

# Examination stress and test anxiety

Dave Putwain looks at the relationship that can have a serious impact on the lives of young people

**Happiness lessons in schools... removing GCSE oral language examinations because they are too stressful... are these political gimmicks from central government, or responses to a real issue regarding the emotional health of children and young people? What is certain is that the results of tests and examinations can form the basis of young people's self-judgements, aspirations and fears. For a small proportion of students they become a serious obstacle to demonstrating academic achievement and also relate to myriad difficulties in other areas of their life, including relationships and mental health difficulties.**

We live in a test-conscious, test-giving culture in which the lives of people are in part determined by their test performance.

(Sarason et al., 1960, p.26).

The above quotation was published in 1960, and it concerns the testing culture in the US at that time. What is striking is that it could so easily read for the present-day climate faced by schoolchildren in the UK. Yet despite first appearing in the literature in 1914 (Follin et al., cited in Spielberger & Vagg, 1995), the study of the stress and anxiety surrounding examinations and other forms of assessment has been largely ignored in the UK until relatively recently. In fact, in terms of major studies using a sample of UK schoolchildren, until the work of Flaxman et al. (2002), Gregor (2005) and Orbach et al. (2007), I can find just one 50-year-old publication (Sarnoff et al., 1958).

Why this relative lack of UK interest? Reasons could include the absence of such an assessment culture in the UK (although this fails to account for the impact of heated debate around the 11+ exam), and the obsession with measurement and prediction with social phenomena in US (see Lunt, 2003). Perhaps it reflects a tendency to trivialise the stress and anxiety experienced by children and young people over tests, examinations and other forms of assessment, and to regard their experiences as somehow less meaningful than those of adults (see Denscombe, 2000).

Recently, there has been an upsurge of

interest in the phenomenon of exam stress and test anxiety in UK. This has coincided with two policy changes effecting a renewed critical focus on the nature, function and effects of school assessments. Firstly, the policy of using students' performance on high-stakes tests (such as Year 6 SATs and GCSEs) as measures of school and teacher accountability has resulted in the development of an 'audit culture' in schools (see Torrance, 2004). These tests are blamed by the Cambridge University Primary review for an increase in test-related anxiety and discouraging children from learning (Tymms & Merrell, 2007) – indeed the statutory requirement for English schools to test children in Year 9 has recently been dropped. Secondly, the Every Child Matters agenda positions schools as being responsible for the mental well-being of their students (Spratt et al., 2006), so now perhaps the issue of stress, anxiety and examinations is being taken more seriously now than before.

## What is test anxiety?

The test anxiety construct is considered as a situation-specific trait accounting for individual differences in the extent to which people find examinations threatening (Spielberger & Vagg, 1995). Within this general conceptualisation there are broad and narrow definitions. Narrow definitions focus on fear of failure (emphasising how performance is judged), or evaluation anxiety (emphasising how test anxiety can be located with other, so called, subclinical anxieties including sports performance, public speaking, and so forth). These emphasise a social dimension where the performance is judged by others. Spielberger's (1966) notion of 'ego threat' offers a potentially broader definition by including threats to self-esteem and the consequences of performance success or failure, in addition to potential derogatory judgement by others.

Zeidner (1998) outlines three components of test anxiety:

1 cognitive: the negative thoughts and

## questions

Is it acceptable for examinations to be mildly stressful? At what point does stress become unacceptable and how do you draw this line?

To what extent does the view of stress as an individual appraisal process deflect attention away from the role of administrators and teachers in managing other aspects of a student's workload?

## resources

McDonald, A.S. (2001). The prevalence and effects of test anxiety in school children. *Educational Psychology*, 21(1), 89–101.

