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Deconstructing test anxiety

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Recent changes to educational policy which have focused attention on the use of high stakes testing as performance and accountability measures have renewed interest in test anxiety both in the UK and the USA. The aim of this paper is to provide a critical examination of the test anxiety construct, and explore the ways in which test anxiety is written about and conceptualised in the existing literature. It is intended that this paper would provide a companion to the comprehensive reviews that already exist, to provoke scholarly thought and debate around the existing literature, than to provide an additional review. Discussion is based around five themes: (1) how test anxiety is differentiated from the anxiety construct in general; (2) the differing conceptions of test anxiety in the literature; (3) the relationship between test anxiety and other, related constructs; (4) how measurement concerns have driven development of the test anxiety construct; and (5) the focus on worry and performance deficits leading to definitional problems. Two directions for future work are highlighted: first, to continue the exploration of test anxiety with other related constructs; and second, to develop qualitative approaches to the study of test anxiety.

Keywords: test anxiety; educational policy; achievement goals; academic self-concept; definition; conceptualisation

Test anxiety is one of a number of constructs located at the disciplinary boundaries of both psychology and education. Published work can be found in both psychological and educational periodicals although there may be some differences between the type of work accepted in each type of publication; theoretical development in the psychological; and substantive application in the educational. Measured purely in terms of the number of published outputs, test anxiety research reached its nadir in the period 1980–1984 and has been steadily declining since (Zeidner 1998). However, as Cizek and Burg (2006) noted in the North American context, the development of educational policy in which test results are used as performance indicators has resulted in renewed interest in test anxiety by the research community. In the UK a similar story emerges where test anxiety research was largely ignored until relatively recently (Putwain 2007a). The growth of an 'audit culture' (see Torrance 2004) in UK schools of performance and accountability pressures, league tables and target setting has prompted a renewed critical focus on the role of assessments in schools and their relationship with amongst other things, psychological constructs such as test anxiety included.

In an English context, the interim report of the Cambridge University review of primary education in English schools highlighted how the pressures associated with

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Standardised Assessments Tests (SATs) increased test-related anxiety among children and were discouraging children from learning (Tymms and Merrell 2007). These warnings are substantiated by the findings of Connor (2001; 2003) who reported that around the time of SATs, some primary school children showed signs of stress and anxiety about SATs beyond what might be considered an 'understandable' or 'typical' level. Children's concerns were focused around two areas in particular: (a) they might fail to achieve as much as other children in their class and (b), a poor score would affect what future academic grouping, or set, they might be placed in. It was acknowledged in some schools that the anxieties experienced by children may be, in part, transmitted by the teaching staff over the pressures experienced themselves over target setting and school league table position. Children realised that SAT results are perceived by teachers as important and so come to assume an importance in the minds of the children. Hall et al. (2004) argue that the constant references to SATs in the primary classroom has resulted in a 'SATurated' identity for schoolchildren characterised by a fear of failure.

These findings would suggest that in England, at least, policy initiatives which have increased the frequency and importance of testing, and the testing of children at younger ages for use as performance indicators of schools and teachers have resulted in an increase in assessment-related anxiety in children. There would also seem to be a contradiction between the 'audit culture' of the performance-by-testing agenda and the practices promoted by the Every Child Matters programme (DfES 2004). The analysis above positions performance-by-testing practices enforced on schools as responsible, in part, for an increase in anxiety, while the Every Child Matters discourse positions schools as responsible for the mental well-being of their students: preventing the development of problems in vulnerable groups and support those experiencing difficulties (Spratt et al. 2006). Thus, we are left with the rather bizarre possibility of schools being held responsible for both creating and then improving the mental well-being, in terms of anxiety, of students. Such an arrangement can only cause confusion in establishing best practice for supporting students (for a discussion of the tensions between different ways of supporting students experiencing assessment-related stress and anxiety, see Putwain 2008).

