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Mindsets and Nursing Student Approaches to Learning: The Williams Inventory of Learning Strategies Tool

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Outcomes

• By the end of this presentation, the participant should be able to:
• Identify the Williams Inventory of Learning Strategies (WILS) as a promising tool in the assessment of mindsets and nursing students learning strategies
Research Question

Is the **Williams Inventory of Learning Strategies** Survey suitable to assess students’ **fixed/growth** mindsets & choice of **learning strategies**?
Mindsets and Learning

• We do know that fixed mindsets fear failure, avoid mistakes, and do not remediate (Dweck, 2014).

Growth Mindsets do remediate, using errors as opportunities for learning.

Less known: mindset proclivity/learning in nursing students.
What are Fixed and Growth Mindsets?
<table>
<thead>
<tr>
<th></th>
<th>Fixed Mindsets</th>
<th>Growth Mindsets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence</td>
<td>Innate</td>
<td>Malleable</td>
</tr>
<tr>
<td>Goals</td>
<td>Performance</td>
<td>Multiple</td>
</tr>
<tr>
<td></td>
<td>Avoidance</td>
<td>Learning</td>
</tr>
<tr>
<td>Effort</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Competence</td>
<td>Display</td>
<td>Development</td>
</tr>
<tr>
<td></td>
<td>Normatively Appraised</td>
<td>Mastery</td>
</tr>
<tr>
<td>Attributions</td>
<td>Girls cannot do math</td>
<td>I have not learned</td>
</tr>
<tr>
<td></td>
<td>The teacher did not...</td>
<td>that yet</td>
</tr>
<tr>
<td>Remediation</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Methods

- Introducing The **Williams Inventory of Learning Strategies (WILS)**
- 33 item Visual analog survey
The WILS has four subscales

- Dweck’s Mindset Assessment (3 items; $\alpha = .95$)
- Low scores Growth Mindset/High scores Fixed Mindsets

**Willingness to remediation and review**
(8 items)

**Fear of failure and avoidance**
(9 items)

**Learning strategies (inventory)**
(13 items)
WILS Face Validity

- **Face validity**: subjective relevance of test
- Assessed by a convenience sample of expert nursing faculty
- Yielded a few minor edits before testing.
WILS Content Validity

- **Content validity** was obtained from a robust review of the literature

- Mindsets: 30 years of research

- Learning: much literature was reviewed
  - Brown (2014)
  - Dunlosky (2013)
  - Hattie (2009)
WILS Content Validity Index (CVI)

• Polit and Beck (2006) expressed the need for CVI
  • Individual I-CVI and Scale S-CVI
  • WILS subscale items assessed by a convenience sample of three expert nursing faculty

• **I-CVI** = 50% of items were very relevant
  • 43% were relevant
  • Only 1 item was not deemed relevant (but retained)

• **S-CVI** = 0.830.
Reliability

• Test/retest reliability was done over two weeks with the same 4 pairs of nursing students completing the WILS

• Test/re-test reliability $\alpha = 0.844$
## Reliability

<table>
<thead>
<tr>
<th>Subscale Items</th>
<th>Pilot Reliability n=102</th>
<th>Recent Reliability n=73</th>
<th>Most Recent n=204</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mindset</td>
<td>R=0.773</td>
<td>R = 0.703</td>
<td>R= 0.683</td>
</tr>
<tr>
<td>Learning inventory</td>
<td>R= 0.664</td>
<td>R= 0.741</td>
<td>R = 0.738</td>
</tr>
<tr>
<td>Remediation and Review</td>
<td>R= 0.806</td>
<td>R= 0.803</td>
<td>R = .809</td>
</tr>
<tr>
<td>Fear of failing and Avoidance</td>
<td>R= 0.664</td>
<td>R= 0.686</td>
<td>R= 0.680</td>
</tr>
</tbody>
</table>
WILS Learning Score

• Learning Inventory Subscale:
  • Compute an overall learning score
  • Higher scores => effective study strategies
  • Possible range 0-3000

• Scores ranged: 1100-2883: n=180
As mindset scores decreased to that of the growth mindset, the learning score increased.
Growth Mindsets exhibited significance

• Increased use of **seeking out feedback** from peers (rho=0.26)
• Increased use of **quizzing and teaching** each other (rho=0.22)
• Worries less about **looking like** they were having trouble with content (rho=0.23)
Fixed Mindsets significance

- Avoid challenges situations in which they may struggle (rho=0.22)
- If they failed an exam they would look for excuses other than themselves to blame (rho=0.23)
Anova One Way

- Low user mindset scores: \( n=94, \text{Mean}=98, \text{SD}=63.3 \)
- High Users’ mindset scores: \( n=90, \text{Mean}=64, \text{SD}=48.9 \)
- High Users' scores decreased to that of the growth mindset scores
- Was found to be statistically significant: Welch Test
  - \( F=(1,174.284)=17.557, p=0.000 \)

- The homogeneity of variances was violated as assessed by Levene's test for equal variances (\( p=0.000 \))... needed to use Welch test
Implications

- The WILS tool showed promise as a new tool
- We used it as an intervention
Using the WILS tool to evaluate mindset training:

The Mindset Intervention for Pre-licensure Nursing Students Study
Purpose:

• To learn if pre-licensure community college nursing students would have increased growth mindset tendencies and report more effective learning strategies after a mindset training intervention.
Methods:

• Quasi-experimental design
• Pre- and post-intervention administration of the WILS tool
• Intervention consisted of 1-hour mindset training session
• Setting was two community college schools of nursing in North Carolina
• Total of 35 participants
## Results

<table>
<thead>
<tr>
<th>WILS Tool Subscales</th>
<th>Pre</th>
<th>Post</th>
<th>Statistical Significance</th>
<th>Interpretation</th>
</tr>
</thead>
</table>
| Average mindset scores                 | 105 | 72   | Significant improvement \[t = 2.32 \ p = 0.03\] \[Cohens d = 0.45\] (moderate effect) | Range 0-300  
0-120 Growth Mindset  
121-180= Mixed Mindset  
181-300 = Fixed Mindset                                                                 |
| Average learning strategies scores     | 812 | 838  | Not significant, but trend showed improvement                | Range= 0-1300  
0-520= Low use of effective learning strategies  
521-780= Moderate use  
781-1300= High use                                                                 |
| Average willingness to remediate and review scores | 453 | 489  | Not significant, but trend showed improvement                | Range 0-800  
0-320= Low willingness to remediate and review  
321-480= Moderate  
481-800= High Willingness                                                                 |
| Average avoidance and fear of failure scores | 228 | 177  | Not significant, but trend showed improvement                | Range 0-900  
0-360= Low avoidance and fear of failure  
361-540= Moderate fear and avoidance  
541-900= High fear and avoidance                                                                 |
Discussion:

- Study applied mindset theory to nursing education with promising results
- The intervention to teach nursing students about mindset was correlated with increased growth mindset perspectives, increased willingness to remediate, and decreased fear of failure
- Although effect size was small and statistical significance met only for the mindset subscale, we hypothesize that a larger sample could demonstrate significant findings
- Researchers are currently replicating the study with a larger sample of BSN students
Limitations

- Survey and social bias
- Non-response bias
  - Many people who did not answer could have been FMs and or GMs
Thanks for Coming

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References


