



Cognitive Assessment Battery (CAB)[®]

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Table of contents

Why use the Cognitive Assessment Battery (CAB)® ?	3
Who can use the Cognitive Assessment Battery (CAB)® ?	4
How to use the Cognitive Assessment Battery (CAB)® ?	4
Block 1 • The Well-Being Questionnaire	5
Block 2 • The Neuropsychological Tests	6
Block 3 • The Report	9
What skills does the Cognitive Assessment Battery (CAB)® measure?	11
How is the Cognitive Assessment Battery (CAB)® useful for conditions?	13
Science and Validation	14
Reliability	14
Validity	16
Construct validity	16
Convergent validity	17
Summary	19
Validation Studies	20
References	23
Appendix	32

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Why use the Cognitive Assessment Battery (CAB)®?

CogniFit **Cognitive Assessment Battery (CAB)®** is a brief but **comprehensive online neuropsychological battery** of 17 non-invasive tests that provide a **broad, objective and precise assessment** of 22 well documented cognitive skills.

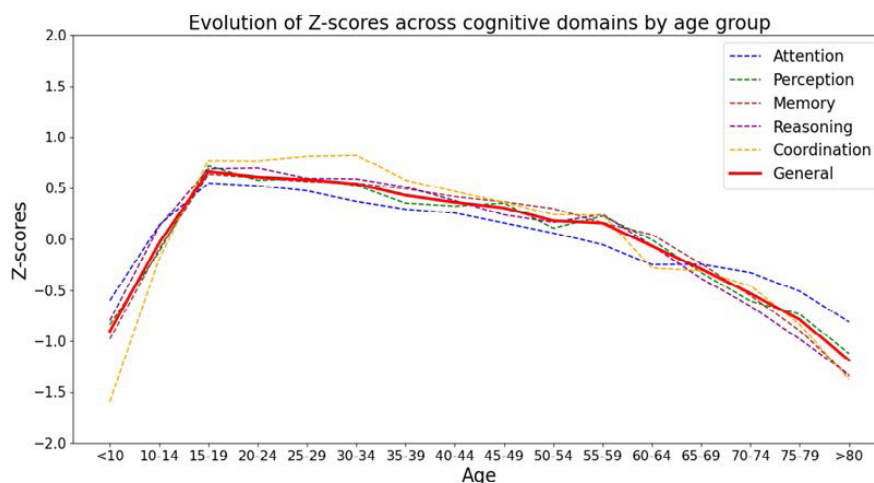
This battery has been used in **different types of individuals** in a variety of peer-reviewed scientific articles, and embodies state-of-the-art cognitive science, psychometrics and technology. Its 24/7 **online availability** and locations as well as increasing cost-efficiency, make it the ideal tool to use in research and practice. Backed by highly accurate psychometrics, intelligent data science and advanced automation systems; CogniFit makes cognitive measurement and delivery of individual and group data **effortless, instantaneous and accessible**.

The Cognitive Assessment Battery (CAB)® **quantitative** results report a **global score** for gauging overall cognitive function, **individual scores** on 22 cognitive skills, and a **well-being score**. Well-being and overall cognitive performance **qualitative** indicators are also provided.

Researchers will also be able to **download the raw data** for the variables that generate these scores. This allows to transform the values into **Z scores** for more detailed analysis.

The Cognitive Assessment Battery (CAB)® assessment also has a **Validity Index** of its measurements. During the assessment tasks, if the users respond mindlessly or are absent, the system will detect this and ask the users to pay more attention to the activities. If they correct their behavior, the variables measured during the task will be considered valid. If they do not, the variables measured will be considered invalid, and this will be reflected in the corresponding section of the report.

The Cognitive Assessment Battery (CAB)® accurately captures human cognitive development across lifespan. The overall score of its large normative sample depicts the cognitive growth during **childhood**, the peak of the cognitive abilities in young **adulthood** and the progressive cognitive decline associated with **ageing** (see the figure below).



Who can use the Cognitive Assessment Battery (CAB)® ?

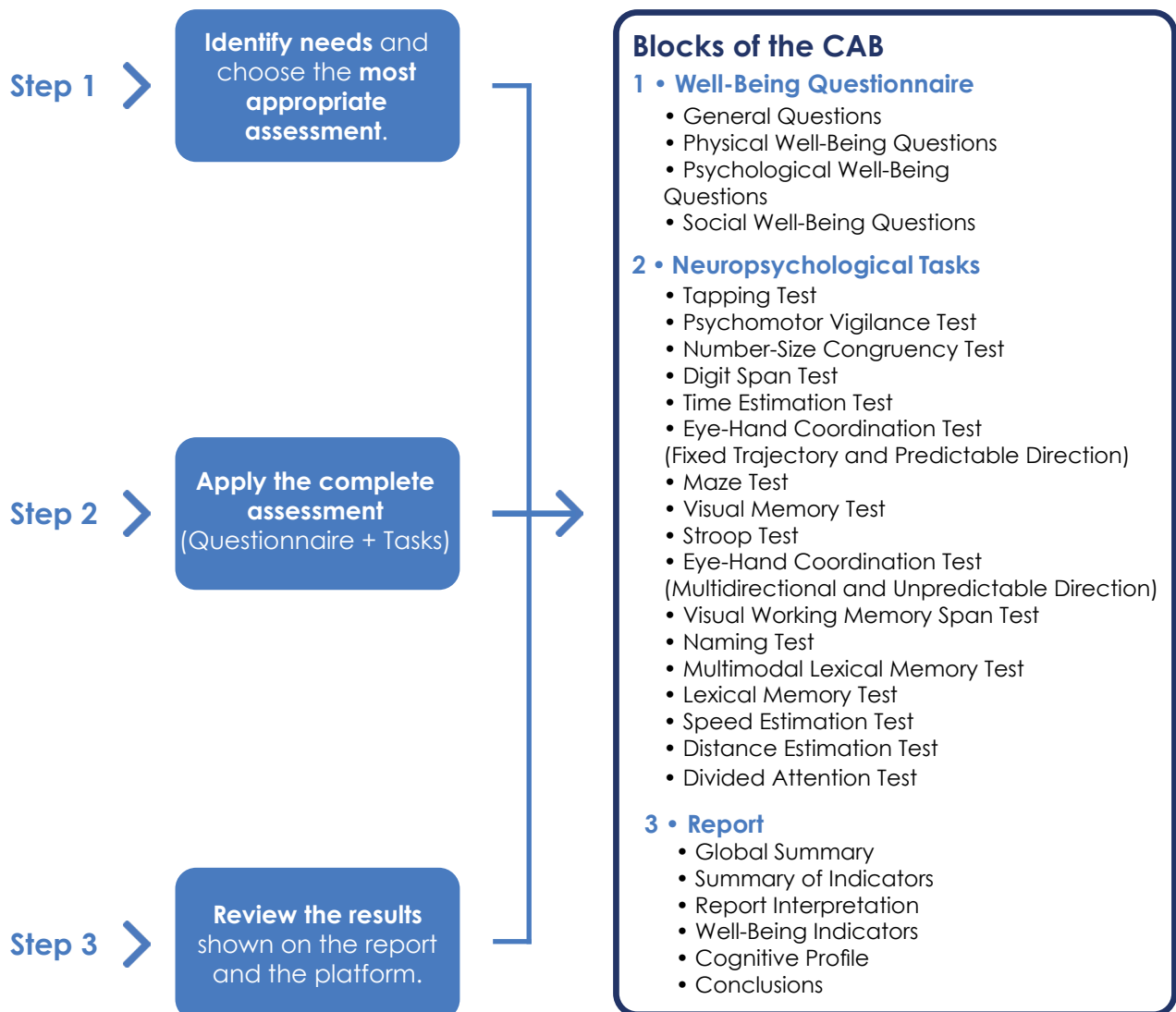
The assessment is designed for people **over the age of 7**. It has a variable length of **30 to 40 minutes**. It can be applied on **computers, tablets, and smartphones**. CogniFit's highly automated platform facilitates both **individual** and **large-scale data collection** and allows for the **simultaneous testing** of large numbers of people.