Although this discussion of the policy context in which test anxiety is conceptualised has focused on English schools, and in primary aged schoolchildren, test anxiety has long been recognised as a topic of concern for students of all ages in many post-industrial societies where evaluative decisions about a student's school, college or university performance depend on high stakes testing, and a truly international literature reflects this concern (Seipp and Schwarzer 1996). As in the English context, recent legislation in North America (No Child Left Behind Act, US Congress 2001) has resulted in a massive increase in the standardised testing of younger aged children (once annually in grades 3–8) to promote continual school improvement. Some writers have estimated this policy change has resulted in an increase in the prevalence of test anxiety in North American schools (e.g. Casbarro 2005). It is, perhaps, these policy changes in North American and English schools which provide a distinct lens to this global phenomenon.

Given the shift in substantive focus, I would argue that the time is right for a critical re-examination of the test anxiety construct. The aim of this paper is not to provide a comprehensive literature review, there are several of these already available (see Spielberger and Vagg 1995; Zeidner 1998; McDonald 2001; Zeidner and

Mathews 2005; Cizek and Burg 2006), but to provide a critical commentary of how the existing literature had constructed the phenomenon of test anxiety. Discussion is organised around five themes to effect a *de*construction of concepts of test anxiety: (1) how test anxiety can be differentiated from anxiety in general; (2) the differing conceptions of test anxiety in the literature; (3) the relationship between test anxiety and other, related constructs; (4) how measurement concerns have driven development of the test anxiety construct; and (5) the focus on worry and performance deficits leading to definitional problems.

Differentiating test anxiety from anxiety in general

A starting point would be to address what differentiates the *test* anxiety construct from anxiety in general. According to Reber (1995), anxiety refers to an unpleasant emotional state without a specific object. Test anxiety is differentiated from the general anxiety construct by specifying the situation and/or context in which it occurs. It has variously been defined as the anxiety that occurs in evaluative situations (Sarason 1978; Zeidner 1998; Zeidner and Mathews 2005), as fear of failure (Meijer 2001), as threats to ego or self-esteem (Spielberger 1966) and as worry over performance (Hong 1999). Two distinct but related themes emerge from these different definitions. First, that test anxiety occurs in a specific situation or context only; that in which assessment performance is being evaluated. Second, that the nature of test anxiety has a social dimension; how this performance will be judged or evaluated by other people.

Sarason (1984) and Zeidner (1998) have argued for a close integration between test anxiety research and theory and the general stress and anxiety literature. Endler and Parker (1990) propose four dimensions of trait anxiety; social evaluation, physical danger, ambiguity and daily routines. According to their differential hypothesis, state anxiety would only develop between a specific dimension and a congruent threatening situation (the distinction between trait and state approaches in the context of test anxiety is discussed further below). Thus, a person high in the social-evaluative dimension of trait anxiety would develop a higher degree of state anxiety in a situation where their performance will be assessed, such as an examination, than a person high in the physical danger dimension of trait anxiety. This multidimensional conception of general trait anxiety is consistent with the definitions of test anxiety outlined above, indicating that a distinct form of anxiety is associated with the evaluation of performance with a social dimension.

Drawing on general theories of anxiety, Sarason (1984) suggests that test anxiety is a multi-dimensional construct consisting of cognitive, emotional, behavioural and physiological components. In the test anxiety literature, cognitive aspects (e.g. self-depreciating thoughts), behavioural (e.g. study skills) and physiological components (e.g. autonomic arousal) have been investigated to some depth, but there are no references to a distinct emotional component. Although many self-report instruments include a subscale titled Emotionality, items are designed to measure the subjective experience of autonomic arousal and associated bodily reactions. This is possibly because anxiety is, by definition, a negative affective state (Reber 1995), reflected in the cognitive and physiological components, but this is not made explicit in the test anxiety literature.

