



Kent Academic Repository

Stoeber, Joachim and Pekrun, Reinhard (2004) *Advances in test anxiety research*. *Anxiety, Stress & Coping: An international journal*, 17 (3). pp. 205-211. ISSN 1061-5806.

Downloaded from

<https://kar.kent.ac.uk/4483/> The University of Kent's Academic Repository KAR

The version of record is available from

<https://doi.org/10.1080/1061580412331303225>

This document version

UNSPECIFIED

DOI for this version

Licence for this version

UNSPECIFIED

Additional information

Editorial

Versions of research works

Versions of Record

If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

Author Accepted Manuscripts

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in *Title of Journal*, Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

Enquiries

If you have questions about this document contact ResearchSupport@kent.ac.uk. Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our [Take Down policy](https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies) (available from <https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies>).

Stöber, J., & Pekrun, R. (2004). Advances in test anxiety research (Editorial). *Anxiety, Stress, & Coping*, 17(3), 205-211.

Advances in Test Anxiety Research

(Editorial)

Joachim Stöber

Reinhard Pekrun

Martin Luther University

Ludwig Maximilians University

of Halle-Wittenberg, Germany

of Munich, Germany

Author for correspondence:

PD Dr. Joachim Stöber
Department of Educational Psychology
Martin Luther University of Halle-Wittenberg
Franckesche Stiftungen, Haus 5
D-06099 Halle/Saale
Germany
Phone: +49-345-5523789
Fax: +49-345-5527244
E-mail: stoeber@paedagogik.uni-halle.de

Advances in Test Anxiety Research

(Editorial)

The aim of this special issue of Anxiety, Stress, and Coping is to present readers with a selection of papers that show new advances in test anxiety research. These papers comprise research related to the assessment of test anxiety and the investigation of individual differences in attitudes and cognitive processes associated with test anxiety, thus opening new perspectives for test anxiety research and beyond. The title of this special issue, "Advances in Test Anxiety," was chosen as a tribute to the series of publications that appeared under the very name in seven volumes from 1982 to 1992 (Hagtvet & Backer Johnsen, 1992; van der Ploeg, Schwarzer, & Spielberger, 1983, 1984, 1985; R. Schwarzer, van der Ploeg, & Spielberger, 1982, 1987, 1989) and that made a substantial contribution to the field, setting landmarks for test anxiety research. After the journal Anxiety, Stress, and Coping (at that time named Anxiety Research) was launched in 1988, however, the series was discontinued in 1992 because publications on test anxiety research then were submitted and published in the present journal. Consequently, it appeared to us that the journal would be the perfect outlet for a special issue devoted to new advances in test anxiety research.

Test Anxiety Research: Past Achievements and Present Developments

Research on test anxiety has a long and fruitful history (for a brief historical overview, see Zeidner, 1998). While first studies relating to test anxiety were conducted as early as 1914 (Folin, Demis, & Smillie, 1914), test anxiety entered the stage of scientific investigation under its own proper name in 1952 when Mandler and Sarason (1952; Sarason & Mandler, 1952) published a series of studies on test anxiety and how it relates to performance and, moreover, provided researchers with an instrument to

assess individual differences in test anxiety in adults, the Test Anxiety Questionnaire, which was followed a few years later by an instrument to assess test anxiety in children, the Test Anxiety Scale for Children (Sarason, Davidson, Lighthall, Waite, & Ruebush, 1960). These two questionnaires became the gold standard of test anxiety research and granted a sound basis for many advances in test anxiety research in the years to come.

In the 60s and early 70s, a number of conceptual advances followed of which two turned out to be seminal contributions for test anxiety research: the first was the distinction between anxiety as a transitory state and anxiety as a stable personality trait (Cattell & Scheier, 1961; Spielberger, 1962, 1972) and the second the distinction between two basic dimensions in the experience of anxiety, namely worry and emotionality (Liebert & Morris, 1967; Morris & Liebert, 1970). Following these conceptual advances, the 70s and 80s saw major advances in model construction (particularly cognitive models of test anxiety and its effects on attention and cognitive performance), research, and applications. These advances resulted in a sizable body of cumulative research findings as demonstrated by an increasing number of scientific publications on test anxiety that, from 1952 to now, have summed up to a total of over a 1,000 publications (Zeidner, 1998, Fig. 1.2).