The easy-to-use Cognitive Assessment Battery (CAB)® permits its application in both **professional** (clinician, school, research, others) and **personal** (individual or family) settings.

How to use the Cognitive Assessment Battery (CAB)® ?

The Cognitive Assessment Battery (CAB)® consists of a selection of **44 questions, 17 neuropsychological tasks and 22 cognitive abilities**.

The **process** for applying the Cognitive Assessment Battery (CAB)® involves the following steps:



Block 1 • The Well-Being Questionnaire

In the well-being questionnaire the test-taker is queried on **physical**, **psychological** and **social** well-being domains. In addition, there are also a number of more **general questions**, such as manual dominance, that are not included in the scoring of these three aspects.

To read **all the questions** that may appear in the Cognitive Assessment Battery (CAB)® questionnaire, see **Appendix**. There, the **category** to which the question belongs, the **text** of the question, the **answers** from which the test-taker can choose and the **age ranges** in which each question is shown are indicated.

Individual users and families are presented with the questionnaire at the beginning of the assessment, before starting the cognitive tasks. However, professional users can choose between two ways to present the questionnaire to patients: **self-administered and non-self-administered**.

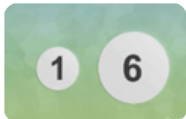
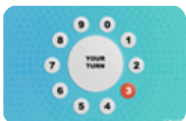
Quantitative and qualitative scores are obtained for each well-being domain by adding one point for each question to which the user has answered affirmatively.

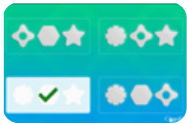
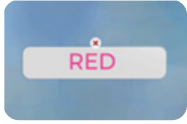
	Low Well-Being			Medium Well-Being			High Well-Being		
	< 25 years of age	25-45 years of age	> 45 years of age	< 25 years of age	25-45 years of age	> 45 years of age	< 25 years of age	25-45 years of age	> 45 years of age
Physical	0 - 2			3			4 - 6		
Psychological	0 - 6	0 - 5	0 - 5	7 - 10	6 - 8	6 - 8	11 - 15	9 - 11	9 - 15
Social	0 - 1			2 - 3			4 - 5		
General	General questions are the same for all test-takers, contain information for the professional and lack associated scoring.								

The **results of the questionnaire do not affect the scores of the tasks** in any way, and the results of the tasks do not affect the scores of the questionnaire.

Block 2 • The Neuropsychological Tasks

The Cognitive Assessment Battery (CAB)® contains **17 tasks**. These tasks **measure a series of variables** in order to obtain a score for a series of cognitive skills.

Task Name	Preview	Main Skill Measured	Task Description	Traditional Equivalent
Tapping Test		Reaction Time	The test-taker is required to keep on clicking for 10 seconds and as rapidly as possible with the mouse, or finger if using a touchscreen device, in a defined area on the screen. Data are collected as the number of clicks during the allocated time, number of clicks inside the defined area and number of clicks outside it.	Fingertip tapping – NEPSY
Psychomotor Vigilance		Focus Attention	The test-taker is required to rapidly press on circles which appear on the screen and to ignore hexagons should they also appear. Embedded in the task are 16 circles-only items and 8 circles-and-hexagons items. For each item data are collected on response time, response accuracy and cursor distance from target center.	Go/No Go Task, Continuous Performance Test, Psychomotor Vigilance Task
Number-Size Congruency Test		Inhibition	The test-taker is required to press on the larger of two circles, regardless of the number inscribed in each circle, while ignoring the text that could appear on the top-middle part of the screen. They are then required to press on the higher number regardless of the size of the circle in which the number is inscribed.	Stroop Test
Digit Span Test		Phonological Short-Term Memory	The test-taker is required to remember and reproduce increasingly longer number sequences, which appear, each in its turn, on the screen. The task will begin with a two-number sequence.	Digit span - WAIS
Time Estimation Test		Estimation	The test-taker is asked to interrupt an ongoing auditory stimulus so as to reproduce the exact length of time of the previously presented one. In the first part of the task an animated drawing accompanies the stimulus. During the second part of the task, the drawing remains still.	Time-Estimation Task
Eye-Hand Coordination Test (Fixed Trajectory and Predictable Direction)		Hand-eye Coordination	In this task the test-taker is required to carefully and precisely track a ball which moves along a path. The distance in pixels between the center of the ball and the cursor moved by the user is considered to calculate the accuracy score.	Vienna Test System (VST)