Three differing conceptions of test anxiety: trait, state and clinical

Test anxiety is usually taken to refer to the anxiety experienced by a student in an assessment context such as an examination or a class test. In principle, test anxiety could also be taken to refer to assessment situations other than those forming part of the educational milieu (Zeidner 1998), such as a driving test, but examples in the literature are rare and usually use measures of general anxiety (rather than test anxiety specifically) or perceived stress (e.g. see Steptoe and Fidler 1987). For this reason the discussion of test anxiety in this paper is centred around the literature in an educational context.

Test anxiety has been conceptualised in the literature in three ways: as a personality trait, as an emotional state and as analogous to a clinical syndrome/disorder. When test anxiety is conceptualised as a personality trait, it is viewed as a stable difference between different students in the extent to which assessments are perceived as threatening in general (Spielberger 1980). Trait approaches to anxiety are usually considered to have distal antecedents (Eysenck 1992), although exactly what these are in test anxiety remains unclear. There are references in the literature to a psychodynamic account of family dynamics characterised by a child's need to gain parental approval through test grades (Sarason et al. 1960) and previous experiences of failure in assessment situations (King et al. 1989; Covington 1992).

Regarding the first of these propositions, family dynamics, it would be fair to say that the test anxiety literature has not kept apace with developments of anxiety theory where psychodynamic models have been replaced by behavioural, cognitive and, more recently, informational paradigms of anxiety- and fear-related beliefs (Rachman 1977, 2002). Indeed, recent models of test anxiety (Zeidner and Mathews 2005; Lowe et al. in press) make no mention of family dynamics. Regarding the second of these propositions – that of a past history of failure – the idea makes substantive sense, and is consistent with implicit notions of the test anxiety construct (described below), but empirical evidence is remarkably scarce. Test anxiety is usually conceptualised as the cause, not effect, of academic failure even when measures of past academic performance are excluded to control for the possibility that test anxiety is a proxy measure of low performance. Marsh (2006) has made the point repeatedly that psycho-educational constructs[1] can be both the cause and effect of performance – what he refers to as a reciprocal effect model. The kind of methodology espoused by Marsh, where repeated measures are taken in a longitudinal fashion and analysed in structural equation model to establish how performance is both effected by, and in turn effects, psycho-educational constructs is yet to be seen in the test anxiety literature.

Knowledge of the origins of trait test anxiety is actually very limited. Current models of test anxiety, based on transactional/process models of stress and anxiety, place immediate appraisal of the evaluative/assessment situation as the central component. Trait test anxiety is viewed as one of a number of personal antecedents that may combine with situational determinants in the appraisal process. A recent study identified some differences in trait test anxiety in the UK for gender, socio-economic background and ethnic background (Putwain 2007a), but these differences are more descriptive than explanatory, and although they might imply something about past experience of failure (e.g. black students, who are considered an under-achieving group in the UK, report higher test anxiety than white students), this

conclusion is not straightforward (e.g. girls, who outperform boys, reported higher test anxiety) and certainly not causal.

When conceptualised as an emotional state, test anxiety is taken to refer to the immediate degree of anxiety experienced by a student in a particular assessment (Zeidner 1998). Whereas the data regarding trait test anxiety are necessarily general and do not have to be gathered and interpreted in the context of a specific assessment, data regarding state test anxiety are made in the context of a specific assessment and require interpretation in the context of that particular assessment (Hong 1999). As noted above, recent models of test anxiety position trait test anxiety one of a number of personal variables which may contribute, along with features of the evaluative situation to the development of state test anxiety. It is therefore possible for a student low in trait test anxiety to perceive a particular assessment as threatening and develop a high degree of state test anxiety due to other factors including self-knowledge (negative self-beliefs and avoidant motivations), social-emotional functioning, study habits and academic self-efficacy (Zeidner and Mathews 2005; Lowe et al. in press). The antecedents of state test anxiety are far better understood than the antecedents of trait test anxiety. One oddity of the conception of test anxiety as an emotional state is that, as noted previously, definitions of the construct, both implicit and explicit, do not include references to a distinct emotional dimension.

