Test Anxiety: Assessment, Documentation, & Management

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“I dreamed I was being chased by a giant standardized test.”
The Age of Anxiety? Birth Cohort Change in Anxiety and Neuroticism, 1952–1993

Jean M. Twenge
Case Western Reserve University

Two meta-analyses find that Americans have shifted toward substantially higher levels of anxiety and neuroticism during recent decades. Both college student (adult) and child samples increased almost a full standard deviation in anxiety between 1952 and 1993 (explaining about 20% of the variance in the trait). The average American child in the 1980s reported more anxiety than child psychiatric patients in the 1950s. Correlations with social indices (e.g., divorce rates, crime rates) suggest that decreases in social connectedness and increases in environmental dangers may be responsible for the rise in anxiety. Economic factors, however, seem to play little role. Birth cohort, as a proxy for broad social trends, may be an important influence on personality development, especially during childhood.
2016 Undergraduate Data

Have any of the following conditions caused you to get a lower grade on an exam or in a course, or caused you to drop a class?

- Stress: 33.8%
- Anxiety: 24.4%
- Cold/Flu: 15.7%

N > 80,000 across 137 institutions
2016 Statistics from CCMH

What concerns do college students present to campus mental health centers with?

![Bar chart showing concerns presented to mental health centers.]

- Anxiety: 61.0%
- Depression: 49.0%
- Stress: 45.3%
- Family: 30.8%
- Academic performance: 27.7%
- Relationship problem (specific): 26.6%
- Interpersonal functioning: 23.5%
- Self-esteem/confidence: 21.0%

N > 150,000 across 139 institutions
2016 Statistics from CCMH

What is the **primary presenting concern** at campus mental health centers?

- Anxiety: 22.7%
- Depression: 18.1%
- Relationship problem (specific): 8.2%
- Stress: 5.5%
- Family: 4.1%
- Interpersonal functioning: 3.5%
- Academic performance: 3.5%
- Grief/loss: 3.2%

N > 150,000 across 139 institutions
Exam anxiety accommodations changed at Red River College

College will now offer proactive approach to help students deal with test anxiety.

For the past few years, Red River College was one of the only colleges in the country to make accommodations for students dealing specifically with test anxiety, allowing those who were suffering to speak with a counselor who would gauge their level of anxiety.

Accommodations such as an extension on their test or a private room to write it in would be given if the counselor felt it was necessary.

However, over the summer, RRC dropped the special accommodations.

“It was hard to determine who had a legitimate anxiety around test-taking,” said RRC coordinator of counselling and accessibility services Laureen Janzen, adding the special accommodations could be sought without a doctor’s diagnosis.
Outline

• Nature and Prevalence of Test Anxiety
• Does Test Anxiety affect Performance?
• Assessment and “Diagnosis”
• Management and Treatment
• Disability Accommodations?
What is Test Anxiety?

- Cognitive component
- Affective/physiological component
- Behavioral component
How Common is Test Anxiety?

• Having **some** TA is near-universal

• 30-52% of college students experience TA “often” or “almost always”
The Heterogeneity of TA

Of High-TA students:

Some may have poor study or test-taking skills; some may be anxious because they have low intellectual ability; some tend to be perfectionist overachievers and will be dissatisfied with anything less than a perfect score; while others are anxious because they fail to meet social expectations or fear parental punishment.

- Zeidner (2014, p. 586)
Does Test Anxiety Matter?

• Correlational studies
  – Typical correlation = -0.2
  – Limitations of these studies

*Evidence that anxiety is usually found to accompany low test scores proves nothing about the part that anxiety plays in bringing about the low scores.*

- French (1962, p. 555)
Low Test Anxiety

Correlation: -0.20

Points: 52
I worried about this test all night...

I worried and worried and worried...

So what happened?

I got an "A".

I wasted a good worry!
Does Test Anxiety Matter?

• The key question:
  Would the same student perform better when less anxious?

• Research evidence is mixed
  – Can only be studied indirectly
  – Small effects found sometimes
Does Test Anxiety Matter?

