Exploring Non-Cognitive Reasons behind Success after Failure

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Background
The availability of large-scale online courses enabled assessment of academic performances at scale. Equally important is the opportunity to investigate the state of non-cognitive or soft skills of online learners to inform design of interventions to improve learning outcomes.

Problem Statement
Pathways to success vary. Some failures may be productive and necessary (Kapur, 2008; Kapur, 2010). Some learners may be more discouraged than others when facing failure, out of cognitive and non-cognitive differences.

Therefore, it is imperative to understand why some learners are more likely to continue their learning processes after failure than others.

Research Question
How do learners who succeed after experiencing failure in an adaptive online course differ with regard to their soft skills?

Method

2 types of outcomes

1. A principal component analysis based on the 25 competency assessments was conducted.
2. The extracted principal components were then used in two logistic regression models to predict the two types of outcome measures: passing the course, and passing the course after failed attempts.

Analyses

Type I: Passing 1st Attempt + Type II: Passing after Failure

Results

Table 1: Logistic Regression Analysis on Passing the Course

<table>
<thead>
<tr>
<th>Component</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1</td>
<td>-3.44</td>
<td>.155</td>
<td>4.951</td>
<td>1</td>
<td>.026</td>
<td>.709</td>
</tr>
<tr>
<td>Component 2</td>
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<td>.154</td>
<td>5.793</td>
<td>1</td>
<td>.016</td>
<td>.690</td>
</tr>
<tr>
<td>Component 3</td>
<td>.083</td>
<td>.136</td>
<td>.369</td>
<td>1</td>
<td>.543</td>
<td>1.086</td>
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</tbody>
</table>

Table 2: Logistic Regression Analysis on Passing after Failure

<table>
<thead>
<tr>
<th>Component</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
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<td>Component 2</td>
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<td>.000</td>
<td>.022</td>
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</tbody>
</table>

Indigo 25 Soft Skills
A total of 255 learners of the math course voluntarily participated in a non-cognitive skillsets assessment developed by Indigo Project (Indigo, 2017), designed as part of an online orientation course.

Conclusions
The present analysis looked learners who successfully passed the course, either passed at their first attempts or passed after failed attempts, and compared how their soft skills differ from the rest of learners. The findings suggested that

1) Learners who successfully passed the course tend to have strong skill sets related to time and project management;
2) Learners who successfully passed the course after failed attempts tend to have higher skill sets related to decision making and leadership.

References

Further Information
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