Seminar Goals

- Review theories related to the development of academic and test anxiety.
- Elucidate the connections between anxiety and learning.
- Review dimensions of specific learning disabilities and the emotional experiences of students with these difficulties.

Classifications of Learning Disabilities

<table>
<thead>
<tr>
<th>Math</th>
<th>Reading</th>
<th>Written Expression</th>
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</thead>
<tbody>
<tr>
<td>With Impairment in:</td>
<td>With Impairment in:</td>
<td>With Impairment in:</td>
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<tr>
<td>• Number Sense</td>
<td>• Word Reading Accuracy</td>
<td>• Spelling Accuracy</td>
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<tr>
<td>• Memorization of Math Facts</td>
<td>• Reading Rate or Fluency</td>
<td>• Grammar and Punctuation Accuracy</td>
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<tr>
<td>• Accuracy or Fluent Calculation</td>
<td>• Reading Comprehension</td>
<td>• Clarity or Organization of Written Expression</td>
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<tr>
<td>• Accurate Math Reasoning</td>
<td>• Dyslexia</td>
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<td>• Dyscalculia</td>
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Nonverbal Learning Disability

- Not a formally recognized diagnostic label.
- Conceptualized as a constellation of symptoms which include:
  - Social & Interpersonal Difficulties
  - Executive Dysfunction
  - Weaknesses in Math
  - Reading Comprehension Issues
  - Deficits in Written Expression
  - Visual-Spatial Deficits
  - Gross and Fine Motor Functions

Psychological and Behavioral Features

- Exhibit lower academic self-efficacy
- Approximately two times more likely than peers to have behavioral issues
- Have lower social standing
- Report less social support
- More likely to report their mood as negative

Social-Emotional Factors

- Younger children with SLD and social anxiety found to endorse a more negative view of teachers
- This has been hypothesized to reflect the increased frustration these students experience due to often requiring teacher help and being singled out for academic struggles
- In addition, these children may express this frustration in the classroom, thereby having to be disciplined more often
- As a result, these children may have fewer opportunities for positive interactions with teachers.
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Theories

Secondary Reaction
Cerebral Dysfunction
Primary Disorder

Nelson & Harwood (2011)

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Differentiation of Terms

- **Fear**
  Emotional response to a known, identifiable threat.

- **Panic**
  Subjective sense of impending doom accompanied by massive autonomic surge.

- **Anxiety**
  Lingering sense of apprehension or worry accompanied by tension, the cause of which may be unclear.

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Fear Conditioning

- This is the process by which we learn to associate a particular object or experience with a feeling of anxiety.

- A learned or conditioned fear can be generalized to similar stimuli (e.g., a child with an aversion to math can become anxious about going to school).
  - This may lead to a greater impairment.
Anxiety & Learning Issues

- Ongoing school difficulties often contribute to internalizing disorders including anxiety and depression.
- Researchers have found that up to 70% of individuals with known learning disabilities reported experiencing anxiety.
- Stress and anxiety have been found to have a negative impact on all areas of cognitive functioning.

Child Attempts to avoid reading in class

Child is anxious to read in class

Embarrassment

Child struggles to read

Avoidance makes child feel better.

Student is asked to read aloud in class

Test Anxiety

- Excessive, impairing fear of poor performance and the resulting negative self-evaluations which occur before, during, and after a testing situation.
- Worry
- Emotionality
- Behavioral

Wren & Bronson, 2004
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Domains of Test Anxiety

Perceptions of the Test

Perceptions of the Situation

Self-Perceptions

Bonaccio & Reeve, 2010

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Math Anxiety

- Involves feelings of tension which interfere with the act of number manipulation and math problem solving
- Impacts students’ self-regulation & self-efficacy
- Individuals with math anxiety show less efficient neural processing in numerical tasks

Richardson & Suinn, 1972; Artemenko, Domery, & Nuerk (2015)