## references

- Denscombe, M. (2000). Social conditions for stress. *British Educational Research Journal*, 26(3), 259–374.
- 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(4), 628–644.
- Elliot, A.J. & McGregor, H.A. (2001). A 2 x 2 achievement goal framework. *Journal of Personality and Social Psychology*, 80(3), 501–519.
- Ergene, T. (2003). Effective interventions on test anxiety reduction: A meta analysis. *School Psychology International*, 24(3), 313–328.
- Eysenck, M.W., Derakshan, N., Santis, R. & Calvo, M.G. (2007). Anxiety and cognitive performance: Attentional control theory. *Emotion*, 7(2), 336–353.
- Gregor, A. (2005). Examination anxiety. *School Psychology Int.*, 26, 617–635.
- Flaxman, P., Bond, F.W. & Keogh, E. (2002). Preventing and treating evaluation strain. In F.W. Bond & W. Dryden (Eds.) *Handbook of brief cognitive behavioural therapy*. Chichester: Wiley.
- Hembree, R. (1988). Correlates, causes, effects and treatment of test anxiety. *Review of Educational Research*, 58, 47–77.
- Lowe, P.A., Lee, S.W., Witteborg, K.M. et al. (2008). The Test Anxiety Inventory for Children and Adolescents (TAICA). *Journal of Psychoeducational Assessment*, 26(3), 215–230.
- Lunt, P. (2003). The histories of social psychology. *Social Psychological Review*, 5(1), 3–19.
- Mathews, G., Hillyard, E.J. & Campbell, S.E. (1999). Metacognition and maladaptive coping as components of test anxiety. *Clinical Psychology and*

depreciating self-statements that occur during assessments (e.g. 'If I fail this exam my whole life is a failure') and the performance-inhibiting difficulties that may arise from anxiety (e.g. recalling facts and difficulty in reading and understanding questions);

- I affective: the person's appraisal of their physiological state (such as tension, tight muscles and trembling);
- I behavioural: poor study skills, avoidance and procrastination of work.

feedback from others, and avoidance which in turn leads to a degradation in skills). The biopsychosocial model (Lowe et al., 2008) proposes that distal (within child/adolescent variables such as intelligence, study skills and academic self-efficacy) combine with proximal (situational or interpersonal) variables to determine the degree of anxiety that is facilitating at low levels, becoming debilitating at higher levels. This estimation is based on a curvilinear

examination stress are treated as the same thing. Some studies examine the influence of examination stress on grade (e.g. Struthers et al., 2000) and measure students' perceptions of worry in such a way that is indistinguishable from that of test anxiety.

Second, as stress is defined in a much broader way than anxiety, it is possible to conceptualise examinations as stressful by virtue of their own properties or functions without having to refer to perceived worry and arousal (e.g. Denscombe, 2000).

Third, a study of GCSE students (Putwain, in press) indicated how stress is also used as an umbrella term for any negative affect associated with examinations: time pressure, the exhaustion of having to sit multiple of examinations in a single day, having to prepare for exams while still completing coursework and the interference on relationships and social activities. The test anxiety construct is too narrow to capture these features of examination stress, but at the same time, owing to its lack of specificity, this broad notion of examination stress is not always helpful.

Fourth, the 'problem' of examination stress leads some people to the view that students should be doing more coursework because they find it less stressful. But this fails to take into account that coursework has its own forms of stress that some students find as stressful as examinations: managing projects involving different elements (e.g. data collection, literature reviewing and group work) without any prior experience; having to stay up late to meet deadlines and managing workload; having to work on several coursework projects simultaneously while doing other school work, preparing for exams, and so forth. (Putwain, 2008c).

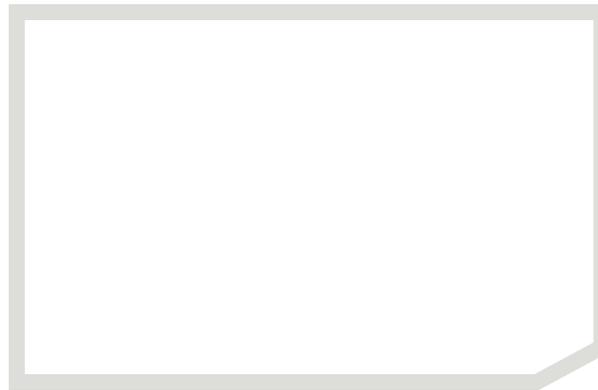
### What causes examination stress in GCSE students?

Research suggests that examinations are stressful for this group of student for four reasons (Denscombe, 2000; Putwain, in

Like many psychological constructs, the more closely they are analysed, the more problematic they become. For instance, research shows that many highly test-anxious students make more effort than low test-anxious students as a compensatory mechanism; and some test-anxious students have good study skills, some do not. Some of these components define test in terms of features, some in terms of effects and some in terms of outcome.

Writing about dyslexia, Tonnesson (1997) argues that only the feature principle should be used, which if applied to test anxiety, would rule out some of the cognitive and behavioural aspects. This would leave only the affective component, which some have claimed is the least important and should be dumped from the construct altogether (Wine, 1982; see Putwain, 2008a).