Task Name	Preview	Main Skill Measured	Task Description	Traditional Equivalent
Maze Test		Planning	The test-taker is presented with several mazes with dead-ends and required to successfully go through it, from start to end, in the smallest possible number of steps, and as fast as possible.	Porteus Maze Test Route finding – NEPSY
Visual Memory Test		Recognition	In this task, a trio-sequence of objects is presented in the center of the screen. The test-taker is required to memorize this stimuli in a first screen, and to recognize it from among four trio-sequences in a second screen. The number of correct answers is considered to calculate an accuracy percentage.	Symbol search – WAIS Wisconsin Card Sorting Test (WCST) Raven's Standard Progressive Matrices
Stroop Test		Inhibition	The test-taker is asked to press on the spacebar (go action) only if the color names on the screen are printed in the matching color and to refrain from pressing (no-go) if the color of the letters does not match the printed color name.	Stroop Test
Eye-Hand Coordination Test (Multidirectional and Unpredictable Direction)		Hand-eye Coordination	The test-taker is required to track, with the mouse (or on-screen digital joystick, if using a mobile device), a ball moving in an undetermined itinerary.	Trail Making Test Vienna Test System (VST)
Visual Working Memory Span Test		Visual Short-Term Memory	In the first part of the task, some circles, within a fixed array of circles, light up. The test-taker is required to memorize which circles, within the array, have lit up and then try to reproduce the sequence in the right order. In the second part of the task, a delay of 4 secs is added between the first screen and the playback screen, in order to increase the time the user must retain the information.	Corsi block-tapping Test
Naming Test		Naming	The test-taker is required to click on the first letter, among four of them, that spells the name of the object depicted on the screen. For example, for the picture of an apple, the test-taker should click on the letter "A" but not on the three incorrect responses (C, P, M) also present on the screen.	Boston Naming Test Vocabulary – WAIS
Multimodal Lexical Memory Test		Contextual Memory	For each object shown, the test-taker must choose from three possibilities: 1) the item is presented for the first time in the task or 2) the last time it appeared the item was spoken or 3) the last time it appeared the item was presented as a picture.	Boston Naming Test Vocabulary – WAIS

Task Name	Preview	Main Skill Measured	Task Description	Traditional Equivalent
Lexical Memory Test		Recognition	A series of objects are shown. In a new series of objects, the test-taker must then recognize only those objects that were previously displayed. This new series could be presented as images or as spoken words.	Boston Naming Test Vocabulary – WAIS Test of Variables of Attention (TOVA) Rey Auditory Verbal Learning test
Speed Estimation Test		Estimation	In the first part, the test-taker is required to determine which of two balls moves faster. In the second part, another ball is added. In the third part, a fourth ball is added and it should be indicated which ball moves twice as fast as a designated ball (the red one). In the fourth part, while watching four balls moving in four separate itineraries, the test-taker must determine as quickly as possible which ball will arrive at a given point first.	Biber Cognitive Estimation Test
Distance Estimation Test		Estimation	The first part consists of indicating which of the objects on the screen is farther away from the user. The second part consists of indicating which of the objects is farther away from a pink ball, also located on the screen. The third part consists of indicating which two objects are at the same distance from the pink ball. The fourth part consists of indicating which object is not at the same distance from the pink ball. Finally, the fifth part is to indicate which of the images has the objects spatially arranged differently from the model.	Biber Cognitive Estimation Test
Divided Attention Test		Divided Attention	The test-taker is required to accurately follow a ball moving and turning in all directions on the screen while, at the same time, performing a variant of the Stroop test.	Stroop Test Vienna Test System (VST) Test of Variables of Attention (TOVA)

Block 3 • The Report

When completing a Cognitive Assessment Battery (CAB)[®], the user will be able to **download a report** with the (1) well-being index and (2) cognitive profile. The first section is divided into physical, psychological and social sections. The second section is also broken down by areas and individual cognitive abilities.



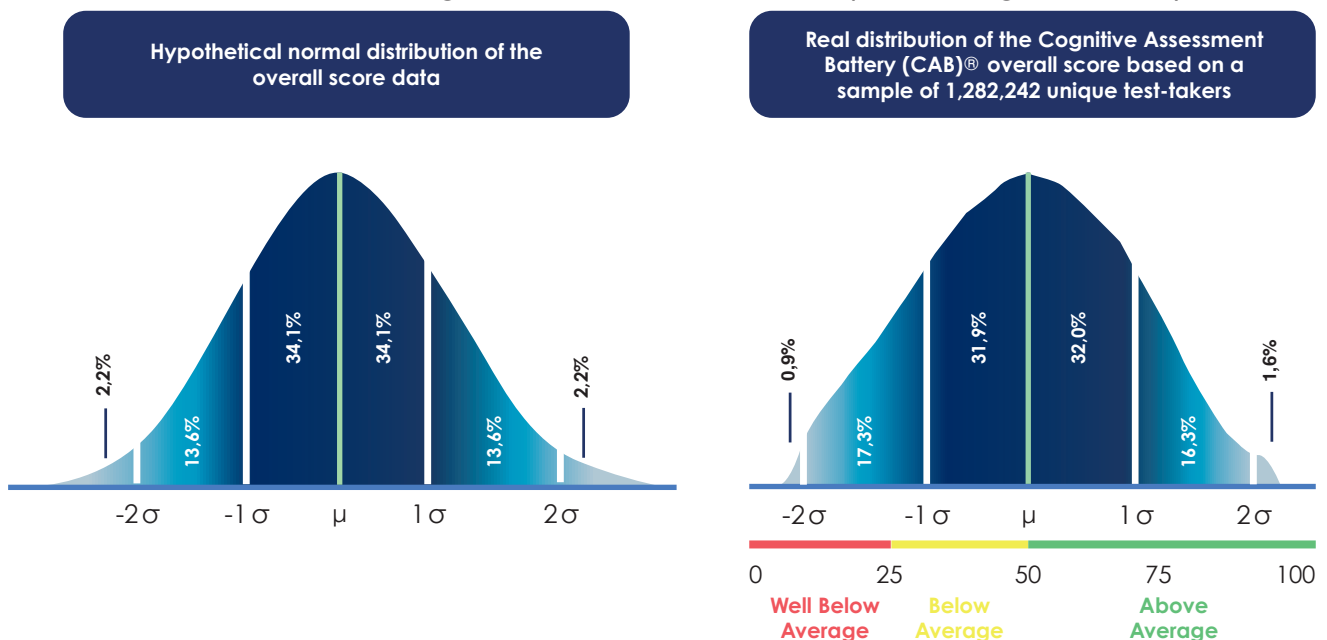
As shown in the images are **four page examples from the Cognitive Assessment Battery (CAB)[®] report**, showing the Global Summary, the Summary of Indicators, the preview of the Well-Being Indicators and an example of the Cognitive Profile.

