smartPredict –
Development Insights and Study Results of Aon’s Gamified Assessment Series

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Aon’s Assessment Solutions
Gamification in Assessments – where we started

Gamifying through interaction

Gamifying using a cover story as a wrapper around assessments

Gamifying by changing the appearance of the assessment
smartPredict – Our **Gamified Cognitive Suite**

Gamified approach to assessing cognitive capabilities

Choose among four challenges in the suite:
- **motionChallenge**: Complex planning capability
- **gridChallenge**: Working memory
- **switchChallenge**: Deductive logical reasoning
- **digitChallenge**: Basic numerical comprehension

**Overall Impression of the Company**
91% better than or equal to traditional assessment

**Perception of Fairness**
88% better than or equal to traditional assessment

**Holds Attention**
96% of users are motivated to do well
93% better than or equal to traditional assessment

**Engages Participants**
94% better than or equal to traditional assessment

**Predicts Performance**
88% better than or equal to traditional assessment
2x as likely to be above average in customer interaction ratings and 1.5x in critical thinking performance
Continuous development of smartPredict

G.A.M.E.

gridChallenge V1

gridChallenge V2

gridChallenge V3
Instruction Update

**BEFORE**

Instructions before:

- Long texts with very detailed descriptions
- Focused on explaining every detail of the test
- Required the candidate to interact with the assessment during the instructions

**AFTER**

New tutorial:

- Less text
- Animations explain how to complete the assessment
- Compact and engaging
- Straight forward and clean user interface
- Easy to understand
Continuous development means **continuous research**

### Applicant Reactions
- Original vs. Gamified Versions
- Desktop vs. Mobile
- New vs. Old Instructions
- Branding vs. Standard

### Equivalency
- Desktop vs. Mobile
- Original vs. Gamified Versions

### Adverse Impact
- Age
- Gender
- Ethnicity
An equivalence study was conducted between May 2019 and June 2019 to determine the equivalence of performance between the G.A.M.E. and gridChallenge assessments provided by an MTurk sample. A total of 306 participants provided complete and usable data for both assessments (68%).

Results indicate a strong relationship. While there is no commonly agreed upon standard of equivalence, a correlation of $r = .71$ generates fairly strong evidence of equivalence.

<table>
<thead>
<tr>
<th></th>
<th>$r$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>0.71</td>
<td>0.000</td>
</tr>
<tr>
<td>Condition 1</td>
<td>0.74</td>
<td>0.000</td>
</tr>
<tr>
<td>Condition 2</td>
<td>0.69</td>
<td>0.000</td>
</tr>
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Results prove that G.A.M.E. and gridChallenge measure the same construct. gridChallenge and G.A.M.E. have a different look and feel but capture similar information. Therefore, it is fair to assume that the technical documentation that has been done for G.A.M.E. can be applied to gridChallenge, and vice versa.
gridChallenge showed no differences in performance for mobile and desktop completions (Cohen’s d = -.12).

When asked for applicant reactions, no differences were found between mobile and desktop completions for 12 areas in total.

<table>
<thead>
<tr>
<th>Adverse Impact Area</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (male-female)</td>
<td>-.05</td>
</tr>
<tr>
<td>Age (under 40-40 and older)</td>
<td>-.02</td>
</tr>
<tr>
<td>Ethnicity (White-Asian-Black-Hispanic-two or more)</td>
<td>-.35 to -.48</td>
</tr>
</tbody>
</table>

Administered to N = 350 participants recruited from Amazon’s Mechanical Turk.
User acceptance study results

**Study Design**
A total of 211 participants completed digitChallenge with new instructions an applicant reactions questionnaire directly afterwards.

The results were compared to a previous study (smartPredict Applicant Reactions Results, July 2018).

**Overall Applicant Reactions:** the reactions are positive to a larger extent than the previous study on the old instructions.

**Adverse Impact Analyses:** No evidence of adverse impact for age or race/ethnic subgroups; preliminary evidence indicates potential for adverse impact for gender.
Administered to N = 374 participants recruited from Amazon's Mechanical Turk

### Applicants Reactions Desktop vs. Mobile

<table>
<thead>
<tr>
<th>Reaction Area</th>
<th>T-values per Assessment</th>
<th>motionChallenge</th>
<th>gridChallenge</th>
<th>switchChallenge</th>
<th>digitChallenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement</td>
<td>-2.188; p &lt; .05</td>
<td>-.279; p = .78</td>
<td>-.866; p = .39</td>
<td>-.351; p = .73</td>
<td></td>
</tr>
<tr>
<td>Opportunity to Perform</td>
<td>-.693; p = .49</td>
<td>1.638; p = .10</td>
<td>.973; p = .33</td>
<td>1.038; p = .30</td>
<td></td>
</tr>
<tr>
<td>Fairness</td>
<td>-1.213; p = .23</td>
<td>.122; p = .90</td>
<td>-.326; p = .74</td>
<td>-.061; p = .95</td>
<td></td>
</tr>
<tr>
<td>Face Validity</td>
<td>-.254; p = .80</td>
<td>-.307; p = .76</td>
<td>.073; p = .94</td>
<td>.679; p = .50</td>
<td></td>
</tr>
<tr>
<td>Effort</td>
<td>-2.133; p &lt; .05</td>
<td>-.610; p = .54</td>
<td>-.227; p = .82</td>
<td>-1.130; p = .26</td>
<td></td>
</tr>
<tr>
<td>Ability to Improve</td>
<td>-2.622; p &lt; .01</td>
<td>-1.249; p = .21</td>
<td>-2.111; p &lt; .05</td>
<td>-.394; p = .69</td>
<td></td>
</tr>
</tbody>
</table>

**Administered to N = 374 participants recruited from Amazon's Mechanical Turk**

- **Age:**
  - Under 40
  - 40 or older

- **Gender:**
  - Male
  - Female

- **Gender Distribution:**
  - Male: 50%
  - Female: 50%

- **Ethnicity:**
  - American Indian/Alaskan Native
  - Asian
  - Black or African American
  - Hispanic
  - Two or More Races
  - White
  - 0% 50% 100%

**T-values and Significance Levels:**
- *p < .05*
- *p < .01*
- *p = .05*
- *p = .01*
- *p = .001*
Logins

Try it yourself!

- Use the link and enter the Login ID.
- Feel free to enter a pseudonym for name and e-mail address when asked for it.

smartPredict

www.mapTQ.com
Login ID: productdev_smartpredict
Thank you very much.
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