Sapp, Durand and Farrell (1995) refer to test anxiety as a '…special case of a *general anxiety disorder* related to taking examinations' (123, emphasis added). This definition indicates a third way in which test anxiety has been constructed, as analogous to a clinical syndrome or disorder (sometimes these are referred to as sub-clinical). Sapp, Durand and Farrell (1995) do not provide any explicit justification for this position in their paper, however, others have also taken up this theme.

In the current edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IVTR, APA 2000), test anxiety is not listed as an axis I clinical disorder. However, using the earlier DSM-IV (APA 1994) criteria, McDonald (2001) and Zuriff (1997) argue that an extreme form of test anxiety would be considered a social phobia – an axis I adult clinical disorder. Social phobia is a disorder characterised by 'a marked and persistent fear of social or performance situations in which embarrassment may occur' (APA 2000, 450). Writing at the time of DSM-IIIR, King, Ollendick and Gullone (1991) suggest that test anxiety could potentially meet the diagnostic criteria for two adult clinical disorders, social phobia and simple phobia, and also three childhood anxiety disorders: separation anxiety disorder, avoidant disorder of childhood and adolescence, and overanxious disorder. Beidel and Turner (1988) found in a sample of 25 highly test anxious school children, 60% met DSM-IIIR diagnostic criteria for one of four anxiety disorders. Six children met criteria for social phobia, one met criteria for simple phobia, two met criteria for separation anxiety and six met the criteria for overanxious disorder.

When conceptualised as a trait, test anxiety exists on a continuum (McDonald 2001) where high scores are associated with impaired assessment performance. According to Zuriff (1997) it is possible to distinguish between the degree of test anxiety that impairs assessment performance and that which does not, by using the principle of clinical significance. The American Psychiatric Association defines clinical significance in terms of impaired functioning and the degree of distress experienced (American Psychiatric Association 2000). If a candidate's performance

in an exam is significantly below what would be expected based on their knowledge or skill, then they meet the criterion of impairment in functioning and if that candidate experiences a degree of distress beyond the range experienced by others then they would meet the criterion of degree of distress. Zuriff (1997) then goes onto argue that if the test anxious person meets these two criteria, they will also meet the clinical criteria for social phobia.

Zuriff's (1997) paper positions test anxiety as possibly a clinical, as well as an educational, phenomenon. This approach may serve a political function as the author argues a case for students suffering from test anxiety to be included under the American Disabilities Act. While this position may have some potential educational benefits for persons concerned under the United States Law, two theoretical issues would require resolving before test anxiety was to be considered as analogous to a discrete clinical disorder. First, Zuriff (1997) does not address the issue of how a *significant* reduction in exam performance should be addressed. It is not clear whether a student would have to fail an exam they would have been expected to pass based on their knowledge and skills, or whether a drop of one grade or more below what was expected would be sufficient. Second, Zuriff (1997) does not specify the degree of distress the test anxious candidate would have to display in order to be considered as *significantly* distressed.

Related constructs: achievement goals and academic self-concept

In the history of test anxiety research, spanning 50 years or so, the relationship with other similarly related constructs has only been considered relatively recently (see Rand, Lens and Decock 1991). One approach has been to consider the usefulness of an approach seeking to integrate the test anxiety construct with the motive to avoid failure (Hagtvet and Benson 1997; Elliot and McGregor 1999). The motive to avoid failure originates in the achievement motivation literature (Atkinson 1964) and has been conceptualised as the avoidance of shame, embarrassment, humiliation, loss of status and esteem. The similarities to the conceptions of test anxiety outlined above are evident, including the external social-evaluative dimension and the more internal references to ego and esteem threat. Indeed, purely on the basis of these descriptions, one might be hard pressed to distinguish clearly how the test anxiety and achievement motivation constructs differ. According to the analysis presented by Hagtvet and Benson (1997), the test anxiety and achievement motivation traditions are differentiated by their respective cognitive and motivational foci; the fear of failure emerged as a basic prerequisite of test anxiety.