- Depends on how much anxiety
- Depends on what aspect of anxiety
- Depends on when anxiety is measured
- Depends on a student’s cognitive resources
Yerkes-Dodson Law

- Optimal arousal
  - Optimal performance
- Impaired performance because of strong anxiety
- Increasing attention and interest

Performance vs. Arousal

- Strong
- Weak

Low - High
Owens et al. (2014)
Does Test Anxiety Matter?

• The Bottom Line: Don’t assume that a student who reports test anxiety is impaired on tests.

• Anxiety seems to affect the amount of effort needed more than actual performance.

• Distress ≠ Functional Impairment.
Assessment of Test Anxiety

• Self-Report Scales are most common
• TA-specific scales
• Broadband scales with TA sections
Assessing Test Anxiety

The Test Anxiety Inventory

– 20 Likert-style items
  • 2 factors: “worry” & “emotionality”
– Separate norms for 2-year vs 4-year undergrads; separate norms for freshmen
– Norms from 2 schools in FL, data from 1970s

• “After an exam is over I try to stop worrying about it, but I can’t.”
• “I feel very jittery when taking an important test.”
Assessing Test Anxiety

• Sections from broader measures
  – Learning and Study Strategies Inventory
  – Adult Manifest Anxiety Scale – College Version
  – Behavior Assessment System for Children – College Version (up to age 25) Self-Report
“Diagnosing” Test Anxiety

• No consensus on clinically significant cutoffs from norm-referenced scales

• Current, ongoing research into cutoffs, based on discriminating clinical samples with functional impairment from general population
  – Studies published in 2014, 2017
Is Test Anxiety a Disorder?

Criteria for establishing distinct disorders (Barkley, 2015)

– Coherent symptom complex
– Course
– Etiology
– Correlates (e.g., demographic)
– Functional Impairment
Test Anxiety as its own category...

• Never been field tested
• Was considered for potential inclusion in DSM-IV
  – Rejected: too difficult to define and captured too large of a population (40%)
• Mentioned briefly in the social anxiety disorder section of DSM-IV; not mentioned in DSM-5
Is TA Hiding in the DSM?

A Poor Fit for...

– Social Anxiety Disorder
  • Involves fear of performance in a social setting

– Specific Phobia
  • Phobic object must almost always evoke reaction

– Panic Disorder
  • Panic attacks must be unexpected and come at unstressful times without any cue

– Generalized Anxiety Disorder
  • Anxiety about many things
Other Specified/Unspecified Anxiety Disorder: A Fit For TA in DSM-5?

• Symptoms characteristic of an anxiety disorder but do not meet full criteria
• Other Specified vs. Unspecified?
Managing Test Anxiety

What can you do in 1 session?

– Psychoeducation
  • High incidence of TA; its “normal” nature
  • Weak relationship with performance

– Study strategy recommendations
  • Specifically, retrieval practice

– Test taking recommendations
  • Reinterpreting physiological arousal
Retrieval practice protects memory against acute stress

Amy M. Smith,* Victoria A. Floerke, Ayanna K. Thomas

More than a decade of research has supported a robust consensus: Acute stress impairs memory retrieval. We aimed to determine whether a highly effective learning technique could strengthen memory against the negative effects of stress. To bolster memory, we used retrieval practice, or the act of taking practice tests. Participants first learned stimuli by either restudying or engaging in retrieval practice. Twenty-four hours later, we induced stress in half of the participants and assessed subsequent memory performance. Participants who learned by restudying demonstrated the typical stress-related memory impairment, whereas those who learned by retrieval practice were immune to the deleterious effects of stress. These results suggest that the effects of stress on memory retrieval may be contingent on the strength of the memory representations themselves.
Smith et al. (2016), Study 2 results

![Bar chart showing the comparison between regular studying and retrieval practice under no stress and stress conditions. The chart indicates that retrieval practice under stress results in a significantly higher number of items recalled compared to regular studying under stress.]
Main Types of Test Anxiety Interventions

- Behavioral/Emotion-focused
- Cognitive
- Cognitive-behavioral
- Skill-focused
Behavioral Strategies