However, after a peak in the 80s, the number of scientific publications on test anxiety started to decrease, a trend that still continues today (Zeidner, 1998, Fig. 1.1). Despite test anxiety not appearing in the headlines of scientific publications as often as it did in the 80s, test anxiety research still is well and alive, and test anxiety continues to be a key construct in research on anxiety, stress, and coping--even though sometimes in disguise, as will be detailed further below. The reasons for the continued interest in test anxiety include the following. First, test anxiety remains to be an important variable in

basic research in cognition and emotion, personality, and social psychology that investigates individual differences in cognitive performance (e.g., Dutke & Stöber, 2001) and achievement motivation (e.g., Elliot & McGregor, 1999). Second, in all disciplines in applied psychology looking at performance and achievement--such as educational psychology, health psychology, sport psychology, and industrial and organizational psychology--, test anxiety remains to be an important factor. Educational psychology, for example, has shown that test anxiety is an important factor in students' primary, secondary, and tertiary education. In school students, individual differences in test anxiety play a major role not only for students' achievement, but also for their school-related motivation, their academic self-concept, and finally for their career advancement as well as for their personality development and health (Dalbert & Stöber, in press; Pekrun, Götz, Titz, & Perry, 2002). Moreover, in educational testing, test anxiety may present a bias that may conceal the true potential of students (Meijer, 2001).

Finally, it is important to note that research in test anxiety is more prominent than it may perhaps appear. One reason for this is that test anxiety may sometimes be subsumed under broader constructs, for example, the construct of examination stress of which test anxiety represents a core feature (C. Schwarzer & Buchwald, 2003). Moreover, research on test anxiety may come under different names. For example, test anxiety may appear under the term of performance anxiety when relating to artists (e.g., Mor, Day, Flett & Hewitt, 1995) or competitive anxiety when relating to athletes (e.g., Hanton, Evans, & Neil, 2003). Furthermore, research on test anxiety may be "hidden" under names related to more specific forms of test anxiety like, for example, math anxiety (e.g., Ashcraft & Kirk, 2001) or statistics anxiety (e.g., Onwuegbuzie, 2000).

Last not least, as individual differences in test anxiety and fear of failure can hardly be differentiated on an empirical level (Hagtvet & Benson, 1997), results from the two different research traditions may be integrated. Consequently, advances in research on test anxiety may also be found when looking at advances in research on fear of failure (e.g., Conroy, 2001). This has important implications for both research traditions as, on the one hand, test anxiety research may profit from paying closer attention to motivational research concerning fear of failure and avoidance motivation (e.g., Conroy & Elliot, this issue), and on the other hand, research on achievement motivation may profit to pay closer attention to past and present research related to test anxiety and associated processes.

Current Trends and New Directions in Test Anxiety Research ... and Beyond

When Zeidner (1998) summed up continuing research, current trends, and future directions in test anxiety research, he correctly predicted that test anxiety research would continue to achieve further advances in the multidimensional assessment of test anxiety and processes associated with test anxiety. This area of research represents a focal area of progress in today's study of test anxiety, as is nicely demonstrated by some of the contributions in this special issue (Schutz, DiStefano, Benson, & Davis, this issue; Wren & Benson, this issue). Furthermore, coping with test anxiety--since long at the focal attention of test anxiety research (for a review, see Zeidner, 1995)--continues to be a major topic of test anxiety research as also is demonstrated in this special issue (Schutz et al., this issue; Stöber, this issue). In both areas, researchers have started to show greater awareness of the different temporal phases and differential stages in individuals' experience of test anxiety when confronted with a test: the pre-exam phase, that may well begin several days prior to examination (Raffety, Smith, & Ptacek, 1997),

representing the anticipatory stage, the exam phase representing the confrontation stage, and the post-exam phase representing the outcome stage (Zeidner, 1998). As these different phases and stages may be associated with different experiences of anxiety (Raffety et al., 1997; Zeidner, 1998) and may call for different coping strategies, it is important that measures related to stress, anxiety, and coping take these differences into account (e.g., Pekrun et al., this issue).

Another issue that continues to receive great attention is how test anxiety relates to attention, memory, learning, and performance. In this, further advances are made with test anxiety research embracing new research paradigms from cognitive psychology and the study of anxiety and cognition (Eysenck, 1992). Under this perspective, test anxiety research adopting a molecular level of analysis that goes into deeper detail of cognitive processes associated with test anxiety to find out how basic cognitive processes of attention and memory are associated with test anxiety (e.g., Dutke & Stöber, 2001; Keogh, Bond, French, Richards, & Davis, this issue). But also on a molar level, research on test anxiety and cognition is making further progress by looking at metacognition and meta-cognitive strategies associated with test anxiety, for example, by investigating how test anxious individuals use external memory aids to deal with the well-known storage deficits associated with high levels of test anxiety (Stöber & Esser, 2001).

