

**Table S1: description of the different versions of the n-back task and Continuous Performance Test used across the studies**

Study	Cognitive measures	Task description
Blanchard et al. <sup>1</sup>	Spatial n-back task	Stimuli consisted of 4 numbers on a screen, each appearing within a circle. The numbers on the screen corresponded geometrically with the numbers on the right-hand side of a standard keyboard that was used for responding, and stimuli appeared on screen for 400 ms (interstimulus interval of 1400 ms). Each condition included 6 blocks of 14 stimuli. Participants are instructed to recall the stimulus seen "n" previously.
Stokes et al. <sup>2</sup>	Spatial n-back task	Stimulus consisted of a dot presented in 1 of 4 spatial locations, arranged horizontally across the screen. Each location corresponded to a particular button on a response pad. Dots were presented for 500 ms followed by a blank screen for 1500 ms, with 12 dots being presented in a block. Participants are instructed to recall the stimulus seen "n" previously.
Solis-Ortiz et al. <sup>3</sup>	CPT <sup>4</sup> (test single and AX task)	Stimuli consisted of 150 alphabet letters displayed continuously in a random sequence, 1 at a time, for 50 ms on a video screen. The intertrial interval ranged randomly from 5 to 7 s. The participants were instructed to perform the test with 2 different levels of difficulty. In the first level, the letter "S" pattern was selected as the target stimulus, and the participant was asked to press the "enter" button on the keyboard as soon as possible each time the target stimulus was perceived. In the second level, this instruction was maintained, and the participant was asked to press the "enter" button only when the target stimulus was preceded by a specified item, the letter "A."
Uçok et al. <sup>5</sup>	CPT (ZA version)	Visual stimuli were presented on a 2-inch square matrix of white light emitting diodes. Letters were randomly presented for 160 ms each (800 ms interval). During the session, participants responded to the target stimulus (the letter "A" preceded by the letter "Z") by pressing a button. In a total of 300 trials, 36% of the targets were presented in 8.5 min.
Wirgenes et al. <sup>6</sup>	Bergen n-back task	Stimuli consisted of 100 pairs of numbers divided on 2 blocks. In total 20 pairs were targets, and 80 pairs were nontargets. Participants are required to press the spacebar whenever the pair of numbers corresponds to the pair of numbers presented 2 trials before.
Pomarol-Clotet et al. <sup>7</sup>	N-back task (sequential letter version)	Stimuli consisted of block of 24 letters that were shown every 2 s (1 s on, 1 s off), and all blocks contained 5 repetitions located randomly within the blocks. Individuals had to indicate repetitions by pressing a button. Four 1-back and 4 2-back blocks were presented in an interleaved way, and between them a baseline stimulus (an asterisk flashing with the same frequency as the letters) was presented for 16 s. Participants are instructed to recall the stimulus seen "n" previously.
Yue et al. <sup>8</sup>	N-back task (sequential number version)	Stimuli comprised black Arabic numbers (0–9) randomly presented on the cathode ray tube; the background colour was silver gray. In this task, the participants responded to the present stimulus if it was identical to the stimulus 3 trials previously. The interstimulus interval was 2500 ms, and every number displayed 500 ms.
Neuhaus et al. <sup>9</sup>	CPT-IP	Stimuli consisted of 300 rapidly flashed trials with 60 target (identical pairs) trials, and 60 false alarm trials (similar pairs). Stimulus onset asynchrony was 1000 ms (interstimulus interval 950 ms). The participant was asked to respond to 2 identical, successively appearing stimuli (4-digit numbers).