Contemporary theory has integrated achievement motivation with goal orientation theory into an achievement goals approach. Although different labels have been used for similar constructs during the development of this approach (see Dweck and Leggett 1988; Ames 1992; Middleton and Midgely 1997), more recently a standardisation of terms has emerged into mastery and performance goals (Pintrich 2003). Mastery goals (also previously referred to as learning- and task-involved) are those where the student focuses on the development of new skills, and performance goals (also previously referred to as ego-involved) are those where the student is focused on the demonstration of ability. The most recent version of this approach conceptualises each goal on an approach–avoidance dimension (Elliot and McGregor 2001). It is the performance goals in this framework that most readily integrate with

test anxiety, where a student's motivation could be either to demonstrate achievement (a performance-approach goal) or avoid failure (a performance-avoidance goal). Elliot and McGregor (1999) proposed a model where trait test anxiety, conceptually analogous to the fear of failure, prompts either a performance-approach or a performance-avoidance goal. Only a performance-avoidance goal was related to a lowered performance, however, through increased state anxiety.

This integrative approach appeals on two accounts. First, test anxiety has been conceptualised as a debilitating form of anxiety only and does not account for how the fear of failure could possibly have some facilitating effects where the student strives to demonstrate achievement (see Martin and Marsh 2003). The conceptualisation of trait test anxiety as possibly leading to both performance-avoidance and/or approach goals addresses this issue. Second, the model specifying how state test anxiety emerges from one goal but not necessarily the other, to influence assessment performance, furthers the theoretical understanding of the relationship between trait and state conceptualisations in a way which models of test anxiety have hitherto left unexplored; motivational goals. The test anxiety–achievement goals integrative approach therefore offers the possibility of advancing models of test anxiety in a new and exciting direction which did not seem possible a decade ago.

The other construct that may be closely related to test anxiety, but has not been explored to the same degree as that of achievement motivation and goals is that of academic self-concept. Academic self-concept refers to a students' perception of their ability in a particular academic subject. The latter point is of great importance to the construct as a great many studies have demonstrated the multidimensionality of academic self-concept (Marsh 2006). Put simply, a student may perceive themselves to be of high ability in one subject (e.g. Mathematics) but not another (e.g. English). Judgements of perceived ability are made against both an external (a student compares their performance with other students) and internal frame of reference (a student compares their own performance between different subjects). One meta-analytic study has explored the relationship between self-efficacy (related to self-concept) and test anxiety, finding that they were inversely related (Preiss, Gayle and Allen 2006), but relied upon unidimensional measures of self-efficacy, which is inconsistent with recent conceptualisations of academic self-concept.

Models of test anxiety (e.g. Lowe et al. in press) incorporate actual rather than perceived ability, but it is not difficult to conceptualise how perceived ability could be related to test anxiety[2]; if a student perceived themselves to be of low ability in Mathematics, the increased chance of failure could translate into increased test anxiety. Meijer's (2001) version of the test anxiety construct, which included self-confidence, may provide the bridge between test anxiety and academic self-concept, where the latter represents a student's perception of their ability and the confidence aspect of test anxiety represents the student's ability to demonstrate their ability in an assessment. As yet, this hypothesis remains untested and there is considerable research opportunity in exploring this area. Perceived confidence as it currently stands, along with most conceptualisations of test anxiety, is not subject-specific, unlike academic self-concept, and so this area would require clarification. It should be noted that there has been debate around the subject-specificity of test anxiety (King et al. 1989; Sapp, Durand and Farrell 1995).