All the **cognitive scores are graded from 0 to 100**. In the case of the individual cognitive skills, this score maps onto a percentile division of the data. In the case of the **cognitive domains** and the **overall score**, this result corresponds to the average of the scores of the individual skills. In all cases, the following interpretation of the score is done:

- **Values of 0 to 25** represent cognitive weaknesses, since they are below what is expected for people of the same age and gender as the user.
- **Values of 26 to 50** are within the expected average range for the user's age and gender, but still being lower than the mean/median values.
- **Values of 51 to 75** are considered adequate, since they are over the mean/median values, but within the expected range for the user's age and gender.
- **Values of 76 to 100** are considered high, since they are allocated well above what is expected for people of the same age and gender.

Thus, scores between 0 and 25 represent a cognitive performance that is **well below average**, scores between 26 and 50 correspond to a cognitive performance **below average**, and scores higher than 50 correspond to a cognitive performance **above average**.

Since the **overall score** corresponds to the average of the scores of the individual skills, it follows a normal-like distribution for the large representative sample of the population included in CogniFit's normative dataset (see the figure below).



What skills does the Cognitive Assessment Battery (CAB)[®] measure?

The **22 individual** scores of the cognitive skills are grouped in **5 areas**.

Cognitive Area	Cognitive Skill	Definition	Tasks involved
Attention	Focus Attention	Ability to concentrate on a stimulus for any period of time	Psychomotor Vigilance Test
	Divided Attention	Ability to attend to two different stimuli at the same time	Divided Attention Test
	Inhibition	Ability to control impulsive or automatic responses	Number-Size Congruency Test, Stroop Test, Divided Attention Test
	Updating	Ability to oversee actions	Number-Size Congruency Test, Eye-Hand Coordination Test (Fixed Trajectory and Predictable Direction), Stroop Test, Multimodal Lexical Memory Test, Divided Attention Test
Perception	Visual Perception	Ability to interpret the info from the eyes	Stroop Test, Naming Test, Multimodal Lexical Memory Test, Lexical Memory Test, Divided Attention Test
	Spatial Perception	Ability to be aware of the relationships with the environment	Psychomotor Vigilance Test, Maze Test, Visual Memory Test, Visual Working Memory Span Test
	Auditory Perception	Ability to interpret information from the ears	Time Estimation Test, Multimodal Lexical Memory Test, Lexical Memory Test
	Estimation	Ability to predict actions when few information available	Time Estimation Test, Speed Estimation Test, Distance Estimation Test
	Visual Scanning	Ability to efficiently, quickly, and actively look for information	Psychomotor Vigilance Test, Maze Test, Visual Memory Test
	Recognition	Ability to identify stimuli met before	Visual Memory Test, Multimodal Lexical Memory Test

Cognitive Area	Cognitive Skill	Definition	Tasks involved
Memory	Short-Term Memory	Ability to retain a small amount of information over a short period of time	Digit Span Test, Visual Working Memory Span Test
	Visual Short-Term Memory	Ability to retain a small amount of visual information over a short period of time	Visual Working Memory Span Test
	Phonological Short-Term Memory	Ability to retain a small amount of phonological information over a short period of time	Digit Span Test
	Contextual Memory	Ability to memorize and discern the origin of a specific memory	Multimodal Lexical Memory Test, Lexical Memory Test
	Non-Verbal Memory	Ability to code, store, and recover non-verbal information	Visual Memory Test, Visual Working Memory Span Test, Multimodal Lexical Memory Test, Lexical Memory Test
	Naming	Ability to find the specific word	Stroop Test, Naming Test, Multimodal Lexical Memory Test, Lexical Memory Test
	Working Memory	Ability to manipulate the information in short-term memory	Digit Span Test, Visual Memory Test, Visual Working Memory Span Test, Multimodal Lexical Memory Test
Reasoning	Shifting	Ability to adapt the behavior	Number-Size Congruency Test, Eye-Hand Coordination Test (Fixed Trajectory and Predictable Direction), Divided Attention Test
	Planning	Ability to “think about the future”	Maze Test, Visual Working Memory Span Test
	Processing Speed	Time it takes a person to do a mental task	Psychomotor Vigilance Test , Number-Size Congruency Test, Eye-Hand Coordination Test (Fixed Trajectory and Predictable Direction), Visual Memory Test, Stroop Test, Visual Working Memory Span Test, Naming Test, Multimodal Lexical Memory Test, Lexical Memory Test, Divided Attention Test
Coordination	Hand-Eye Coordination	Ability to do activities that require the simultaneous use of hands and eyes	Psychomotor Vigilance Test, Eye-Hand Coordination Test (Fixed Trajectory and Predictable Direction), Eye-Hand Coordination Test (Multidirectional and Unpredictable Direction), Divided Attention Test
	Response Time	Time that elapses from the moment something is perceived until it is reacted to	Tapping Test, Psychomotor Vigilance Test, Number-Size Congruency Test, Digit Span Test, Visual Memory Test, Stroop Test, Naming Test, Multimodal Lexical Memory Test, Lexical Memory Test, Divided Attention Test

How is the Cognitive Assessment Battery (CAB)® useful for conditions?

The pattern of cognitive impairment varies across pathologies, disorders or conditions. The following table shows the **pattern of cognitive impairment** usually seen in each of them and the degree of relevance of every single cognitive ability.