Finally, some researchers call back to attention that anxiety is an emotional state (Spielberger, 1972) by pointing out, for example, that coping with test anxiety may be understood as a process of emotional regulation (Schutz & Davis, 2000; Schutz et al., this issue) and that anxiety is only one of many emotions which may be experienced in

the context of tests and examinations and which should be taken into account by researchers in the field (Pekrun, 2000; Pekrun et al., this issue).

Overview of the Issue

For this special issue, six papers from authors working in Canada, Germany, the United Kingdom, and the United States were selected that present current advances in test anxiety research related to the continuing research traditions, current trends, and future directions pointed out above.

In his paper "Dimensions of Test Anxiety: Relations to Ways of Coping with Pre-Exam Anxiety and Uncertainty," Stöber builds on the four-dimensional model of test anxiety advanced by Hodapp (1991; see also Keith, Hodapp, Schermelleh-Engel, & Moosbrugger, 2003) and examines how the four dimensions of test anxiety--worry, emotionality, interference, and lack of confidence--relate to students' ways of coping with pre-exam anxiety and uncertainty, differentiating three major ways of coping with pre-exam anxiety: task-orientation and preparation, seeking social support, and avoidance. Results show that the four dimensions of test anxiety are differentially related to ways of coping with pre-exam anxiety. In addition, they show pervasive gender differences in how students cope with pre-exam anxiety and how ways of coping are differentially related to the four dimensions of test anxiety. With this, Stöber's paper points to the fact that, while gender differences in test anxiety and its components are well-documented (for a review, see Zeidner, 1998), gender differences in coping with test anxiety still are much less well understood.

In their paper "Measuring test anxiety in children: Scale development and initial construct validation," Wren and Benson describe the development and initial validation of a new scale to measure test anxiety in children, the Children's Test Anxiety Scale

(CTAS). Building on a validation program comprising four stages of construct validation (Benson, 1998), the authors arrive at a measure comprised of three dimensions: thoughts, autonomic reactions, and off-task behaviors. Based on ethnically diverse sample of elementary school children from grades 3 to 6, the authors present initial validity information showing that the CTAS represents an up-to-date and psychometrically sound multidimensional measure to assess test anxiety in children that not only represents viable alternative to the Test Anxiety Scale for Children (Sarason et al., 1960), but may have the potential to replace Sarason et al.'s scale as the gold standard for the assessment of test anxiety in children.

In their paper "Test anxiety, susceptibility to distraction and examination performance," Keogh, Bond, French, Richards, and Davis, extending previous work by Keogh and French (2001), examine the relative role that worry about examinations (a major component of test anxiety) and susceptibility to distraction (a characteristic closely associated with test anxiety) play in determining the performance of students in an academic examination. Using a multidimensional measure of test anxiety and a computer-based task to measure susceptibility to distraction, the authors show that of the multiple dimensions of test anxiety, it is the worry component that is related to lower examination performance, thus corroborating predictions made by Eysenck and Calvo's (1992) processing efficiency theory. Moreover, they show that both worry and susceptibility to distraction independently predicted subsequent examination performance.

In their paper "The Emotional Regulation during Test-taking scale," Schutz, DiStefano, Benson, and Davis describe development and initial validation of a new scale, the Emotional Regulation during Test-taking scale (ERT), a scale that captures

how individuals regulate their affective responses during test-taking. Building on associations of test anxiety, emotion regulation, and coping, the ERT captures individual differences with respect to four major dimensions of emotion regulation while taking a test, some of which are further divided into separate facets (in brackets), namely cognitive-appraising processes (goal congruence, agency, testing problem efficacy), task-focusing processes, regaining task-focus processes (tension reduction, importance reappraisal), and emotion-focusing processes (wishful thinking, self-blame). Presenting a variety of analyses demonstrating construct validity, the authors show that the eight subscales of the ERT provide for a fine-grained assessment and analysis of the regulatory efforts that individuals exert during tests and examinations.

