
John D. Mayer  
University of New Hampshire – Durham

A.T. Panter  
University of North Carolina – Chapel Hill

David R. Caruso  
Yale University

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Introduction

Definition of Personal Intelligence
Personal intelligence can be defined as the capacity to reason about personality and to use personality and personal information to enhance one’s thoughts, plans, and life experience (Mayer, 2008, p. 209). It is a person-centered intelligence in the sense of operating on information that relates to personality, be it in oneself or in others (Mayer, 2018).

The gold standard for measuring intelligences is through the use of ability scales. The Test of Personal Intelligence (TOPI), multiple-choice ability measure that asks questions regarding people’s understanding of personality, has been developed over a series of versions (1 through 5, at present) (Mayer, Caruso, & Panter, 2019; Mayer, Panter, & Caruso, 2012, 2017, 2019).

Rationale for the TOPI Brief-20
To advance research in personal intelligence, the authors have made available short forms of the TOPI. Most widely used is the TOPI MINI-12, which is composed of two sets of 6 items on the TOPI 1.2 (see Mayer, Panter, et al., 2019).

One issue in particular with the TOPI MINI-12, however, has encouraged us to develop a second short form. This is the test’s limited measurement at its upper ranges in the form of many “bunched up” scores among test takers who often get 10, 11, or 12—83%, 92% or 100% correct of the items on the test, i.e., it’s negative skew. This crowding in the upper range was compounded by the overall modest reliability of the TOPI MINI, making it difficult to distinguish at all among high scorers.

As we have noted elsewhere, negative skew may reflect the reality of ability measures of people-centered intelligences: Most people may be fairly good at understanding themselves and others and, moreover, there may be limits to how clever one can be in this domain. That said, it is equally the case that measures can be improved in their skew relative to the MINI-12 (Mayer, Caruso, et al., 2019).

For that reason, we sought a slightly longer short form that would help improve the issue, even modestly, with the understanding that more significant improvements in measurement would require a longer scale such as the TOPI 5E (Mayer, Caruso, et al., 2019).

Administration and Scoring of the TOPI Brief-20
How the TOPI is Scored
The TOPI and its derivative scales (e.g., the TOPI Brief-20, described below) use a veridical scoring method. Test items were developed by consulting the literature on personality psychology and then by selecting a single, correct answer based on that literature. For example, an item asking about the covariation of two personality traits was based upon research examining the correlations among the Big Five personality traits.

Administration of the test
The TOPI can be administered either online or through a paper scale. It is typically used for (and designed for) research use only.
**Instructions**

No special instructions are used for the TOPI Brief-18, but two examples of possible instructions include the following:

**Example A. Instructions.** Please select the correct alternative for each of the following questions.

**Example B. Instructions.** The following items are designed to measure your understanding of personality. There is one correct answer for each item. Please read each question carefully and select the most correct alternative.

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**Development of the TOPI Brief-20**

**Selection of Test Items**

To develop the Brief-20, we drew on 31 items that originally appeared on the TOPI 4 but had since been dropped in the process of creating the TOPI 5G. Of those, 26 items had been dropped in an attempt to develop a TOPI version that assessed two partially-independent factor-based scales of personal intelligence (Mayer et al., 2017): The 26 had loaded near-equally on both factors. A further set of six dropped items were from a task that appeared duplicative of other tasks—and one item overlapped both sets.

It later turned out that the two-factor structure appeared to have emerged owing to contextual factors in the TOPI 4 itself rather than due to two truly distinct mental abilities (Mayer, Caruso, et al., 2019). Given that evolved viewpoint, we regarded it as reasonable to reintroduce the 26 item set.

After collecting the 31 items, we created a short scale and checked the coefficient alpha in Archive A-odd, our “go-to” test development sample (N = 5144): Eight items were dropped in a first round: Seven for loadings on the test first factor $r < .15$, and one further item because the wording appeared potentially sex-biased. This left 23 items.

**Narrowing from 23 to 20 Items**

The winnowing process from 23 to 20 items was fairly straightforward and relied for the most part on dropping several items owing to their difficulty level (most people got them correct), so as to reduce—so far as possible—any expected skew of the test.