Very Relevant		Relevant													Less Relevant	
Cognitive Area	Condition Skill	MCI	Insomnia	Long-COVID	Chemo-brain	Epilepsy	Depression	MS	Stroke	ADHD	Parkinson	Dyscalculia	Fibromyalgia	Dyslexia		
Attention	Focus Attention															
	Divided Attention															
	Inhibition															
	Updating															
Perception	Visual Perception															
	Spatial Perception															
	Auditory Perception															
	Estimation															
	Visual Scanning															
	Recognition															
Memory	Short-Term Memory															
	Visual Short-Term Memory															
	Phonological Short-Term Memory															
	Contextual Memory															
	Non-Verbal Memory															
	Naming															
	Working Memory															
Reasoning	Shifting															
	Planning															
	Processing Speed															
Coordination	Hand-Eye Coordination															
	Response Time															

Science and Validation

The CogniFit Cognitive Assessment Battery (CAB)[®] is grounded in rigorous psychometric research that ensures each score is statistically robust, clinically meaningful and internationally generalisable. Below we summarise the core reliability and validity evidence supporting the Cognitive Assessment Battery (CAB)[®].

Reliability

Reliability tells us how consistent an instrument is. Two complementary indices establish that the Cognitive Assessment Battery (CAB)[®] provides stable, trustworthy scores.

1. Test-retest reliability – temporal stability

- *In a sample of 500 adults retested after 7–10 days, Pearson correlations for the set of cognitive abilities tested ranged from $r = 0.70$ to 0.92 , confirming excellent stability.*
- *Comparable coefficients have been reported in specialist cohorts (e.g., older adults, clinical populations), reinforcing robustness across contexts.*

2. Internal consistency – homogeneity of items

- *Cronbach's alpha averaged 0.78 in the 2015 normative study ($N = 65,377$), surpassing the conventional ≥ 0.70 criterion.*
- *Independent replication in Bulgarian older adults (Yaneva et al., 2021) produced alpha values of $0.83 - 0.87$ for individual tasks and an overall ICC = 0.87 , demonstrating cross-cultural reliability.*

The following table shows the results of consecutive analyses of the reliability of the cognitive abilities measured by the Cognitive Assessment Battery (CAB)[®].

Internal consistency and test-retest reliability by cognitive skill

Cognitive Ability	Internal Consistency 2015 (Chronbach's Alpha)	Internal Consistency PC 2022 (Chronbach's Alpha)	Internal Consistency Mobile 2022 (Chronbach's Alpha)	Test-retest Reliability
Shifting	0.73	0.72	0.50	0.84
Divided Attention	0.87	0.73	0.69	0.85
Hand-Eye Coordination	0.78	0.86	0.96	0.88
Naming	0.69	0.76	0.64	0.78
Focus Attention *	-	-	-	0.91
Visual Scanning	0.86	0.81	0.71	0.92
Estimation	0.76	0.65	0.62	-
Inhibition	0.66	0.43	0.74	0.70
Phonological Short-Term Memory	0.92	0.73	0.76	0.70
Contextual Memory	0.88	0.91	0.86	0.78
Visual Short-Term Memory	0.87	0.84	0.91	0.74
Short-Term Memory	0.85	0.81	0.84	0.72
Working Memory	0.85	0.89	0.81	0.70
Non-Verbal Memory	0.79	0.83	0.78	0.73
Spatial Perception	0.61	0.33	0.82	0.91
Visual Perception	0.75	0.78	0.69	0.89
Auditory Perception	0.65	0.77	0.65	0.90
Planning	0.77	0.61	0.77	0.83
Updating	0.57	0.79	0.50	0.88
Recognition	0.86	0.88	0.86	0.77
Response Time	0.87	0.90	0.81	0.82
Processing Speed	0.89	0.87	0.77	0.76

* Focus Attention is a cognitive skill computed from a single variable, and consequently certain stats are not available.

Validity

Validity refers to whether the instrument truly measures the cognitive constructs it claims to assess. Evidence comes from both construct and convergent approaches.

Construct validity

1. The CogniFit Matrix

Development began with a theory-driven mapping of latent abilities to task variables. Factor analyses performed during four technology migrations (2010, 2012, 2015, 2022) consistently reproduced a five-domain structure (Attention, Perception, Memory, Reasoning, Coordination). In the latest internal study (2022; N = 1,282,242; ages 7–85) model fit was excellent. Thus, a new validation of the matrix was carried out with data from these unique test-takers (711,262 females and 570,980 males), and the current reference normative dataset was created.

Reference normative sample of the Matrix	
Type of users	Number of users
Females	711,262
Males	570,980
Total	1,282,242

2. Independent empirical confirmations

- **Working memory:** Longitudinal web-based monitoring of ageing (Sánchez-Vincitore et al., 2023) showed the Cognitive Assessment Battery (CAB)® span task loading strongly on a working-memory factor and tracking age-related decline.
- **Estimation abilities:** Lifespan study of time, speed and distance estimation (Tapia et al., 2022) verified expected developmental trajectories using Cognitive Assessment Battery (CAB)® estimation tasks.
- **Global construct:** A Bulgarian adaptation (Yaneva et al., 2021) replicated the original structure, confirming cross-linguistic generalisability.

Convergent validity

Convergent validity tests whether Cognitive Assessment Battery (CAB)[®] scores align with scores from established gold-standard instruments that tap the same constructs. Multiple peer-reviewed studies report medium-to-large correlations.

Van der Hoek et al. (2019) showed strong correlations between CogniFit's visual episodic memory tests and the Montreal Cognitive Assessment (MoCA). Similarly, Yaneva et al. (2021) reported significant correlations between the tests included in the Cognitive Assessment Battery (CAB)[®] and both the Mini-Mental State Examination (MMSE) and the Consortium to Establish a Registry for Alzheimer's Disease (CERAD) Neuropsychological Battery. Haimov et al. (2008) also showed strong correlations between the Cognitive Assessment Battery (CAB)[®] and a series of classical cognitive tests and batteries, including the CANTAB battery. Furthermore, a study by Buades-Sitjar et al. (2022) showed significant correlations between the reasoning and executive functioning tests of the Cognitive Assessment Battery (CAB)[®] and different gold-standard tests and batteries in the field. Across studies the observed effect sizes comfortably exceed the accepted threshold for meaningful convergence, substantiating the interpretative validity of the Cognitive Assessment Battery (CAB)[®] indices.

An illustrative example of the convergent validity of CogniFit, as reported in the study by Haimov et al. (2008), is shown in the following table.