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Reading Anxiety

- Unpleasant emotional reaction to the act of reading
- Elicited from a history of negative experiences with reading which causes an individual to associate aspects of reading with negative internal emotions
- Studies have found that higher anxiety reported by individuals with reading disorders persisted even when other comorbid conditions (e.g., ADHD) were controlled for

Piccolo, Hoffmeier, Gianonzi, Julia-Costa, Oliveira, Zbornik, Hanx, & Salis (2017)
Avoidance

- Behaviors which attempt to avoid exposure to a fear-producing stimulus
- This avoidance is positively reinforced by experiences of decreased anxiety and relaxation or relief response

Neuroanatomical Findings

- Activation in the pain perception network of the brain including the posterior insula and mid-cingulate cortex
- Hyperactivity and abnormal connectivity has been seen in in the right basolateral amygdala which is the fear network
- In addition, individuals have exhibited under-activation in task specialized brain areas (e.g., areas of the frontal lobe required for working memory)

Cognitive Processing

- Anxiety interferes with the efficiency of information processing in two ways:
  - Reduces the capacity of available working memory skills required to complete simultaneous tasks
  - Increases the amount of effort required to improve performance
- Anxiety-Complexity Effect: The more complex the problem, the greater the impact of anxiety on performance

References:
Mowrer 1947
Piccillo et al. (2017); Artemenko, Dorony, & Nuerk, 2015
Cognitive Interference Model

- Multiple research studies have shown that test anxiety is negatively correlated with aspects of intelligence.
- Conceptualizes the relationship between anxiety and performance as a linear, negative relationship
  - The greater the anxiety, the poorer the cognitive performance.

Nelson & Harwood 2011; McGovern, Lowe, & Hill 2016

Motivational Enhancement Model

- Taken from Processing Efficiency Theory (Eysenck & Calvo, 1992)
- When students experience heightened test anxiety, they are more motivated to compete which increases concentration and performance.

Eysenck & Calvo, 1992

Yerkes-Dodson Law

- Optimal arousal and optimal performance
- Impaired performance because of strong anxiety
- Increasing attention and interest
Anxiety & Approach Goals

- Individuals with test anxiety show dysfunctional views of their academic self-concept and the amount of control they have over academic outcomes.
- Motivation for achievement is often more focused on avoiding failure rather than a desire to master the material.
- Often exhibit Avoidance Goals meaning that they aim to reduce exposure to any situation which may test their abilities.

Achievement and Perceived Competence

- Students who feel they are less competent in a particular subject often reported experiencing more anxiety about their performance.
- These students’ achievement was motivated by a fear of failure.
- Differences were noted in how the relationship between self-competence and anxiety impacted the study habits of males and females.

Putwain & Daniels, 2010

Differences in Anxiety & Achievement

- Sung, Chao, & Tseng (2016) found differing reports of anxiety based on students’ individual achievement.
- Low achieving Taiwanese students exhibited a positive correlation between anxiety and achievement.
- Students in a higher-achieving group exhibited a negative relationship.
- Thus, differences may emerge as a result of personal variables with regards to an individual’s reaction to given stressors.
What is a Neuropsychologist?

- Neuropsychologists specialize in the assessment and characterization of brain-behavior relationships.
- Assessment of neurocognitive functioning includes evaluation of intellectual functioning, language, nonverbal reasoning, dexterity and fine motor coordination, attention, executive functioning, memory, academic performance, and social-emotional states.
- This is performed using paper and pencil as well as computerized measures.

Protective Factors

- Self-Advocacy Strategies
- Strength Identification
- Social Connections

Considerations for Treatment

- Building emotional regulation skills can help to minimize the impact of anxiety on performance.
- Studies have indicated that helping participants with high math anxiety to engage in emotional regulation skills, they were able to draw on cognitive control strategies to compensate for deficits.

Hendren, Haft, Black, Cashen, White, & Hoefl (2018)

Artemenko, Diotrey, & Naeak (2015)
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**Supporting Students**

- Validate emotions
- Provide specific labeled praise
- Use accurate but constructive criticism when providing feedback
- Recognize patterns of maladaptive coping

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**Reference List**


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**References**

References


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