**Model Fit—Confirmatory Factor Analysis**

A one-factor confirmatory factor model in Mplus (WLSMV extraction) fit the 20 items, treated as categorical data, with an RMSEA = .02, and CFI and TLI of .966 and .962 respectively (Chi-square 512.64, df = 170). An IRT model fit the data with an RMSEA of .02 and indicated all the items exhibited a parameters > .35 and b parameters indicating (as is the case with TOPI 4), far better ability-discrimination at the lower reaches of the scale than upper reaches (see Mayer et al., 2019 for details).

**Model Fit-Item Response Theory**

The test also fit an IRT single-factor model well, with all items exhibiting good slopes but with the exception that—as indicated by the b parameters in IRTPRO, all items were too easy. Although this is unfortunate, it reflects the reality of the skew of the full-length TOPI 4
from which the items were drawn, and, in fact, reflects similar skew in many other people-centered tests, both from this and other labs (see Mayer, Caruso, et al., 2019, for a discussion of these issues). That said, the skew does not appear appreciably worse than that of the TOPI-MINI, and the differentiation of the two scales at the upper range is better for the Brief-20.

**Descriptive Statistics, Reliability, and Validity of the TOPI Brief 20**

Having created the Brief-20, we next compared it with the TOPI MINI-12 to see if it outperformed the earlier-developed, shorter scale. We already possessed a number of archival data sets that had used the TOPI 4 and that, as a consequence, included all the items of both the TOPI-MINI-12 and Brief-20 (none of which overlapped). We therefore went through that archival data so as to understand more about the two tests including (a) their means and standard deviations across samples, (b) their reliabilities, (c) skew, and (d) correlations with the TOPI 4.

The results for the MINI-12 and Brief 20 can be seen in Table 1.

<table>
<thead>
<tr>
<th>Data Archive</th>
<th>N</th>
<th>M</th>
<th>S</th>
<th>Coef. Alpha</th>
<th>Skew</th>
<th>r with TOPI 4</th>
<th>N</th>
<th>M</th>
<th>S</th>
<th>Coef. Alpha</th>
<th>Skew</th>
<th>r with TOPI 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-Odd</td>
<td>5144</td>
<td>.841</td>
<td>.166</td>
<td>.662</td>
<td>-1.761</td>
<td>.774</td>
<td>5144</td>
<td>.847</td>
<td>.141</td>
<td>.725</td>
<td>-1.873</td>
<td>.861</td>
</tr>
<tr>
<td>A-Even</td>
<td>5174</td>
<td>.838</td>
<td>.165</td>
<td>.656</td>
<td>-1.727</td>
<td>.765</td>
<td>5174</td>
<td>.844</td>
<td>.142</td>
<td>.723</td>
<td>-1.773</td>
<td>.861</td>
</tr>
</tbody>
</table>

The correlation of the MINI-12 with the Brief-20 in Odd Archive sample (A) was $r = .678$; that for the Even Archive sample was $r = .668$.

**Comparative Distributions of the Brief-20 to the MINI-12**

The incremental improvement of the Brief-20 relative to the MINI-12 is evident when examining the distribution of scores across a given sample. Figures 1 and 2 provide the distribution of the scores for the two measures on the odd (scale development) and even (cross-check) sample of 10,318 mostly-college age ROTC and West Point cadets. Visually, the distribution indicates two key improvements:

- About 32% of the sample fall in the top two scores of the Brief-20, compared with 51% for the TOPI-MINI
- Commensurate with the above, the median of the Brief-20 is located at 18 of 20 points (third score from the top), compared with the TOPI-MINI median at 11 of 12 points (second score from the top)
The top two scores (11 or 12 correct) were attained by 52.8% of the MINI-12 respondents. The median participant (52.8th percentile) on the TOPI-12 achieved an 11 of 12 points (second from the top).

The top two scores (19 or 20 correct) were attained by 32.3% of the Brief-20 respondents. The median participant’s score (52.5th percentile) on the Brief-12 attained an 18 of 20 points (third from the top).

The top two scores (11 or 12 correct) were attained by 51.2% of the MINI-12 respondents. The median participant (51.2nd percentile) on the TOPI-12 achieved an 11 of 12 points (second from the top).

The top two scores (19 or 20 correct) were attained by 31.6% of the Brief-20 respondents. The median participant’s score (51.6th percentile) on the Brief-12 attained an 18 of 20 points (third from the top).
Overall Comparison of the TOPI Brief-20 Relative to the TOPI MINI-12

The advantages of the Brief-20 to the MINI-12 are incremental, but the increments are in key areas:

- The reliability of the Brief-20 is higher.
- The upper half of the distribution is divided approximately into three score levels in the Brief 20 (18, 19 and 20), compared to two score levels on the MINI-12 (11 and 12).
- The items are non-duplicative of the TOPI 5G and 5E

Two areas in which the Brief-20 AND MINI-12 are similar are that:

- The Brief-20 maintains about the same challenge level for participants.
- The Brief-20 maintains about the same negative skew as the MINI-12.

One area in which the Brief-20 is less good than the MINI-12 is that it is 20 items rather than 12.

(Manual continues on next page.)
Agreement Regarding Access to and Use of the TOPI Brief-20

The TOPI Brief-20 is Available Under the Following Terms

The TOPI Brief-20 is a short ability-based test, with correct and incorrect answers, based on the longer Test of Personal Intelligence.

As the test’s authors and developers, we have a responsibility to maintain the test’s measurement validity for assessing personal intelligence. We also appreciate the advantages of open source materials in promoting research in the field of psychology and related disciplines.

Balancing those goals, we are making the TOPI Brief-20 available to qualified researchers, in psychology and related disciplines, at no cost, for the purposes of collecting and analyzing data and for reporting findings related to personal intelligence and other areas of study.

The authors give their permission for its general research use subject to a researcher’s agreement with our principles of stewardship (see below). Our policy extends to qualified, competent researchers (e.g., psychologists, medical researchers, nursing and social work professionals, and students under the supervision of qualified faculty) whose work falls more generally under the supervision of an Institutional Review Board to ensure the ethical treatment of human participants.

Stewardship Agreement

Please help us to ensure that the researcher community can continue its use of a valid instrument by safeguarding the items and scoring key. Specifics in safeguarding a test’s security include but are not limited to:

- Keeping the test content secured except as needed during test administration
- Keeping the test answer key secured and available only to those who must see it, and
- Refraining from redistributing the test or the extended form of the test manual (which includes the test) beyond the confines of your own laboratory and laboratory assistants. (Please direct others who desire the test to our lab).

*Where possible, we would appreciate if you shared with us de-identified data from the TOPI Brief-20 from any larger data sets (e.g., N > 100) or data files of any size from special populations that you might collect as part of your research.
Translation Policy for the TOPI Brief-20

<table>
<thead>
<tr>
<th>Standard Translation Agreement for the TOPI Brief-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>In using the TOPI Brief-20 you agree that any translation of the test will be clearly labeled listing the author team (John D. Mayer, David R. Caruso, and A. T. Panter) and with the individuals who carried out the translation next, with the indication that they are the translators. For example, the credit might read, as in this fictional translation:</td>
</tr>
<tr>
<td>Test of Personal Intelligence, Brief-20 (TOPI Brief-20), Italian Translation</td>
</tr>
<tr>
<td>John D. Mayer, David R. Caruso &amp; A. T. Panter</td>
</tr>
<tr>
<td>Luca Cancio &amp; Marco Bianchi (Trans).</td>
</tr>
</tbody>
</table>

In turn, we agree that if we use or distribute the translation, we will note both our own authorship and credit any individuals who carried out the translation(s).
References


In documents with the Appendix containing the TOPI Brief-20, the title should be changed to Test of Personal Intelligence Brief-20 (TOPI Brief-20) (1st ed): Brief Manual and Test.

   https://doi.org/10.2190/IC.27.3.b


   https://doi.org/doi.org/10.3390/jintelligence7010004

   https://doi.org/10.1080/00223891.2011.646108

   https://doi.org/10.1016/j.paid.2017.02.008

   https://scholars.unh.edu/personality_lab/20/

[END of Standard Manual]