Conception of TA:

Stimulus

Test

Response

Anxiety
Behavioral Strategies

E.g., Systematic Desensitization

• Develop fear hierarchy

• Teach relaxation response
  – Breathing exercises
  – Progressive muscle relaxation

• Pair imagined situations with relaxation response
Sample Hierarchy Items

• You are in class on a non-test day.
• Your professor announces the date and time of the final exam.
• You are studying for the final exam the night before it happens.
• You begin taking the final exam.
• You have 5 minutes left to work on the exam and your mind goes blank.
Cognitive Strategies

Conception of TA:

– Irrational beliefs about:
  • The test itself
  • One’s performance
  • The consequences of low performance
Cognitive Strategies

• Cognitive restructuring (= “cognitive therapy”)
  – Training in identifying cognitive errors
  – Searching for evidence for and against beliefs
  – Reassessing beliefs

• Attention training: therapist modeling of...
  – On-task statements (e.g., “I will think about that later; back to the test for now”)
  – Positive self-evaluation statements
Skill-Focused Strategies

• Focus on test *performance* rather than *anxiety per se*
  – With the hope of indirect effects on anxiety

• Training in:
  – Study skills
  – Test-taking skills (including *test wisdom*)
Test-Taking Skills: PIRATES

1. **P**repare to Succeed
2. **I**nspect the Instructions
3. **R**ead, Remember, Reduce
4. **A**nswer or Abandon
5. **T**urn Back
6. **E**stimate
7. **S**urvey
Meta-Analyses of TA Interventions

- Criteria for interpreting effect size (Cohen, 1988)

<table>
<thead>
<tr>
<th>Effect Size</th>
<th>Interpretation</th>
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<tbody>
<tr>
<td>.20</td>
<td>Small</td>
</tr>
<tr>
<td>.50</td>
<td>Medium</td>
</tr>
<tr>
<td>.80</td>
<td>Large</td>
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</table>

- Hembree (1988)
- von der Embse et al. (2013) – K-12 samples

<table>
<thead>
<tr>
<th>Technique</th>
<th>ES</th>
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<tbody>
<tr>
<td>Behavioral: Relaxation Training</td>
<td>.68</td>
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<td>Behavioral: Systematic Desensitization</td>
<td>.59-1.09</td>
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<tr>
<td>Cognitive</td>
<td>.34</td>
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<tr>
<td>Cognitive-Behavioral</td>
<td>.87</td>
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<tr>
<td>Study Skills</td>
<td>.14</td>
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<tr>
<td>Study Skills + Behavioral</td>
<td>1.22</td>
</tr>
<tr>
<td>Study Skills + Cognitive-Behavioral</td>
<td>.83</td>
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<tr>
<td>Test-wiseness Training</td>
<td>.55</td>
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<tr>
<td>Pseudotherapy (Placebo therapy)</td>
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</table>

Test performance
- Study skills + behavioral: ES = .76
- Cognitive-behavioral: ES = .52
- All other interventions in trivial to small range or not enough studies

GPA
- Study skills + behavioral/cognitive-behavioral: ES = .73
- Cognitive-behavioral: ES = .72
- All others in trivial to small range

- Impact on anxiety (not academic outcomes)
- Located 56 studies
  - Majority of these conducted with college students
Ergene (2003) Results

• Overall ES = .65
• Treatment approach:
  – Cognitive + skill-focused: ES = 1.22
  – Behavioral + skill-focused: ES = 1.10
  – Skill-focused alone: ES = .42
  – Cognitive-behavioral alone: ES = .36
• Treatment modality:
  – Combined group/individual most effective: ES = .84
  – Group only: ES = .67; Individual only: ES = .34
• Treatment length:
  – 3 to 6 hours most effective: ES = .91
  – More than 6 hours: ES = .71; Single Session ES = .34
TA Interventions: Impact on TA itself

• Most single approaches are effective
  – Most effect sizes in the medium range
  – Study skills only treatment has not been found to be effective in most studies
  – “Other” approaches also not found to be effective

• Combined approach is best
  – Most effect sizes in the large range
TA Interventions:
Impact on Academic Outcomes

• Less research
• Smaller effect sizes
• Single approaches generally in the small range
• Combined approaches in the medium range
TA Interventions: Moderator Variables

• Treatment format
  – Group format more effective than individual format

• Treatment length
  – 3 to 6 hours most effective treatment length

• Level of education
  – Most effective with college students
Some Unanswered Questions...

