries that a group will not work well together. This factor also has good internal consistency (Cronbach's Alpha = .80).

In addition to the Principal Axis Factoring with Varimax rotation, factorization of the same data was applied using the Principal Axis Factoring and has revealed almost identical results, demonstrating an invariant structure of the extracted factors.

Confirmatory factor analysis was conducted during the preliminary stage of this study, since this scale was translated and applied in secondary schools within a population of the younger participants. The results of this analysis indicate a good fit between the original Classroom Anxiety Scale used to examine first-year undergraduates (Sotardi, 2018) and our data obtained for from a sample of secondary-school students. As Table 6 shows, this analysis identified factor loadings similar to the results of the exploratory factor analysis. The standard measures of the confirmatory

factor analysis (see Table 7) according to the consensus among authorities in this domain (Hu and Bentler, 1999; Steiger, 2007) demonstrate a good model fit.

Table 7. CFA Fit Measures

Test for exact fit χ^2 (48) of 124.0
Comparative fit index (CFI) of .95
Tucker-Lewis Index (TLI) .94
Standardized root mean square residual (SRMR) of .044 and
Root mean square error approximation (RMSEA) of .075, 95% CI [.059, .092]

Cronbach's alpha coefficient that examines the internal consistency of the items from the Classroom Anxiety Scale was .87, and according to the generally accepted criteria (Gliem and Gliem, 2003; Nunnally, 1978; Panayides, 2013), this value indicates good internal consistency of the entire scale. Alpha coefficients for the four classroom anxiety subscales are also good ranging from .80 for group work-related anxiety and up to .89 for public speaking-related anxiety (See Table 8).

In addition, we have applied McDonald's ω coefficients, which provide a more reasonable index of internal consistency (Dunn, Baguley and Brunnsden, 2014; McDonald, 1999). The obtained ω coefficients are very similar to Cronbach's Alpha and demonstrate very good reliability of all subscales of the Classroom Anxiety Scale (see Table 8). Based on the results of this study, it seems that the Classroom Anxiety Scale is appropriate for secondary-school students and that educators may confidently use this instrument for screening and design of interventions to reduce students' anxiety in school.

Table 8. Internal consistency of Classroom Anxiety Scale and four subscales

School anxiety scale and subscales	Cronbach's Alpha	McDonald's ω
Test/exam anxiety	.83	0.84
Writing anxiety	.87	0.87
Public speaking anxiety	.89	0.90
Group work anxiety	.80	0.80

CONCLUDING REMARKS

School-related anxiety is a frequent phenomenon that affects many students at all levels of education (Anyamene, Nwokolo and Azuji, 2016; Mercieca, Mercieca and, Raykov, 2015). Despite some positive, mobilizing effects, school-related anxiety significantly decreases students' quality of life and academic achievement, and often contributes to early dropping out from education and training (DeLoatch, Bailey, Kirlik and Zilles, 2017). One aim of this study was to examine the structure of the

Classroom Anxiety Scale, which is deemed suitable for the screening and diagnostics of school-related anxiety.

The results demonstrate that secondary-school students experience intensive anxiety related to tests/exams and public speaking, while a smaller number of students experience anxiety related to writing tasks and group work. Exploratory factor analysis has found four well-defined factors, much as in the original scale (Sotardi, 2018) used for screening university students for anxiety. High internal consistency in the entire scale was also found, as well as high internal consistency in all four subscales. Confirmatory factor analysis indicated that the Classroom Anxiety Scale is a good fit to the observed data obtained from students in secondary schools.

The study has found some significant differences between boys and girls, as well as among students of different ages. Its findings are similar to those of previous studies, which consistently demonstrate that girls (Cassady and Johnson, 2002; Leonard et al, 2015; Spinath and Neubauer, 2008; Steinhausen, Müller and Winkler, 2008) and older students (King et al. (1989; Ollendick, King and Frary, 1989; Leonard et al, 2015) more often report intensive school-related stress. In addition to the previous findings, this study shows that gender differences regarding the intensity of school-related stress are evident only in the domain of test and public speaking-related anxiety, while there are no differences regarding anxiety related to writing and group work. This finding has some practical implications for teaching and planning of assessments in schools, particularly among students in higher grades of secondary schools.

This study was conducted to support educators' efforts to reduce students' school-related anxiety by providing a valid, reliable and economical diagnostic tools as a precondition for efficient educational and psychological interventions. Despite a relatively small number of items, the CAS has a high level of internal consistency and excellent factorial structure. Based on the results of this study, educators may confidently use this scale for screening and planning interventions to reduce students' school-related anxiety and thus improve their academic achievement and overall quality of life.

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OCENA SKALI LĘKU KLASOWEGO (CAS) DLA UCZNIÓW SZKÓŁ ŚREDNICH

ABSTRAKT: Lęk związany ze szkołą jest częstym zjawiskiem dotyczącym uczniów na każdym poziomie edukacji. Aby zredukować u uczniów lęk związany ze szkołą, nauczyciele potrzebują właściwych, rzetelnych narzędzi diagnostycznych, za pomocą których przeanalizują różne przejawy tego lęku. Pierwszym celem tego badania była ocena nowego instrumentu - Skali Lęku Klasowego (Classroom Anxiety Scale CAS), aby oszacować częstość występowania lęków związanych ze szkołą wśród uczniów

szkół średnich, a także zbadanie relacji pomiędzy charakterystyką demograficzną studenta a występowaniem lęku związanego ze szkołą. Wyniki pokazują, że uczniowie doświadczają intensywnego lęku związanego z testami/egzaminami i wystąpieniami publicznymi, podczas gdy niewielka ich liczba odczuwa lęk związany z wykonywaniem zadań pisemnych i zadań w grupie. Wyniki pokazują również, iż Skala Lęku Klasowego (CAS) posiada zadawalającą charakterystykę pomiarową.

SŁOWA KLUCZOWE: lęk klasowy, szkoła średnia, płeć, wiek, ewaluacja psychometryczna