In their paper "Fear of failure and achievement goals in sport: Addressing the issue of the chicken and the egg," Conroy and Elliot present a study on the fear of failure component of achievement motivation and how it relates to achievement goals in sport. Building on the 2×2 conceptualization of achievement goals, which distinguishes mastery vs. performance orientation on the one hand and approach vs. avoidance orientation on the other hand, the authors present data from a longitudinal study. They show that fear of failure predicted residual changes in both performance and mastery avoidance goals with higher fear of failure leading to stronger avoidance goal orientations. With fear of failure intimately related to test anxiety, the paper presents an important contribution linking test anxiety research to recent developments in achievement motivation research. Moreover, it represents a valuable addition to this special issue by pointing out that test anxiety (or competitive anxiety) has been a major issue in the psychology of sport and exercise (for a review, see Kleine, 1990) and so continues to be (e.g., Hanton et al., 2003).

Finally, in their paper "Beyond test anxiety: Development and validation of the Test Emotions Questionnaire (TEQ)," Pekrun, Götz, Perry, Hochstadt, Molfenter, Kramer, and Elliot expand the focus of test anxiety research and--building on an extensive research program on academic emotions experience in achievement contexts (Pekrun, 2000; Pekrun et al., 2002)--describe development and validation of a questionnaire that measures a range of test emotions besides test anxiety, namely joy, hope, pride, relief, anger, anxiety, shame, and hopelessness. Their findings from confirmatory factor analyses and correlational analyses with a breadth of external variables not only demonstrate that the TEQ is a reliable and valid measure of emotions that students may experience before, during, and after tests and exams, but also open up new perspectives for research on the role of emotions in tests and examinations beyond test anxiety.

Overall, the papers selected for this special issue present paradigmatic examples of the most recent advances in test anxiety and demonstrate that research on test anxiety is well and alive today and promises to stay so in the future.

References

Ashcraft, M. H., & Kirk, E. P. (2001). The relationship among working memory, math anxiety, and performance. Journal of Experimental Psychology: General, 103, 224-237.

Benson, J. (1998). Developing a strong program of construct validation: A test anxiety example. Educational Measurement: Issues and Practice, 17, 10-17.

Cattell, R. B., & Scheier, I. H. (1961). The meaning and measurement of neuroticism and anxiety. Oxford, UK: Ronald.

Conroy, D. E. (2001). Progress in the development of a multidimensional measure of fear of failure: The Performance Failure Appraisal Inventory (PFAI). Anxiety, Stress, and Coping, 14, 431-452.

Dalbert, C., & Stöber, J. (in press). Forschung zur Schülerpersönlichkeit [Research on individual differences in school students]. In W. Helsper & J. Böhme (Eds.), Handbuch der Schulforschung. Opladen, Germany: Leske + Budrich.

Dutke, S., & Stöber, J. (2001). Test anxiety, working memory, and cognitive performance: Supportive effects of sequential demands. Cognition and Emotion, 15, 381-389.

Elliot, A. J., & McGregor, H. A. (1999). Test anxiety and the hierarchical model of approach and avoidance achievement motivation. Journal of Personality and Social Psychology, 76, 628-644.

Eysenck, M. W. (1992). Anxiety: The cognitive perspective. Hove, UK: Erlbaum.

Eysenck, M. W., & Calvo, M. G. (1992). Anxiety and performance: The processing efficiency theory. Cognition and Emotion, 6, 409-434.

Folin, O., Denis, W., & Smillie, W. G. (1914). Some observations on "emotional glycosuria" in man. Journal of Biological Chemistry, 17, 519-520.

Hagtvet, K. A., & Backer Johnsen, T. (1992). Advances in test anxiety research (Vol. 7). Lisse, The Netherlands: Swets & Zeitlinger.

Hagtvet, K. A., & Benson, J. (1997). The motive to avoid failure and test anxiety responses: Empirical support for integration of two research traditions. Anxiety, Stress, and Coping, 10, 35-57.

Hanton, S., Evans, L., & Neil, R. (2003). Hardiness and the competitive trait anxiety response. Anxiety, Stress, and Coping, 16, 167-184.

Hodapp, V. (1991). Das Prüfungsängstlichkeitsinventar TAI-G: Eine erweiterte und modifizierte Version mit vier Komponenten [The Test Anxiety Inventory TAI-G: An extended and modified version with four components]. Zeitschrift für Pädagogische Psychologie, *5*, 121-130.

Keith, N., Hodapp, V., Schermelleh-Engel, K., & Moosbrugger, H. (2003). Cross-sectional and longitudinal confirmatory factor models for the German Test Anxiety Inventory: A construct validation. Anxiety, Stress, and Coping, *16*, 251-270.

Keogh, E., & French, C. C. (2001). Test anxiety, evaluative stress, and susceptibility to distraction from threat. European Journal of Personality, *15*, 123-141.