- Treatment effect at different severity levels of test anxiety
- Qualifications and expertise needed to effectively implement the interventions
- Generalization
- Treatment maintenance

...but still overall efficacy!
An Emerging Intervention

Acceptance-Based Therapy

– Brown et al. (2011)

• Substantial effects on anxiety and on test performance
• Superior to cognitive therapy
Test Anxiety and ADA

• Disability under ADA
  – A mental or physical impairment causing a substantial limitation in one or more major life activities

• Is TA an ADA disability?
What do Testing Entities Think?

• “Please note that documentation of test anxiety in and of itself is insufficient to arrange academic accommodation.” – ON

• “All students have testing anxiety at some level...test anxiety alone is not a disability” – NY

• “‘Exam Anxiety’...is not a diagnosable disability which would qualify for exam accommodations (i.e. extra time).” - MB

• “**Myth:** Test anxiety is a disability. **Reality:** Many students become anxious when taking an exam.” – MN

• “test anxiety alone is not a sufficient diagnosis to support requests for accommodations” - ETS
Test Anxiety and ADA

• Issues in defining TA as a disability
  – Is it even a mental impairment?
  – Is test-taking a major life activity?
  – Does TA actually even limit test-taking?
Accommodations for TA?

General features of appropriate accommodations:

1. Make test scores more valid
2. Don’t change what the test is designed to measure
3. Only help students with disabilities
4. Used when someone can’t adapt to standard conditions
5. Given through standardized decision protocols

(S. E. Phillips, 1994)
Accommodations for TA?

• Extended time
  – Test anxiety predicts *perceived* extended time needs
    • Even when controlling for actual reading fluency
  – College students who receive extended time often don’t use much

• Does anxiety keep that student from finishing exams?
SEPTAR (Likert-Scaled)

1. I am a slow reader.
2. I have trouble finishing timed tests.
3. My reading speed negatively affects my ability to do well on exams.
4. I finish exams early.
5. I am able to pace myself appropriately on timed exams.
6. I could do better on my exams if I had additional time.
7. I need to read things over and over again to be able to understand them.
8. I would do better on exams if I were faster.
9. My reading speed is adequate for exams.

(Kleinmann & Lewandowski, 2005)
## Correlations

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<td>1. SEPTAR</td>
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<td>2. Test Anxiety</td>
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<td>--</td>
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<tr>
<td>3. Reading Fluency</td>
<td>-.51***</td>
<td>-.14</td>
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**Partial correlation** between SEPTAR and Test Anxiety, controlling for Reading Fluency

<table>
<thead>
<tr>
<th></th>
<th>.43***</th>
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*p < .05  **p < .01  ***p < .001

(Lovett, 2007)
% of Tests finished when – Of students receiving 50% Extension

<table>
<thead>
<tr>
<th>% of Class Time Used</th>
<th>LD</th>
<th>ADHD</th>
<th>ASD</th>
<th>Psych</th>
<th>Visual</th>
<th>Phys</th>
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<td>65.95</td>
<td>57.71</td>
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<td>10.71</td>
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<td>3.33</td>
<td>3.80</td>
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Of 605 exams taken by a subset of 187 students; Spenceley & Wheeler (2016)
Accommodations for TA?

• Separate Room
  – Common rationales given
  – Comfort vs. need
  – The special problem of panic attacks

• Research on separate room? Needed!
Evaluating Documentation for TA

1. Insist on an actual disorder diagnosis being present.

2. Look for *norm-referenced* evidence of high TA levels.

3. Have interventions been tried and failed?


5. Insist on professional documentation (rather than merely self-report or observation/ interview data).
Thank You! 😊

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SELECTED BIBLIOGRAPHY