Diaz-Asper et al. <sup>10</sup>	Spatial n-back task, CPT 1–9	N-back task: Stimulus consisted of a number between 1 and 4 presented every 1.8 s for a 200 ms duration, at set locations at the points of a diamond-shaped box. Participants are instructed to recall the stimulus seen "n" previously. Participants complete 6 trials each of the 0, 1 and 2-back conditions. CPT: In the vigilance portion of the test, participants view a continuous sequence of single digits (presented at the rate of 1/s) on a screen and must respond to an infrequently occurring target sequence (1 followed by 9). The distractibility portion is similar, except that other digits appear simultaneously flanking the stimuli to which the participant is told to pay attention. Each portion of the test lasts 6 min. The total <i>n</i> available for the CPT was 877.
Bertolino et al. <sup>11</sup>	Spatial n-back task	See Blanchard et al. <sup>1</sup>
Aguilera et al. <sup>12</sup>	CPT-IP	See Neuhaus et al. <sup>9</sup>
MacDonald et al. <sup>13</sup>	N-back task (sequential letter version), CPT (AX/DPX tasks)	N-back task: Stimuli consisted of series of upper- and lowercase letters which appeared on the screen for 500 ms (interstimulus interval 2000 ms). Targets were defined as a repetition of the letter that appeared 3 letters beforehand. Half of the 56 trials were target trials. Participants are instructed to recall the stimulus seen "n" previously. CPT: Stimuli consisted of a series of capital letters (AX task) or dot patterns (DPX) presented one at a time on a computer screen. Participants were asked to identify each letter as a "target" or "nontarget" using the appropriate key. A target was defined as a given letter or dot pattern (e.g., "X") only when it followed another specific letter or dot pattern (e.g., "A"). All other stimuli were nontargets. Most of the trials were valid cue-probe pairs (e.g., A-then-X, or AX). Occasionally, an invalid cue (e.g., "B") would precede a valid probe.
Caldú et al. <sup>14</sup>	Conners' CPT II, n-back task	CPT: Stimuli consisted of a series capital letters. Participants are required to respond to all but 1 (i.e., letter "X"). The interstimulus intervals are 1, 2 and 4 s with a display time of 250 ms. There are 6 blocks, with 3 subblocks, each containing 20 trials. N-back task: Stimuli consisted of series of digit numbers (ranging from 1 to 9). Twenty-four consecutive trials followed the instruction message. Each trial consisted of a 1500 ms interstimulus interval followed by the presentation of a 1-digit number for 500 ms. After the last trial, there was a 2-s period of blank screen before the next block began. Participants are instructed to recall the stimulus seen "n" previously.
Stefanis et al. <sup>15</sup>	CPT-IP	See Neuhaus et al. <sup>9</sup>
Galderisi et al. <sup>16</sup>	CPT (AX task)	See MacDonald et al. <sup>13</sup>
Bruder et al. <sup>17</sup>	N-back task (sequential letter version)	Stimuli consisted of 60 letters presented for 500 ms (2500-ms interstimulus intervals). A total of 12, 20 and 20 targets were presented for the 1-, 2- and 3-back conditions, respectively. Participants are instructed to recall the stimulus seen "n" previously.
Goldberg et al. <sup>18</sup>	Spatial n-back task, CPT 1–9	N-back task: Stimulus consisted of series of numbers (between 1 and 4) displayed every 1.8 s on a computer screen. Stimulus duration was 200 ms. Participants were instructed to recall the stimulus seen "n" previously and to press a corresponding response button. CPT: Stimuli consisted of a continuous sequence of digits presented at the rate of 1/s. Participants were required to respond to a fixed target sequence (1 followed by 9).