Convergent Validity - Main correlations between CogniFit Cognitive Assessment Battery (CAB)[®] and both CANTAB and other traditional tests

CogniFit CAB [®]	CANTAB	STROOP Test	WCST & RSPM	Reading Tests
Naming & Memory span, including digit and spatial span	Rapid visual information processing (sustained attention). $r = 0.75$ ($p > 0.01$)	Stroop (words) time $r = -0.59$ ($p < 0.001$)	N.A.	Reading test. Silent reading time $r = 0.51$ ($p < 0.01$)
	Stockings (frontal/executive task): Mean subsequent thinking time. $r = -0.85$ ($p < 0.001$)			Reading test: Naming speed of letters (time) $r = 0.60$ ($p < 0.001$)
	Stockings (frontal/executive task): Problems solved in minimal moves. $r = 0.62$ ($p < 0.001$)			
	Delayed matching to sample (attention and memory). $r = 0.50$ ($p < 0.01$)			
Integration of two dimensions-visual and semantic & Psychomotor skills (i.e., tracking) & Time estimation, both auditory and visual	Internal/External dimensional shift (frontal/executive task). $r = 0.60$ ($p < 0.01$)	Stroop (words) $r = 0.63$ ($p < 0.001$)	(WCST) Internal/External dimensional shift (frontal/executive task) $r = 0.60$ ($p < 0.01$)	Reading test: Oral reading time $r = 0.73$ ($p < 0.001$)
	Rapid visual information processing (sustained attention task). $r = 0.86$ ($p < 0.001$)		(WCST) Rapid visual information processing (sustained attention task) $r = 0.86$ ($p < 0.001$)	Reading test: Silent reading time $r = 0.61$ ($p < 0.001$)
	Stockings of Cambridge (planning) (frontal/executive task). $r = 0.76$ ($p < 0.001$)			
Sustained attention in tasks involving allocated attention to a target - with and without distractor & Executive functioning - planning and working memory, tested in a maze task	Stockings of Cambridge (planning) Thinking time (frontal/executive task). $r = 0.72$ ($p < 0.001$)	Stroop (words) $r = 0.58$ ($p < 0.001$)	(RSPM) Raven number of error $r = 0.57$ ($p < 0.001$)	Reading test: Oral reading time $r = 0.71$ ($p < 0.001$)
	Rapid visual information processing (frontal/executive task). $r = 0.68$ ($p < 0.01$)			
	Spatial working memory (frontal/executive task). $r = 0.57$ ($p < 0.001$)	Stroop (words) $r = 0.58$ ($p < 0.001$)		Reading test: Oral reading errors $r = 0.65$ ($p < 0.001$)
	Spatial working memory (frontal/executive task). $r = 0.52$ ($p < 0.001$)	$r = .52$ ($p < 0.001$)		

Validation studies: Haimov I, Hanuka E, Horowitz Y. Chronic insomnia and cognitive functioning among older adults. Behav Sleep Med. 2008;6(1):32-54. doi: 10.1080/15402000701796080 ; Yaneva A, Massaldjieva R, Mateva N. Initial adaptation of the General Cognitive Assessment Battery by CogniFit[™] for Bulgarian Older Adults. Exp Aging Res. 2022 Jul-Sep;48(4):336-350. doi: 10.1080/0361073X.2021.1981096; Buades-Sitjar F, Duñabeitia JA. Intelligence subcomponents and their relationship to general knowledge. J Cult Cogn Sci. 2022;6:343-355. doi: 10.1007/s41809-022-00113-z

Summary

- **Reliability:** High internal consistency and strong test–retest stability.
- **Construct validity:** Confirmed by large-scale factor analyses and targeted experimental work across cultures and age groups.
- **Convergent validity:** Medium-to-high correlations with benchmark neuropsychological measures.

Together with its million-participant normative database and automated quality-control algorithms (e.g., on-line attention checks and validity indices), the Cognitive Assessment Battery (CAB)[®] stands as a psychometrically sound, scalable solution for clinical diagnostics, longitudinal monitoring and research applications in cognitive science and neuropsychology.

Validation Studies

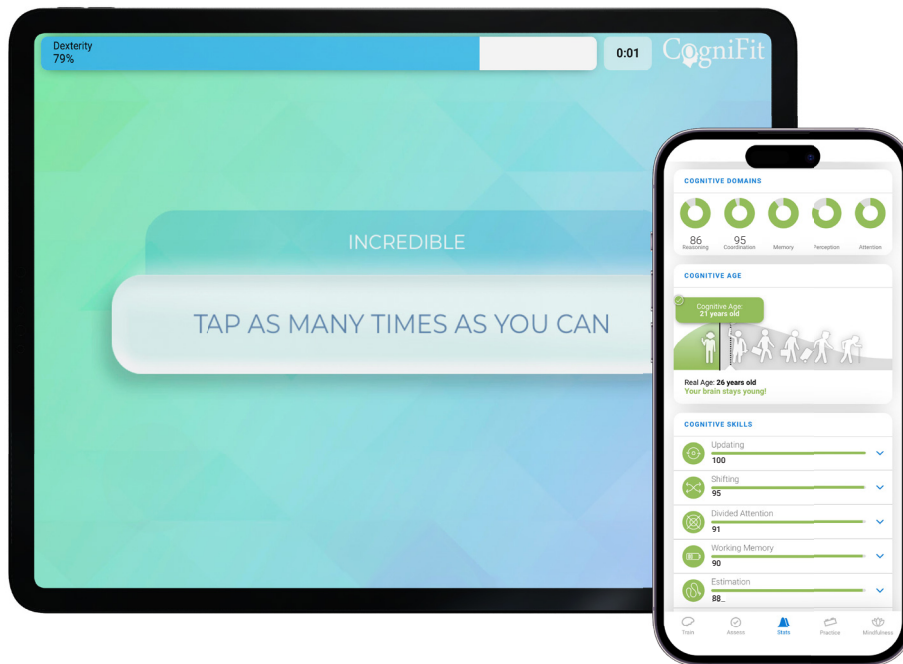
The General Cognitive Assessment Battery (CAB)® has been used and validated on numerous occasions by universities around the world and external entities.