Measurement concerns and the development of the test anxiety construct

The construct of test anxiety has developed in parallel with the self-report instruments designed to measure the construct for use in empirical research. There is nothing remarkable about this development *per se*, indeed the construct validity approach emphasises the synergy between empirical and theoretical considerations in the development of a construct (cf. Marsh 2002). Early test inventories such as the Test Anxiety Questionnaire (Sarason and Mandler 1952), Test Anxiety Scale for Children (Sarason et al. 1960) and the Test Anxiety Scale (Sarason 1978) did not employ distinct scales to measure different components of the test anxiety construct, which might imply that test anxiety was viewed as a unidimensional construct at the time. Factor analytic research in the 1960s (e.g. Gorsuch 1966; Sassenrath 1964) suggested a two-component structure, leading to the development of separate scales to establish worry and emotionality in subsequent inventories.

Later test inventories employing distinct scales such as the Worry Emotionality Questionnaire (Liebert and Morris 1967), Revised Worry Emotionality Questionnaire (Morris, Davies and Hutchings 1981), Revised Worry Emotionality Scale (Meijer 2001), Test Anxiety Inventory (Spielberger 1980), Reactions to Tests (Sarason 1984), Revised Test Anxiety Scale (Benson et al. 1992), a state sensitised version of the Test Anxiety Inventory (Hong 1999) and the Children's Test Anxiety Scale (Wren and Benson 2004) have been designed, in part, by refining and revising items drawn from earlier scales. As the different dimensions of test anxiety are established through the use of factor analytic techniques on data produced from self-report inventories, the process of establishing the construct and dimensionality of test anxiety is theoretically driven to such an extent that is not possible from existing literature to establish a test anxiety construct that is separate from its measurement.

Although those parts of the test anxiety literature concerned with the construct of test anxiety and/or its measurement have largely adhered to the construct validity approach, the use of previous questionnaire items as the empirical basis on which to develop items for new questionnaires has potentially constrained development of the test anxiety construct for three reasons. First, previous theoretical considerations, for example, the distinction between worry and emotionality components, have been extensively replicated. Second, new domains of test anxiety are largely ignored, with the possible exception of Meijer (2001), who suggested a third component – self-confidence – and more recently Lowe et al. (in press), who have incorporated social humiliation and facilitative anxiety in a broad conceptualisation of test anxiety. Third, there has been limited development and validation of new items based on existing components of test anxiety, for example, to measure the possibility of different sources of anxiety in a changing educational context. Using an alternative empirical basis would provide a new impetus and ideas for both construct and questionnaire development and at the very least confirm that existing conceptualisations of test anxiety remain adequate for use in the present educational context.

The dominance of a quantitative approach to the study of test anxiety is clearly evident in the test anxiety literature where prominence has been given to methodologies associated with development of instrumentation and the relationship, causal or otherwise, of test anxiety with a range of other 'measured' constructs. By locating the test anxiety literature within the overall framework of the development of North American Psychology in the critical-historical manner advocated by Richards (2003), it is possible to address other reasons for the dominance of this

approach, and also allow for more critical purchase on its usage than is found within the test anxiety literature itself. The concept of test anxiety and its research originally flourished in North American Universities *circa* mid-twentieth century. The cultural and political backdrop of Rooseveltian liberal-individual democracy, with a growing need for feedback regarding the effects of behaviour and constant information about public reaction to political decisions, provided the conditions for the development of individual measurement technologies in psychology (Lunt 2003). Within psychology, the measurement project was an attempt to refine valid and reliable technologies of measurement. Outside of psychology the very same technologies were employed for political and commercial means (Lunt 2003).

As Hart (1998) notes, within a dominant body of work (such as that of test anxiety), alternative ways of conceptualising research questions, methodologies and research techniques can fail to be adequately addressed as subject boundaries, and the *modus operandi* of research become entrenched over a period of time. It is therefore not surprising that with one notable exception (see Putwain in press), test anxiety has not been researched from a qualitative perspective. The relative merits of qualitative and quantitative approaches to the study of stress and anxiety in an educational context have been extensively debated elsewhere (Putwain 2007b), but it is sufficient to say here that the objection made by some researchers of a dogmatic quantitative orientation that qualitative research somehow renders the findings any less objective or scientific, confounds the method of data collection or methodological strategy with an epistemic or ontological position. It is possible to use some qualitative approaches to data collection and analysis, such as grounded theory, in such a way that is consistent with the realist ontology that underpins most quantitative research, yet rarely is explicated, or subjected to critical focus.