AX = xx; CPT = Continuous Performance Test; DPX = Dot Pattern Expectancy; IP = identical pair; ZA = xx.

**Appendix 1** to Ira E, Zanoni M, Ruggeri M, et al. COMT, neuropsychological function and brain structure in schizophrenia: a systematic and a neurobiological interpretation. *J Psychiatry Neurosci* 2013.

DOI: 10.1503/jpn.120178

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## References

1. Blanchard MM, Blanchard MM, Chamberlain SR, et al. Effects of two dopamine-modulating genes (DAT1 9/10 and COMT Val/Met) on n-back working memory performance in healthy volunteers. *Psychol Med* 2011;41:611-8.
2. Stokes PR, Rhodes RA, Grasby PM, et al. The effects of the COMT Val108/158Met polymorphism on BOLD activation during working memory, planning, and response inhibition: A role for the posterior cingulate cortex? *Neuropsychopharmacology* 2011;36:763-71.
3. Solís-Ortiz S, Perez-Luque E, Morado-Crespo L, et al. Executive functions and selective attention are favored in middle-aged healthy women carriers of the Val/Val genotype of the catechol-o-methyltransferase gene: a behavioral genetic study. *Behav Brain Funct* 2010;6:67.
4. Bellani M, Brambilla P. The use and meaning of the continuous performance test in schizophrenia. *Epidemiol Psychiatr Soc* 2008;17:188-91.
5. Uçok A, Ozturk M, Duman Z, et al. COMT Val 158 Met polymorphism is related with interpersonal problem solving in schizophrenia. *Eur Psychiatry* 2010;25:320-2.
6. Wirgenes KV, Djurovic S, Sundet K, et al. Catechol O-methyltransferase variants and cognitive performance in schizophrenia and bipolar disorder versus controls. *Schizophr Res* 2010;122:31-7.
7. Pomarol-Clotet E, Fatjo-Vilas M, McKenna PJ, et al. COMT Val158Met polymorphism in relation to activation and de-activation in the prefrontal cortex: A study in patients with schizophrenia and healthy subjects. *Neuroimage* 2010;53:899-907.
8. Yue C, Wu T, Deng W, et al. Comparison of visual evoked-related potentials in healthy young adults of different catechol-O-methyltransferase genotypes in a continuous 3-back task. *Neuroreport* 2009;20:521-4.
9. Neuhaus AH, Oppen-Rhein C, Urbanek C, et al. COMT Val 158 Met polymorphism is associated with cognitive flexibility in a signal discrimination task in schizophrenia. *Pharmacopsychiatry* 2009;42:141-4.
10. Diaz-Asper CM, Goldberg TE, Kolachana BS, et al. Genetic variation in catechol-O-methyltransferase: effects on working memory in schizophrenic patients, their siblings, and healthy controls. *Biol Psychiatry* 2008;63:72-9.
11. Bertolino A, Di Giorgio A, Blasi G, et al. Epistasis between dopamine regulating genes identifies a nonlinear response of the human hippocampus during memory tasks. *Biol Psychiatry* 2008;64:226-34.
12. Aguilera M, Barrantes-Vidal N, Arias B, et al. Putative role of the COMT gene polymorphism (Val158Met) on verbal working memory functioning in a healthy population. *Am J Med Genet B Neuro-psychiatr Genet* 2008;147B:898-902.
13. MacDonald AW III, Carter CS, Flory JD, et al. COMT Val158Met and executive control: a test of the benefit of specific deficits to translational research. *J Abnorm Psychol* 2007;116:306-12.
14. Caldú X, Vendrell P, Bartres-Faz D, et al. Impact of the COMT Val108/158 Met and DAT genotypes on prefrontal function in healthy subjects. *Neuroimage* 2007;37:1437-44.
15. Stefanis NC, van Os J, Avramopoulos D, et al. Effect of COMT Val158Met polymorphism on the Continuous Performance Test, Identical Pairs Version: tuning rather than improving performance. *Am J Psychiatry* 2005;162:1752-4.
16. Galderisi S, Maj M, Kirkpatrick B, et al. COMT Val(158)Met and BDNF C(270)T polymorphisms in schizophrenia: a case-control study. *Schizophr Res* 2005;73:27-30.
17. Bruder GE, Keilp JG, Xu H, et al. Catechol-O-methyltransferase (COMT) genotypes and working memory: associations with differing cognitive operations. *Biol Psychiatry* 2005;58:901-7.
18. Goldberg TE, Egan MF, Gscheidle T, et al. Executive subprocesses in working memory: relationship to catechol-O-methyltransferase Val158Met genotype and schizophrenia. *Arch Gen Psychiatry* 2003;60:889-96.