Kleine, D. (1990). Anxiety and sport-performance: A meta-analysis. Anxiety Research, *2*, 113-131.

Liebert, R. M., & Morris, L. W. (1967). Cognitive and emotional components of test anxiety: A distinction and some initial data. Psychological Reports, *20*, 975-978.

Mandler, G., & Sarason, S. B. (1952). A study of anxiety and learning. Journal of Abnormal and Social Psychology, *47*, 166-173.

Meijer, J. (2001). Learning potential and anxious tendency: Test anxiety as a bias in educational testing. Anxiety, Stress, and Coping, *14*, 337-362.

Mor, S., Day, H. I., Flett, G. L., & Hewitt, P. L. (1995). Perfectionism, control, and components of performance anxiety in professional artists. Cognitive Therapy and Research, *19*, 207-225.

Morris, L. W., & Liebert, R. M. (1970). Relationship of cognitive and emotional components of test anxiety to physiological arousal and academic performance. Journal of Consulting and Clinical Psychology, *35*, 332-337.

Onwuegbuzie, A. J. (2000). Statistics anxiety and the role of self-perceptions.

Journal of Educational Research, 93, 323-330.

Pekrun, R. (2000). A social-cognitive, control-value theory of achievement emotions. In J. Heckhausen (Ed.), Motivational psychology of human development: Developing motivation and motivating development (pp. 143-163). New York: Elsevier.

Pekrun, R., Götz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. Educational Psychologist, 37, 91-106.

Ploeg, H. M. van der, Schwarzer, R., & Spielberger, C. D. (Eds.). (1983). Advances in test anxiety research (Vol. 2). Lisse, The Netherlands: Swets & Zeitlinger.

Ploeg, H. M. van der, Schwarzer, R., & Spielberger, C. D. (Eds.). (1984). Advances in test anxiety research (Vol. 3). Lisse, The Netherlands: Swets & Zeitlinger.

Ploeg, H. M. van der, Schwarzer, R., & Spielberger, C. D. (Eds.). (1985). Advances in test anxiety research (Vol. 4). Lisse, The Netherlands: Swets & Zeitlinger.

Raffety, B. D., Smith, R. E., & Ptacek, J. T. (1997). Facilitating and debilitating trait anxiety, situational anxiety, and coping with an anticipated stressor: A process analysis. Journal of Personality and Social Psychology, 72, 892-906.

Sarason, S. B., Davidson, K. S., Lighthall, F. F., & Waite, R. R., & Ruebush, B. K. (1960). Anxiety in elementary school children. New York: Wiley.

Sarason, S. B., & Mandler, G. (1952). Some correlates of test anxiety. Journal of Consulting and Clinical Psychology, 47, 810-817.

Schutz, P. A., & Davis, H. A. (2000). Emotions and self-regulation during test taking. Educational Psychologist, 35, 243-256.

Schwarzer, C., & Buchwald, P. (Eds.). (2003). Examination stress: Measurement

and coping [Special issue]. Anxiety, Stress, and Coping, 16(3).

Schwarzer, R., Ploeg, H. M. van der, & Spielberger, C. D. (Eds.). (1982).

Advances in test anxiety research (Vol. 1). Lisse, The Netherlands: Swets & Zeitlinger.

Schwarzer, R., Ploeg, H. M. van der, & Spielberger, C. D. (Eds.). (1987).

Advances in test anxiety research (Vol. 5). Lisse, The Netherlands: Swets & Zeitlinger.

Schwarzer, R., Ploeg, H. M. van der, & Spielberger, C. D. (Eds.). (1989).

Advances in test anxiety research (Vol. 6). Lisse, The Netherlands: Swets & Zeitlinger.

Spielberger, C. D. (1966). Theory and research in anxiety. In C. D. Spielberger (Ed.), Anxiety and behavior (pp. 3-20). New York: Academic Press.

Spielberger, C. D. (1972). Anxiety as an emotional state. In C. D. Spielberger (Ed.), Anxiety: Current trends in theory and research (Vol. 1, pp. 23-49). New York: Academic Press.

Stöber, J., & Esser, K. B. (2001). Test anxiety and metamemory: General preference for external over internal information storage. Personality and Individual Differences, 30, 775-781.

Zeidner, M. (1995). Adaptive coping with test situations: A review of the literature. Educational Psychologist, 30, 123-133.

Zeidner, M. (1998). Test anxiety: The state of the art. New York: Plenum.