Population	University	Link	Reference
Insomnia	The Max Stern Yezreel Valley College	Publication Link	Haimov, I., Hanuka, E., & Horowitz, Y. (2008). Chronic Insomnia and Cognitive Functioning Among Older Adults. <i>Behavioral Sleep Medicine</i> , 6(1), 32–54. https://doi.org/10.1080/15402000701796080
Healthy Seniors	University of Washington - Seattle	Publication Link	Thompson, H. J., Demiris, G., Rue, T., Shatil, E., Wilamowska, K., Zaslavsky, O., & Reeder, B. (2011). A Holistic Approach to Assess Older Adults' Wellness Using e-Health Technologies. <i>Telemedicine and e-Health</i> , 17(10), 794–800. https://doi.org/10.1089/tmj.2011.0059
US Navy Pilots	USA Navy	Publication Link	Chandler, J. F., Arnold, R. D., Phillips, J. B., & Tummire, A. E. (2013). Predicting Individual Differences in Response to Sleep Loss: Application of Current Techniques. <i>Aviation, Space, and Environmental Medicine</i> , 84(9), 927–937. https://doi.org/10.3357/ase.3581.2013
Healthy Young Adults	Cairo University	Publication Link	Mohamed, Z., el Halaby, M., Said, T., Shawky, D., & Badawi, A. (2018). Characterizing Focused Attention and Working Memory Using EEG. <i>Sensors</i> , 18(11), 3743. https://doi.org/10.3390/s18113743
Cognitive estimation across the lifespan	University Antonio de Nebrija, University of Norway	Publication Link	Tapia, J. L., Rocabado, F., & Duñabeitia, J. A. (2022). Cognitive estimation of speed, movement and time across the lifespan. <i>Journal of Integrative Neuroscience</i> , 21(1), 010. https://doi.org/10.31083/j.jin2101010
HIV	University of Alicante	Publication Link	Ruiz-Robledillo, N., Clement-Carbonell, V., Ferrer-Cascales, R., Portilla-Tamarit, I., Alcocer-Bruno, C., & Gabaldón-Bravo, E. (2021). Cognitive Functioning and Its Relationship with Self-Stigma in Men with HIV Who Have Sex with Men: The Mediating Role of Health-Related Quality of Life. <i>Psychology Research and Behavior Management</i> , Volume 14, 2103–2114. https://doi.org/10.2147/prbm.s332494
Seniors	Medical University of Plovdiv	Publication Link	Yaneva, A., Massaldjieva, R., & Mateva, N. (2021). Initial Adaptation of the General Cognitive Assessment Battery by CogniFit TM for Bulgarian Older Adults. <i>Experimental Aging Research</i> , 48(4), 336–350. https://doi.org/10.1080/0361073x.2021.1981096
Crystallized Intelligence	University of Bebrija & University of Norway	Publication Link	Buades-Sitjar, F., & Duñabeitia, J. A. (2022). Intelligence subcomponents and their relationship to general knowledge. <i>Journal of Cultural Cognitive Science</i> . https://doi.org/10.1007/s41809-022-00113-z
VR & Learning	University Antonio de Nebrija, University of Norway	Publication Link	Rocabado, F., González Alonso, J., & Duñabeitia, J. A. (2022). Environment Context Variability and Incidental Word Learning: A Virtual Reality Study. <i>Brain Sciences</i> , 12(11), 1516. https://doi.org/10.3390/brainsci12111516
VR	University Antonio de Nebrija, University of Norway	Publication Link	Rocabado, F., Duñabeitia, J.A. (2022) Assessing Inhibitory Control in the Real World Is Virtually Possible: A Virtual Reality Demonstration. <i>Behav. Sci.</i> , 12, 444. https://doi.org/10.3390/bs12110444

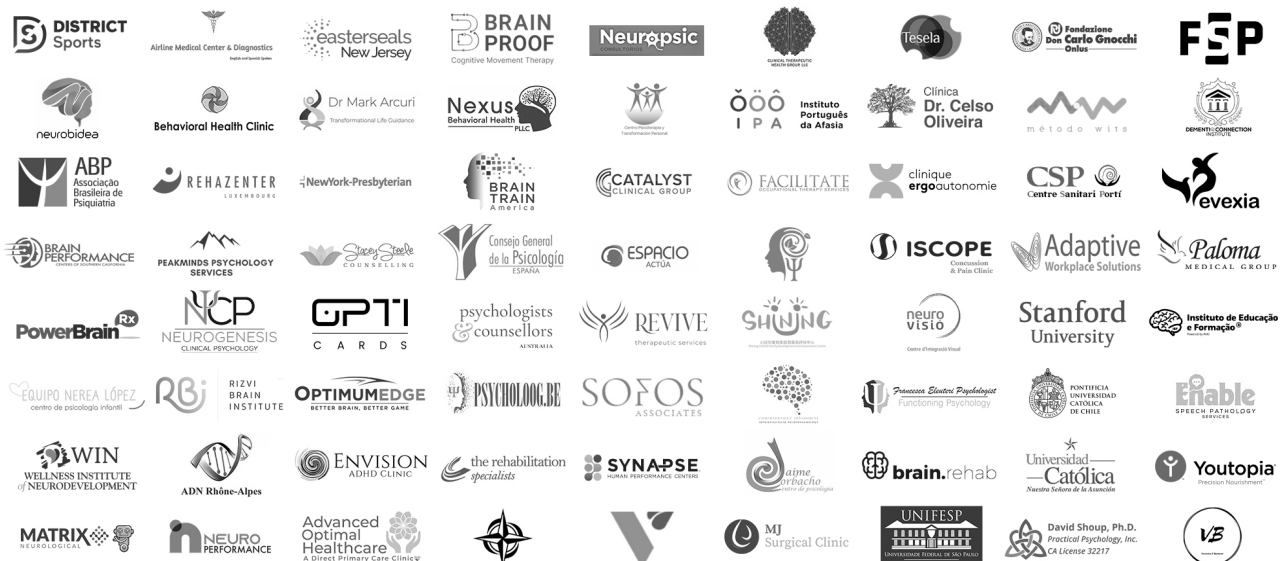
Population	University	Link	Reference
Memory & Weight	University of Alicante, Institute for Health and Biomedical Research (ISABIAL-FISABIO Foundation)	Publication Link	Berbegal M, Tomé M, Sánchez-SanSegundo M, Zaragoza-Martí A and Hurtado-Sánchez JA (2022) Memory function performance in individuals classified as overweight, obese, and normal weight. Front. Nutr. 9:932323. doi: 10.3389/fnut.2022.932323
Indoor Air Quality	University College London, China Academy of Building Research, National Engineering Research Center of Building Technology	Publication Link	Zhou, J., Wang, H., Huebner, G., Zeng, Y., Pei, Z., & Ucci, M. (2023). Short-term exposure to indoor PM2.5 in office buildings and cognitive performance in adults: An intervention study. Building and Environment, 110078. https://doi.org/10.1016/j.buildenv.2023.110078
Intellectual Giftedness	University of Nebrija	Publication Link	Asensio, D., Fernández-Mera, A., & Duñabeitia, J. A. (2023). The Cognitive Profile of Intellectual Giftedness. International Journal of Educational Psychology, 1(1), 1–24. https://doi.org/10.17583/ijep.11828
Thermal Strain in Healthcare Workers During COVID	University of Brighton	Publication Link	Bonell, A., Nadjm, B., Samateh, T., Badjie, J., Perry-Thomas, R., Forrest, K., Prentice, A. M., & Maxwell, N. (2021). Impact of personal cooling on performance, comfort and heat strain of healthcare workers in PPE, a study from West Africa. Frontiers in Public Health, 9. https://doi.org/10.3389/fpubh.2021.712481
Healthy Older Adults	University of Iberoamericana (Unibe) Universidad Nebrija The Arctic University of Norway	Publication Link	Sánchez-Vincitore LV, Cubilla-Bonnetier D, Marte-Santana H and Duñabeitia JA (2023) Cognitive decline monitoring through a web-based application. Front. Aging Neurosci. 15:1212496. doi: 10.3389/fnagi.2023.1212496
Drivers	University Nebrija The Arctic University of Norway	Publication Link	Tapia & Duñabeitia (2023) Rethinking Driving Assessment: A Hypothesis-Driven Proposal for Cognitive Evaluation, OBM Neurobiology; 7(4): 187; doi: 10.21926/obm.neurobiol.2304187.
Drivers	University Nebrija The Arctic University of Norway	Publication Link	Tapia, J. L., & Duñabeitia, J. A. (2023). Driving safety: Investigating the cognitive foundations of accident prevention. Heliyon, e21355. https://doi.org/10.1016/j.heliyon.2023.e21355