Recent models of test anxiety are process-orientated and emphasise how a great many variables interact in the appraisal of an examination. In Zeidner and Mathews' (2005) self-regulative model short-term distress is seen primarily as the result of negative self-beliefs, maintained by metacognitive strategies (such as heightened attention). Long-term distress is seen as the result of maladaptive person-situation interaction (e.g. negative



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relationship between test anxiety and performance, but this relationship is not universally accepted. Some propose that facilitative and debilitating test anxieties are independent, so that a student may be high in one form and low in another (e.g. Putwain, in press).

### Are they the same?

What is the relationship between test anxiety and examination stress? Are they the same thing or not? I have spent some time speculating about these questions, looking at the evidence and analysing some data about how students talk about examinations. I have come to several conclusions.

First, in a lot of cases test anxiety and

Psychotherapy, 6(2), 111–125.  
Musch, J. & Bröder, A. (1999). Test anxiety versus academic skills. *British Journal of Educational Psychology*, 69(1), 105–116.  
Orbach, G., Lindsay, S. & Grey, S. (2007). A randomised placebo-controlled trial of a self-help internet-based intervention for test anxiety. *Behaviour Research and Therapy*, 45(3), 483–496.

Putwain, D.W. (2007). *Do different measures of assessment performance bias or exaggerate relationships?* Paper presented at the BERA Annual Conference 2007, 5–8 September, Institute of Education. [Available at [tinyurl.com/649t7c](http://tinyurl.com/649t7c)]  
Putwain, D.W. (2008a). Deconstructing test anxiety. *Emotional and Behavioural Difficulties*, 13, 141–155.  
Putwain, D.W. (2008b). Do high stakes

examinations moderate the test anxiety-examination performance relationship? *Educational Psychology*, 28(2), 109–118.  
Putwain, D.W. (2008c). Supporting assessment stress in Key Stage 4 students. *Educational Studies*, 34(2), 83–95.  
Putwain, D.W. (in press). Assessment and examination stress in Key Stage 4. *British Educational Research Journal*,

Putwain, D.W. & Deveney, C. (2008). *Do achievement goals mediate the relationship between academic emotions and examination performance?* Manuscript submitted for publication.  
Putwain, D.W., Woods, K.A. & Symes, W. (2008). *Personal and situational predictors of test anxiety of students in post-compulsory education.* Manuscript submitted.

press): consequences; markers of self-esteem; judgements from others; and fear appeals by teachers .

- | Consequences: examinations are stressful because of their educational and/or occupational consequences, for example achieving sufficient GCSE grades for college or sixth-form entry, or the vague understanding that higher GCSE grades are required for a 'good' particular job.
- | Markers of self-esteem: students judge themselves on the basis of their grades, a good grade resulting in high esteem. To a greater or lesser extent there has been an internalisation of the message that esteem can be enhanced through educational achievement.
- | Judgements from others, such as parents.
- | Fear appeals by teachers: the repeated messages communicated to students over the importance and timing of the GCSEs by their teachers were identified as a trigger for the development of stress in some students. Although the fear content of such messages (e.g. 'Unless you get five GCSEs you won't get into college') may have been intended as a motivational strategy by teachers, it did not always have the desired affect. The sceptical among you might wonder if there is an element of self-interest in teachers making fear appeals, since GCSE performance data are used to rank schools in league tables and, in some cases, as evidence of teacher effectiveness.

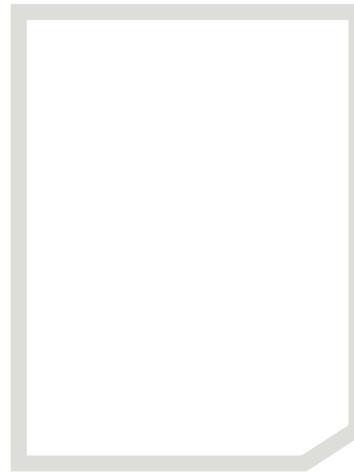
### Performance

Whether one adopts a test anxiety or examination stress perspective, they have both been associated with a negative impact on examination performance. For instance, meta-analytic reviews of the relationship between test anxiety and measures of academic performance – both formal and informal, and conducted in both schools and universities – suggest an

average correlation of around  $-0.2$  (Hembree, 1988; Seipp, 1991). The critical point is not perhaps that the effect is a small one, but where precisely that effect is taking place. Are highly test-anxious students getting a grade B when they should be getting a grade A, or a grade G instead of a grade F? If the drop in grade is hovering around a pass boundary (and in GCSE students, the evidence suggests that it is – see Putwain, 2007), the net effect might be a greater number of highly test-anxious students failing.