Problematising worry and performance deficits

As noted above, worry is one of the central components of test anxiety (the cognitive component) and generally considered to be the component linked to, and indeed responsible for, the lower assessment performance reported in highly anxious students (e.g., Hembree 1988; Seipp 1991; Keogh et al. 2004). It is therefore necessary to consider the nature of worry in the test anxiety construct. An analysis of several self-report instruments is shown in Table 1. Items that ask about, or imply, worry are coded into five categories: (1) Worry about the social-evaluative component; (2) Worry where the content is not specified; (3) Worry about the future; (4) Worry about performance; and (5) Worry about the examination conditions/arrangements.

The majority of worry items related to the first four categories and there is only a single reference to worry about examination conditions/arrangements made on the Revised Worry Emotionality Scale. There are differences between questionnaires in the weighting given to different worry items which reflect small variations in different conceptions of test anxiety. For instance, the majority of worry items on the Test Anxiety Scale and Test Anxiety Scale for Children are unspecified; the Test Anxiety Inventory has equal weighting given to unspecified worry and worry over performance; the Reactions to Tests and Revised Test Anxiety Scale give more weighting to worry over performance; the majority of items on the Revised Worry Emotionality Scale are social-evaluative worry; and the Revised Worry Emotionality

Table 1. An analysis of the different categories of worry items in several test anxiety instruments.

	Category of worry					
Instrument	Total	A	B	C	D	E
Test Anxiety Scale	7	2	4	1		
Test Anxiety Scale for Children	15	5	10			
Test Anxiety Inventory	8		3	2	3	
Revised Worry Emotionality Questionnaire	4	1	1		2	
Revised Worry Emotionality Scale	16	7	1	1	6	1
Reactions to Tests	9	2	2	1	4	
Revised Test Anxiety Scale	5	1	1	1	2	
Test Anxiety Inventory (state sensitised)	4		2	2		
Children's Test Anxiety Scale	11	1		1	9	

Note: A, Social-evaluative worry; B, Worry where the content is not specified; C, Worry about the future consequences of failure; D, Worry about performance; E, Worry about the examination arrangements.

Questionnaire has only one worry item related to social-evaluation and one worry item related to performance. The state sensitised version of the Test Anxiety Inventory gives equal weighting to worry over the future and worry over performance and the majority of the items on the Children's Test Anxiety Scale relate to performance worry.

This analysis highlights a source of variation in the test anxiety construct. It is not clear whether the key issue is simply that test anxiety involves worry, or whether the content of that worry is important. Answers to these questions have important theoretical and practical value. The theoretical issue is two-fold. First, if the content of worry is not a crucial variable, then the differences in worry items between these test anxiety inventories are not important. Arguably, there is considerable difference between conceptualising test anxiety as worry *over* social-evaluative situations, which specifies the content of worry, and worry that *occurs* in social-evaluative situations, which does not specify the content of worry, but also does not address whether worry content is important. Second, is whether performance deficits are attributable to worry *per se*, and the content of that worry is unimportant, or whether particular worries (e.g. over performance) are more strongly related to performance deficits than others. The practical significance of this distinction related to the treatment of test anxiety. If the content of worry is a relevant factor, then an effective treatment will need to address these worries directly.

This theoretical confusion can, in part, be viewed as a function of conceptualising test anxiety in terms of its link with performance. An example of this stance can be seen in Zuriff's (1997) argument that test anxiety would fulfil the criteria for social phobia, and can be made distinct from 'normal' examination nervousness, when examination performance is significantly impaired. The test anxiety literature carries an implicit legitimacy of its own worth by appealing to a liberal progressive

education agenda that the performance of students can be improved. If performance was not affected, then it is unlikely that test anxiety would have ever become a phenomenon of educational and psychological study. Similar conceptual problems have occurred with dyslexia (cf. Tonnesson 1997), and therefore it might be helpful to examine whether these same considerations apply to test anxiety.

Tonnesson (1997) suggests that definitions of dyslexia can be grouped according to: (1) the feature principle; (2) the causality principle; and (3) the prognosis principle. When this typology is applied to the test anxiety construct, worry and physiological arousal would be the key features of the first principle, but derive their significance from the third principle, their effect on performance. The usefulness of both of these features was questioned by Wine (1982), as the physiological component of test anxiety, measured through emotionality, has little or no effect on performance. Wine (1982) argued that the test anxiety concept has outlived its usefulness and should be *re*conceptualised as a cognitive-attentional syndrome that produces performance deficits. The associated concepts from general anxiety theory, particularly the affective and physiological components, are of little theoretical use in explaining this relationship. In Tonnesson's (1997) typology, this would be defining test anxiety in terms of the causality and prognosis principles.

Zeidner (1998) argues against Wine's (1982) thesis on the basis that the term *test* anxiety has gained usage by both public and professionals. Anderson and Sauser (1995) writing about the issue of measurement, reject the proposition that the physiological component of test anxiety is not necessary on the basis that autonomic nervous system arousal is a necessary dimension of the general anxiety construct. Both of these arguments rest upon keeping the test anxiety construct within the confines of the general anxiety construct and seem to be missing the conceptual importance of Wine's (1982) argument that it might be more useful, given the importance of performance deficits, to break the link with the general anxiety construct. A more serious problem with Wine's (1982) argument is her acceptance of performance deficits being caused by cognitive interference – the causality principle. According to Tonnesson (1997) conceptualising a condition in terms of its causality is making an *a priori* judgement over the cause of that condition, and alternative causes (e.g. the skills-deficit model) are ruled out by definition.

Other writers have argued that the construct of test anxiety should be broadened into a general evaluation anxiety construct concept (Carver et al. 1983). While such a move would be consistent with Tonnesson's (1997) argument that definitions should be limited to the feature principle only and viewed as testable hypotheses, it is difficult to establish what the conceptual and theoretical benefits of such a move would achieve given the emphasis on the link with test or examination performance. This emphasis is so great that as Zeidner (1998) notes, there are no models of test anxiety that do not make some reference to the effect on performance. This state of theoretical confusion about the test anxiety construct and domain would therefore seem to have developed from an understanding of the construct of test anxiety by simultaneously drawing upon general models of anxiety, while defining test anxiety in terms of the context in which it occurs and deriving significance from performance deficits.

Conclusions

This critical analysis has highlighted two possible ways in which the test anxiety construct could be moved forward both in theory and empirical work. First is to

continue the exploration of test anxiety with other related constructs such as achievement goals, in particular the fear of failure, and academic self-concept. Although beyond the scope of this paper, work has also been conducted into related emotions occurring in an assessment context (Pekrun et al. 2002, 2004), which may also prove a promising line of inquiry. Second, is to broaden out the methodological scope of test anxiety research to include qualitative approaches. Given the current dearth of qualitative research in this field, such a development has the possibility of generating new directions for test anxiety research in a relatively short space of time. In summary, I would argue the impetus provided by recent policy changes could spark a new and exciting phase in the development of the test anxiety construct.

Notes

1. Marsh (2006) primarily writes about academic self-concept, but the same principle applies equally to other constructs including test anxiety and achievement goals.
2. Zeidner and Mathews' (2005) model does offer the possibility of incorporating perceived rather than actual ability through the influence of self-knowledge, although this is not made explicit in the model.

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