Detection of Differential Item Functioning in the Ethical Reasoning Identification Test
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Background
- The Ethical Reasoning in Action at James Madison University is an ethical reasoning initiative with a mission of preparing students to be enlightened citizens in the community.
- The initiative uses an eight-key question approach that aims to be applied in personal, professional, and civic lives.
- The Ethical Reasoning in Action assesses ethical reasoning using an instrument called the Ethical Reasoning Identification Test (ERIT).
- This instrument is a pre/posttest design. Freshman are assessed prior any curricular/cocurricular intervention, and then re-tested after being introduced to campus interventions. Therefore, this instrument not only measures student ethical reasoning ability, but growth in this domain as well.
  - **Eight-Key Questions:**
    - **Fairness** - How can I act equitably and balance legitimate interests?
    - **Outcomes** - What achieves the best short- and long-term outcomes for me and all others?
    - **Responsibilities** - What duties and/or obligations apply?
    - **Character** - What action best reflects who I am and the person I want to become?
    - **Liberty** - How does respect for freedom, personal autonomy, or consent apply?
    - **Empathy** - What would I do if I cared deeply about those involved?
    - **Authority** - What do legitimate authorities (e.g. experts, law, my religion/god) expect of me?
    - **Rights** - What rights (e.g. innate, legal, social) apply?

Purpose
- The purpose of this study is to detect differential item functioning (DIF) in the ERIT.
- DIF poses a threat to the validity of the inferences made from this instrument.
- This statistical phenomenon (DIF) occurs when individuals who are equal on the construct(s) being measured differ due to some external factor(s).
- **Research Question:** Does the Ethical Reasoning Identification Test contain differential item functioning?

Data
- The data consists of four testing occasions made up of two cohorts.
  - Fall 2015 (n=465) is the first cohort that was re-tested in Spring 2017 (n=271).
  - Fall 2016 (n=406) is the second cohort that was re-tested in Spring 2018 (n=291).
- The subgroups of interest were ethnicity (Caucasian, non-Caucasian) and sex (male, female).
- DIF was detected using the Mantel Haenszal procedure and then converted to the ETS metric for classifying DIF.
• This metric has three levels:
  • **Level-A DIF**: little to no concern to test developers; not statistically significant
  • **Level-B DIF**: moderate concern
  • **Level-C DIF**: high concern to test developers

**Results**

*ETS Level Differential Item Findings*

<table>
<thead>
<tr>
<th>DIF Level</th>
<th>Sex</th>
<th>Ethnicity</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETS Level-A DIF</td>
<td>1 item detected</td>
<td>0 items detected</td>
<td>1 item</td>
</tr>
<tr>
<td>ETS Level-B DIF</td>
<td>8 items detected</td>
<td>0 items detected</td>
<td>8 items</td>
</tr>
<tr>
<td>ETS Level-C DIF</td>
<td>13 items detected</td>
<td>8 items detected</td>
<td>21 items</td>
</tr>
</tbody>
</table>

**Conclusions**

• Preliminary discussion with content experts revealed speculative causes of DIF:
  • Political influences
  • Gender influences
• **Sample items containing DIF:**

  Despite the protests of his party, the minority whip decided to speak out against the bill. He argued that as an individual, he shouldn’t be bound by party lines.
  • Correct Answer: Liberty

  A family friend asked Theresa directly if she would have an extramarital affair. Though Theresa was attracted to him, she said no because she wanted to like who she was the next day.
  • Correct Answer: Character

**References**

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