Questions about the causal status of test anxiety have been raised on the basis that test anxiety may just be a proxy measure of ability and that both high anxiety and poor performance are joint effects of poor study skills. Research tried to address the first of these problems by including measures of ability, such as IQ, as a covariate (e.g. Zatz & Chassin, 1985). But this approach is also problematic; in principle, IQ could be affected by test anxiety, so the question then becomes how do you measure ability in a way that hasn't been affected by test anxiety in some way. One argument is to use low stakes tests, such as short class tests, as they will be less influenced by test anxiety, although a recent study showed that, bizarrely, the low stakes tests seemed influenced more by anxiety than the high stakes test (Putwain, 2008b). The alternative is to use teacher-based judgements based on factors other than test results, although ensuring the reliability and comparability of these measures would be a difficult task.

A popular theory in the 1980s was that poor study skills would result in high test anxiety because students would anticipate



GCSE examinations are stressful because of their educational and occupational consequences

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failure as a direct result of their study skills. Measuring test anxiety and performance together shows a relationship, but the two variables are not causally related. Intervention research indicates that study skills training alone is not as effective at reducing anxiety. Treatments that target the cognitive component of anxiety (Ergene, 2003), and research comparing the relative effects of study skills with negative cognitions, tend to suggest the latter

directly interfere with performance (Musch & Bröder, 1999).

These ideas have been incorporated into cognitive-attentional interference theories of test anxiety (Sarason, 1984) and more recently into processing efficiency theory and attentional control theory (Eysenck et al., 2007). Given the articulate way in which these theories account for the negative impact of anxiety, a key question for me is why the measured effect of test anxiety on examination performance is not bigger. There are a number of possible answers, all of which suggest the effect would be much higher but for their positive mediating effect.

First, metacognition and coping play a central role in the Zeidner and Mathews' (2005) self-regulatory model. The basic idea is that it is not anxiety *per se* that is responsible for a negative impact on performance, but how a student copes with or responds to that anxiety. One such factor that has received some attention in the maintenance of clinical anxiety is the tendency to catastrophise (Weems et al., 2001). In the context of test anxiety, this could manifest such that if one question cannot be answered, the person believes

Sarason, I.G. (1984). Stress, anxiety and cognitive interference: Reactions to tests. *Journal of Personality and Social Psychology*, 46(4), 929–938.

Sarason, S.B., Davidson, K.S., Lighthall, F.F. et al. (1960). *Anxiety in elementary school children*. New York: Wiley.

Sarnoff, I., Lighthall, F.F., Waite, K.S. et al. (1958). A cross-cultural study of anxiety amongst American and English school children. *Journal of*

*Educational Psychology*, 49, 129–137.

Seipp, B. (1991). Anxiety and academic performance. *Anxiety Research*, 4(1), 27–41.

Spratt, J., Shucksmith, J., Phillip, K. & Watson, W. (2006). Part of who we are as a school should include responsibility for well-being. *Pastoral Studies in Education*, 24(3), 14–21.

Spielberger, C.D. (1966). Theory and research on anxiety. In C.D.

Spielberger (Ed.) *Anxiety and*

*behaviour*. New York: Academic Press.

Spielberger, C.D. & Vagg, R.P. (1995). *Test anxiety*. Bristol: Taylor & Francis.

Struthers, C.W., Perry, R.P. & Menec, V.H. (2000). An examination of the relationships between academic stress, coping motivation and performance in college. *Research in Higher Education*, 41(5), 581–592.

Tonnesson, F.E. (1997). How can we best

define dyslexia? *Dyslexia*, 3(1), 78–92.

Torrance, H. (2004). Using action research to generate knowledge about educational practice. In G. Thomas & R. Pring (Eds.) *Evidence-based practice in education*. Maidenhead: Open University Press.

Tymms, P. & Merrell, C. (2007). *Standards and quality in English primary schools over time*. Cambridge: University of Cambridge Faculty of Education.

they will fail the whole exam and their whole life will become a failure.

Second, students are prepared extremely thoroughly for examinations in English schools through planned compulsory revision in lessons, optional revision at lunch time and after school, in the Easter holidays, repeated examination practice using past papers (Putwain, 2008c). The processing efficiency model would predict such practices should reduce the effects of anxiety on cognitive resources through rehearsal and increasing familiarity.

