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## Measuring 100 personality traits and 9 cognitive domains at biobank scale under 1 hour

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ABSTRACT: 250

Genetics of behavioral traits tend to focus on Big Few – broad personality traits and global IQ. Detailed measures can offer at least two times more insight into health and life outcomes. Unfortunately, biobanks rarely use detailed measures and therefore statistical power for gene discovery is low. For quick and detailed personality measurement, we are developing open source personality test One Hundred Nuances of Personality (100NP). Provisionally, its 200 questions will assess 14-22 nuances per each Five-Factor Model domain as well as nuances beyond them. Because of its wide coverage, 100NP also measures the traits of other personality tests, including NEO PI-R, HEXACO, and impulsivity measures. Pilot data from UK ( $n \sim 1000$ ) shows that 100NP nuances have excellent test-retest reliability ( $r = .70-.80$ ) and adequate narrow sense heritability ( $h^2 = .20$ ). For cognition, we hand-picked 9 maximally independent freely available tasks by testmybrain.org. 296 Estonians participated online twice over a week, once using a computer and another time using a handheld device. Device switch hurt test-retest reliability of motor tasks, such as simple reaction time (RT,  $r = .30$ ), Trails A ( $r = .31$ ) and B ( $r = .32$ ), but not others, even across parallel versions: matrixes:  $r = 0.49$ , digit-symbol coding:  $r = 0.73$ , vocabulary:  $r = 0.83$ ; verbal memory:  $r = 0.58$ , delay discounting:  $r = 0.85$ , choice RT:  $r = 0.69$ . Average completion time was 25 minutes for personality and the same for cognition. The measure set will be used by Estonian Biobank ( $N = 200,000$ ), and likely in several other biobanks. We hope that these detailed open source measures will pave way to genomics of detailed human behaviors.

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