The neuropsychological Cognitive Assessment Battery (CAB)[®] is a clinically proven, reimbursable, reliable and easy to use for professionals and patients.



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Appendix

Category	Question	Possible Answers	Age
General	Why are you taking this test?	I've been in an accident I'm easily distracted I have a bad memory I'm curious I have trouble with math Other reasons I have problems with reading and writing I have a medical condition	All
	On a scale of 1 to 10, where 10 corresponds to perfect hearing, indicate how you would rate your hearing level.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	All
	On a scale of 1 to 10, where 10 corresponds to perfect vision, indicate how you would rate your visual acuity.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	All
	In general, how would you rate your health?	Excellent Very good Good Fair Poor	All
	In general, how would you rate your mental health, including your mood and your ability to think?	Excellent Very good Good Fair Poor	All
	In general, how would you rate your physical health?	Excellent Very good Good Fair Poor	All

Category	Question	Possible Answers	Age
General	In general, how would you rate your satisfaction with your social activities and relationships?	Excellent Very good Good Fair Poor	All
	To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?	Excellent Very good Good Fair Poor	All
	Please indicate whether you are using a touchpad, a mouse or a touchscreen device.	Touchscreen Mouse Touchpad	All
	Are you right handed?	No Yes	All
	Do you frequently use a computer mouse?	No Yes	All
	Do you frequently use a tablet or touchscreen?	No Yes	All
	Do you use a hearing aid?	No Yes	All
	Do you wear glasses or contact lenses when reading on your computer or mobile device?	No Yes	All
	Are you careful about what you eat and do you make sure to add fruit and vegetables to your diet? Do you try not to eat much junk food?	No Yes	All
	Are you in good physical and psychological health (without recent health problems)?	No Yes	All

Category	Question	Possible Answers	Age
Physical	Do you exercise often?	No Yes	All
	Do you feel healthy and energetic?	No Yes	All
	Do you feel well physically?	No Yes	All
	Do you get 7-9 hours of sleep each night?	No Yes	All
	Are you usually careful and pay attention to what you're doing?	No Yes	All
	Are you able to remember what you read?	No Yes	All
	Are you able to remember directions easily?	No Yes	All
	Do you concentrate easily at work or at school?	No Yes	All
Psychological	Do you enjoy reading?	No Yes	All
	Do you like to plan your activities for the day?	No Yes	All
	Do you like to write and take notes?	No Yes	All
	Do you organize your time well?	No Yes	All
	Do you speak two (or more) languages fluently?	No Yes	All
	Do you think you have a good memory?	No Yes	All
	Do you usually careful and pay attention to what you're doing?	No Yes	All
	Are you able to remember what you read?	No Yes	All
	Are you able to remember directions easily?	No Yes	All
	Do you concentrate easily at work or at school?	No Yes	All
	Do you enjoy reading?	No Yes	All
	Do you like to plan your activities for the day?	No Yes	All

Category	Question	Possible Answers	Age
Psychological	Do you usually concentrate on what you're reading?	No Yes	All
	Do you like to go to school and learn?	No Yes	7 - 25
	Do you pay attention in class?	No Yes	7 - 25
	Is it easy for you to concentrate when you study or when doing a task that requires concentration?	No Yes	7 - 25
	Is it easy for you to remember what you've studied?	No Yes	7 - 25
	Are you able to do things on your own and don't generally need help with daily activities (bathing, shopping, cooking, etc.)?	No Yes	+45
	Are you able to remember the time and date, and recognize your surroundings?	No Yes	+45
	Do you have a good memory and remember information and names easily?	No Yes	+45
	Is your memory the same as it was when you were younger?	No Yes	+45
Social	Are you currently a student?	No Yes	All
	Are you currently employed?	No Yes	All
	Do you have friends and make plans to see them?	No Yes	All
	Do you live with your family, friends, partner, or roommates?	No Yes	All
	Do you see your family, friends, or other people frequently?	No Yes	All