Third, there are different types of highly test-anxious students (Zeidner, 1998, presents a typology of six categories) who vary in their susceptibility to the negative influence of test anxiety. Including them all in a single analysis may hide the fact that for some students there is a much stronger effect than for others. A similar line of reasoning is advanced by Mathews et al. (1999), who suggest that test anxiety may be characterised primarily by metacognitive beliefs or a maladaptive coping style.

### Future directions

One of ways in which test anxiety research is moving forward is by examining how it might be related to other, similar constructs, including achievement goals and academic self-concept. Elliot and McGregor's (2001) 2 x 2 framework for achievement goals conceptualises distinct performance and mastery goals, focusing on grades and learning respectively, along dimensions of approach and avoidance. A performance-avoidance goal, characterised by a fear of failure, is the most likely point of convergence between the achievement goals and test anxiety constructs. Initial research by Elliott and McGregor (1999) supports this proposition. Their integrated hierarchical model suggests students high on trait anxiety may hold performance-approach or performance-avoidance goals, but it is only the test anxious students holding the avoidance

goal that are showing a negative relationship to performance via state worry. This distinction is consistent with the suggestion above that there may be different types of test-anxious students, only some of whom show a negative relationship with performance.

This finding has not been replicated by all research, however, suggesting that some degree of theoretical refinement is necessary. For instance, Putwain and Deveney (2008) tested an expanded hierarchical model containing a range of test-related emotions. We found that a performance-avoidance goal was more strongly related to anger, shame and hopelessness than to anxiety. Academic self-concept may also play an important role, providing the self-knowledge upon which self-referent processing is based (as in Zeidner and Mathews' model). Research has supported this prediction, finding that both academic self-concept and perceived test competence are both negatively related to test anxiety (Putwain et al., 2008). This study also examined achievement goals, finding that mastery-avoidance rather than performance-avoidance goals were most strongly related to test anxiety, again suggesting that this relationship should be re-examined.

### Conclusion

Given the current climate in the UK of increasing the amount of high stakes testing in children, debates around the issue of test anxiety and examination

## Implications

**1. Early identification of highly test-anxious students is difficult, as test-anxious responses may not manifest until high stakes examinations (such as GCSEs). Practitioners should look out for signs such as procrastination and loss of interest in academic work.**

**2. How should highly test-anxious students be supported? Changing the examination conditions to make them less stressful (perhaps extra time, breaks or a smaller venue than a hall) or helping the student to cope more effectively, or become more resilient, with examinations? There are obvious tensions here between notions of inclusivity, equality of opportunity and fairness.**

**3. Should anxiety be the main focus of intervention or support? Might the student be better served by targeting the factors that lead to a high test-anxious response in the first place: improving study and test-taking skills, improving academic self-concept (perhaps through addressing attributions for success or failure) or more individual subject-specific tuition. This kind of approach requires a recognition that a student might be become test-anxious for a variety of reasons.**

stress are unlikely to go away for the foreseeable future. Although this line of research has a long history, the recent changes in educational policy present a new and interesting challenge for psychology to engage with some of the 'big' questions in this area: At what age should we be testing children? Is a lot of testing bad for children? Does the focus on testing encourage shallow learning and performance goals at the expense of deep learning and mastery goals? Do individualised accounts of stress focus attention away from the surveillance function of examinations? and so forth. Although many educational commentators are ready to offer opinions on these and other related questions, evidence at present is very scarce indeed, and there is a real opportunity now to inform future policy making with both research evidence and critical commentary.



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Weems, C.F., Berman, S.L., Silverman, W.K. & Saavedre, L.M. (2001). Cognitive errors in youth with anxiety disorders. *Cognitive Therapy and Research*, 25(5), 559–575.

Wine, J.D. (1982). Evaluation anxiety: A cognitive-attentional construct. In H.W. Krohne & L. Laux (Eds.) *Achievement, stress and anxiety*. Washington, DC: Hemisphere.

Zatz, S. & Chassin, L. (1985). Cognitions

of test-anxious children under naturalistic test-taking conditions. *Journal of Consulting and Clinical Psychology*, 53, 393–401.

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

Zeidner, M. & Mathews, G. (2005). Evaluation anxiety. In A.J. Elliot & C.S. Dweck (Eds.) *Handbook of competence and motivation*. London: Guilford Press.