The relationship between a sense of belonging and well-being in men and women undergraduate physics students

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The social cure

‘The social cure’ is the idea that those that have stronger social connections and relationships have higher levels of well-being and general health (e.g., Jetten, Haslam, & Alexander, 2012).
Belonging in Education

• Could this be applied to education?
• Could the shared experience of learning and strong bonds with other students result in more support and more well-being?

Walton & Cohen (2011)
Self-perceptions of women in undergraduate physics

- Recent research suggests that women report a lesser sense of belonging than men (Seyranian et al., 2018).
- Similarly, women report less self-efficacy (their confidence in their ability to complete physics tasks) than men (Nissen & Shemwell, 2016).
- Women also do not identify with physics as a discipline to the same extent as men (Hazari, Sonnert, Sadler, & Shanahan, 2010)
Hypotheses

That women will have a lower sense of belonging and well-being than men.

That the relationship between belonging and well-being will be stronger for men than for women in physics.
Study: Sample and survey

- The sample consisted of 310 physics students (105 women, 205 men).
- The physics students were from all year levels, from introductory to the integrated Masters level.
- The survey was given to them prior to their lecture or workshop.
- The survey measured their sense of belonging, identification with physics as a discipline, their self-efficacy, and their sense of well-being.
Results: Means, Standard deviations, and t-tests.

<table>
<thead>
<tr>
<th></th>
<th>M&lt;sub&gt;Men&lt;/sub&gt;</th>
<th>SD&lt;sub&gt;Men&lt;/sub&gt;</th>
<th>M&lt;sub&gt;Women&lt;/sub&gt;</th>
<th>SD&lt;sub&gt;Women&lt;/sub&gt;</th>
<th>t-value (df=308)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>3.99</td>
<td>.61</td>
<td>3.80</td>
<td>.59</td>
<td>2.60</td>
<td>.010</td>
</tr>
<tr>
<td>ID</td>
<td>5.26</td>
<td>1.42</td>
<td>4.93</td>
<td>1.36</td>
<td>2.00</td>
<td>.046</td>
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<tr>
<td>Belonging</td>
<td>5.25</td>
<td>1.46</td>
<td>5.27</td>
<td>1.52</td>
<td>-0.087</td>
<td>.931</td>
</tr>
<tr>
<td>Wellbeing</td>
<td>2.86</td>
<td>.46</td>
<td>2.88</td>
<td>.41</td>
<td>-0.29</td>
<td>.769</td>
</tr>
</tbody>
</table>

Please note that these variables are not measured on a standardized scale, as such this scale should be used to compare the differences between men and women, rather than between variables.
Results: Regressions

**Men:**
- Physics ID -> Well-being: $\beta = -0.111$, $p = 0.146$.
- Self-efficacy -> Well-being: $\beta = 0.325$, $p < 0.001$.
- Belonging -> Well-being: $\beta = 0.302$, $p < 0.001$.

**Women:**
- Physics ID -> Well-being: $\beta = 0.010$, $p = 0.930$.
- Self-efficacy -> Well-being: $\beta = 0.424$, $p < 0.001$.
- Belonging -> Well-being: $\beta = 0.043$, $p = 0.718$. 
Why is this?

• Could it be that women don’t identify with physics, as such it doesn’t matter to them if they belong?
• Could it be that women who pick physics do not derive that their well-being from a sense of belonging?
• Could it be that women do not feel as though their performance is more important to their sense of well-being than their feeling of belonging?
Future question

• Is it just the case for women in undergraduate physics or for all under-represented groups in education?
Summary

• Contrary to our hypotheses, women in undergraduate physics reported similar levels of belonging and well-being as men.

• Self-efficacy predicts well-being for both men and women.

• Belonging predicts well-being for men, but not for women.
Thank You

• If you have any questions, please contact me at:
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References: