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Test of Personal Intelligence Mini-12 (TOPI MINI-12): Brief Manual and Test (9th Edition)

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Test of Personal Intelligence Mini-12 (TOPI MINI-12): Brief Manual (9th Edition)¹

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*A short index of personal intelligence originally drawn from
the items of the:*



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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 “hot” intelligence in the sense of operating on information that is personally relevant and of importance to the individual.

The gold standard for measuring intelligences is through the use of ability scales. The Test of Personal Intelligence (TOPI), a 134-item ability measure, has been developed over three versions (1.0, 1.1., and 1.2) to test the existence of personal intelligence and to provide for its measurement (Mayer, Panter & Caruso, 2012).

Rationale for the TOPI MINI-12

In the summer of 2013, we continued to examine the full TOPI 1.2 in preparation for a revision. To support research in the area while we worked on the longer scale, we sought to create a short scale for quick research use in the laboratory. The TOPI MINI-12 is that scale, and includes 12 items from the TOPI 1.2 Rf (a reformatted version of the TOPI 1.2 (Mayer, Panter, & Caruso, 2012, Study 3).

Content of the TOPI MINI-12

The TOPI MINI-12 is composed of two sets of 6 items on the TOPI 1.2. The first six are from the original TOPI 1.2 Rf Forming Models section; the second six are from the Guiding Choices section. More specifically, the 12 items include the first six items of Forming Models, Cluster D (FMD) and the first five and seventh items of the original Guiding Choices, Cluster C task (GCC).

Administration and Scoring of the TOPI MINI-12

How the TOPI is Scored

The TOPI and its derivative scales (e.g., the TOPI MINI-12, 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 MINI-12, but two examples of possible instructions include the following:

Example A. Instructions. Please answer the following questions to the best of your ability. For each question, please select the best alternative.

Example B. Instructions. The following items are designed to measure your problem-solving abilities. There is one correct answer for each item. Please read each question carefully and select the alternative you believe is best.

Studies Reporting the TOPI MINI-12

In editions of the manual since the 3rd, we have removed small, still-unreported samples and focused on several larger samples and publicly-available reports in their place.

Table 1. Means, Standard Deviations and Reliabilities of the TOPI MINI-12 Across Samples

Source	Sample	N	Mean (SD) ^d	Reliability Estimates	
				<i>Split Half</i>	<i>Alpha</i>
Mowlaie et al. (2016)	Iranian students at a medical university ^a	370	5.03 (2.79)	--	.86
Phillips (2016)	General population	158	8.87 (2.95)	--	.81
Phillips (2016)	Employed individuals with disabilities	1,631	8.00 (3.24)	--	.80
Mayer et. al, (2017a, Study 1) Exploratory sample ^b	Mostly military sample	5144	10.08 ^c (1.99)	--	.66
Mayer et al. (2017b, Study 1)	Employed individuals in Mturk survey	394	10.44 (1.80)	.70	.65

^a Persian translation
^b Reanalysis of Study 1 exploratory analyses (odd-numbered participants) for this manual
^c In consultation with the authors, US Army computer programmers slightly adjusted the wording of 4 of the 12 TOPI items for the military sample, so as to fit those items within the constraints of their survey-administration software. This resulted in a slightly non-standard administration of 33% of the test, and may have slightly complicated what participants read, compared to other administrations.
^d We also calculated the skew of the TOPI MINI-12 in the Exploratory sample (N=5144), at -.1.761, which was within the range of +/- 2.00 generally regarded as appropriate for common statistical analyses that assume normality.

Reliability and its Constraints on Validity

The reported reliability of the TOPI MINI-12 ranges from $r = .66$ to $.86$. Lower values seem to emerge from more highly screened samples, for which there was the acknowledged potential that at least some genuinely low-scoring individuals were removed, such as the Mayer, Panter & Caruso, 2017a Study 1 data, which was heavily screened preliminary to item analyses of the longer TOPI 1.4. One could, therefore, view those values as reflecting a restricted range of performance that may have inappropriately underestimated the test's reliability.

Alternatively, one might argue that the more highly-screened samples reflect those who were (most likely to be) fully engaged and paying attention throughout, and therefore reflect more trustworthy findings. There is no clear answer to which of these two alternatives is correct.

In classical true-score theory, test reliability is primarily a function of item inter-correlations and of test length.

The Issue of Split-Half Estimates v. Coefficient Alpha.

Two of us, along with Peter Salovey, have written about the superiority of split-half reliability estimates compared to alpha coefficients for short tests with heterogeneous items (Mayer, Caruso & Salovey, 2012). Coefficient alpha's assumptions are violated when items are heterogeneous in form. The TOPI MINI 12 draws from ability items of at least two different types (i.e., from different TOPI item clusters), rendering them heterogeneous. To the best of our knowledge, the superiority of split-half is not controversial in this context, but is often overlooked. Because some people are more familiar with alpha coefficient estimates, we chiefly report those here. Our position, however, is that split halves are better indicators of reliability, especially for a brief test of this sort. Another option is coefficient Omega (Dunn, Baguley & Brunsten, 2014). Note in Table 1 also that the split-half estimated reliability runs a bit higher than the coefficient alpha.

Evidence for Validity of the TOPI MINI-12

General Consideration as to Evidence for the Validity of the TOPI MINI-12

Insofar as its items are drawn from the longer TOPI tests, evidence for the validity of the TOPI MINI-12 from sources such as test content, cognitive response processes and overall test structure (because the MINI-12 is unifactorial) are similar to those of the overall test. To the extent that the MINI-12 correlates reasonably with the overall TOPI tests, it should have evidence for its validity based on the same correlations with criteria found with the overall test. Note that the TOPI MINI-12 is typically somewhat lower in its reliability than the overall TOPI test and generally lower or equivalent to either of the individual the TOPI 1.4Rf subscales as well.

Expectable Shrinkage in Criterion Correlations Based on a Short-Form Test

The maximum validity coefficient of a test is constrained by its reliability coefficient. Table 3 indicates the type of constraints to be expected given tests of varying reliability.

Table 3. Limits on Validity-Related Correlations		
Estimated Reliability	Theoretical Maximum of Validity Coefficient	% reduction in coefficient from 1.00
.90	.95	5%
.80	.89	11%
.70	.84	16%
.60	.77	23%
.50	.71	29%
.40	.63	37%

Evidence for Validity based on Correlations with Criteria

The relationship of the TOPI MINI-12 with the TOPI 1.2, 1.4 and 1.4Rf

For the TOPI MINI-12 to be a valid short scale, it ought to correlate fairly highly with the overall, full-length TOPI tests.

In a reanalysis for this manual, conducted on earlier-collected data (Mayer, Panter, & Caruso, 2012, Study 3), the correlation between the MINI-12 and the full TOPI 1.2 was $r(379) = .78$.

Table 4 indicates the correlations between the TOPI MINI-12 and the TOPI 1.4Rf

Table 4: Correlations Between the TOPI MINI-12 and the TOPI 1.4Rf scoring from Mayer et al. (2017a), Reanalysis of Study 1, Exploratory Subsample, $N = 5144$				
	TOPI 1.4 Scores			TOPI MINI-12
	Consistency	Dynamic	Overall	
TOPI 1.4 Scores				
Consistency-Congruence	1	.65	.88	.65
Dynamic-Analytical	.65	1	.93	.76
Overall	.88	.93	1	.78
TOPI MINI-12	.65	.76	.78	1

Two Analyses Relating the TOPI MINI-12 to the Big Five traits of socio-emotional style and self-control

Table 5 shows the relationship between the TOPI MINI-12 and the Big Five, including some indication of how its relations with certain variables can exhibit both some consistency and some variation across samples.

Table 5: Correlations between the TOPI MINI-12, the Big Five, and other Criterion Scale		
	Mayer, Panter & Caruso, 2012	Mayer, Panter & Caruso, 2013
Sample Size (N)	384	354
Big Five		
Extraversion	-.01	.06
Agreeableness	.14*	.13*
Conscientiousness	.16*	.10
Neuroticism	-.04	.05
Openness	.10*	.10

Interpretation and Appropriate Use of Test Scores

General Interpretation of Score Ranges

Test scores fall along a continuum that describe low performance to high performance. We anticipate that, for the most part, researchers will correlate the scores with various criteria and so no interpretive intervals will be needed. If intervals are needed, researchers are advised to consult Table 3, which contains means and standard deviations for the test scores for English-speaking college-level students. Based on that table, one possible division would be into:

- Top scorers (11-12)
- Average scorers or above (7-10)
- Average scorers or below (0-6)

Please remember that local norms may vary and, if so, those categories may require adjustment.

General Unsuitability of Feedback for Individual Test-Takers

The TOPI MINI-12 is useful for understanding the relationships between personal intelligence and other variables in groups of people. The MINI-12 is, however, not designed to provide accurate information to test-takers about their individual performance; it is too brief to provide reliable information at the individual level.

We therefore discourage providing test-takers with feedback.

Some researchers may, however, regard the provision of test feedback at an individual level as contributing to a “fair exchange” for participants’ research time. If so, and if the researcher is competent to provide such individual feedback, and if the researcher has the approval to do so from their local IRB, then researchers may decide to provide such feedback. Under such conditions, we suggest that researchers engage in the following process to do so:

1. Making clear that people have many different mental abilities and other qualities of personality and that personal intelligence is a new area that is not yet fully understood.
2. Explain that the TOPI MINI-12, because it is brief, does not supply a reliable measure of individuals for the most part, but that to satisfy a test-taker’s curiosity you can say that (see 3)
3. Based on their results they have scored
 - a. Average or slightly less (everyone below the 50% percentile)
 - b. Average or slightly above (everyone not in group (a) or (c) or
 - c. Within the range of the top scorers (scores of 11 or 12).
4. Listen attentively and address any concerns that might be raised by the test-taker and tactfully correct any misunderstandings in any cases where such corrections would be helpful and constructive.

Stewardship and Obtaining the TOPI MINI-12

Obtaining the TOPI MINI-12

If, after looking at this manual, you would like to use the TOPI MINI-12, please review the usage agreement below. If you are a qualified researcher and would like a copy of the test, please let us know and we will send you the extended version of the manual, which also includes the TOPI MINI-12 test itself and associated materials helpful for its use.

[Agreement appears on the next page]

Agreement Regarding Access to and Use of the TOPI MINI-12*

The TOPI MINI-12 is Available Under the Following Terms

The TOPI MINI-12 is a brief ability-based test, with correct and incorrect answers.

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 MINI-12 an open source instrument, available to qualified researchers only, in psychology and related disciplines, 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 "open source" 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 MINI-12 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.

References

Please note: the present document can be cited as: Mayer, J. D., Panter, A. T., & Caruso, D. R. (2018). *Test of Personal Intelligence MINI-12 (TOPI MINI-12) (9th ed): Brief Manual*. Unpublished manuscript. University of New Hampshire. [or, if downloaded online:] Downloaded [date downloaded] from: <web address here>

In documents with the Appendix containing the TOPI MINI-12, the title should be changed to *Test of Personal Intelligence MINI-12 (TOPI MINI-12) (9th ed): Brief Manual and Test*.

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[END of Standard Manual]