

For You | For Your Business

Genius Finder Psychometric Technical Manual

Version 4

By Dr Nancy Doyle Genius Within



Contents

Contents	1
The Genius Finder	2
Psychological theories and constructs	3
Language processing	4
Cold executive functions	4
Hot executive functions	4
Crystallized intelligence	4
Visual-motor integration	5
Emotional intelligence	5
Sensory processing	5
Psychometric Principles	7
Standardisation	7
Reliability	7
Validity	7
Exploratory Factor Analysis	9
Construct validity	10
Confirmatory Factor Analysis	13
Data Analysis	16
Internal Consistency & Convergent Validity	17
Discussion	19
Concurrent validity	19
Adverse Impact	21
References	23
Appendix	26



The Genius Finder

The Genius Finder profiling assessment is based on 'neurodiversity' – broadly the idea that all humans vary in our neurocognitive ability and that this is helpful for a community. Humans are neurodiverse – some of us are generalists and some of us are specialists, with such specialisms varying.

In the Genius Finder, we aim to capture the range of work-related skills and abilities that vary and, from that, signpost strengths and strategies to compensate for difficulties. The Genius Finder is based on robust psychological theory and has been subject to psychometric scrutiny, which has found it to be a scientifically reliable and valid measure.

Since 2011, Genius Within has worked with over 20,000 neurodivergent people, supporting them to work at their best. Since 2016, we have anonymously mapped which behaviours and skills contribute to effectiveness at work: our clients' strengths and their struggles. Our findings expand the typical platform of psychometric assessment to include a wider range of experience, finding some of the more hidden aspects of workplace performance and putting those more usually measured together in a new style. This document outlines our conceptual framework, measures of statistical reliability and validity as well as a demographic analysis of any adverse impact.





Psychological theories and constructs

The cognition and brain sciences unit at Cambridge University have mapped the cognitive profiles of over 1500 children with a diagnosis of a neurodivergent condition (Astle et al., 2019; Jones et al., 2021; Siugzdaite et al., 2020). They have not been able to replicate the diagnostic categories that we use in the practice of diagnosis. Instead, they have found clusters of difficulty in the areas of language processing, cold executive functions and hot executive functions. These findings signal to us that categorising people as per the existing neurotypes (e.g. Autism, Dyspraxia) is unlikely to be a good indicator of what support they need, or indeed where their strengths lie. Instead, the Genius Finder focuses on behavioural markers.

This shift in focus achieves several objectives:

- 1. Behavioural measures are less intrusive and easier to administer than cognitive testing. This makes the Genius Finder easier to distribute, without direct psychological supervision or need to capture health care data, which is subject to more stringent data protection and may be experienced as an overreach by employees using the profiler at work.
- 2. Behavioural measures map more closely to performance strategies, reasonable adjustments and accommodations, as opposed to diagnosis, which doesn't directly map to work without additional assessment. We can use the Genius Finder to understand which direct, concrete and observable actions could improve an individual and a team's performance.
- **3.** Behaviour is self-referenced, and directly translatable to the workplace. This is opposed to cognitive ability which does not always translate into positive or negativity activity at work, due to differences in scaffolding, emotional management, social interaction and sensory sensitivity, as well as disabilities in movement and sensory perception.
- **4.** By assessing behaviour in context, we also capture the effect of the environment on current performance, which maps more closely to a workplace needs assessment.



The behavioural categories that we use map onto the under constructs common to all humans, and incorporate a wide range of neurological functions. Firstly, we use the three domains discovered by the Cambridge team, which are encompass all neurodivergent thinkers and are relevant to all humans.

Language processing

This will involve both the production of spoken language and the listening to spoken language, which itself relates to the ability to acquire literacy, and may also affect social communication confidence and long term memory.

Cold executive functions

These relate to the practical cognitive skills associated with the executive functions such as working memory, attention switching, planning, prioritisation, time management, but also the planning of movement and idea creation.

Hot executive functions

These relate to the cognitive skills required for processing emotion and social interaction, such as risk perception, social filters, emotional resilience and displays.

These constructs do not necessarily cover the whole range of the Genius Finder. For example, sensory management and creativity are not mentioned directly by the authors, although they do have some overlaps.

Secondly, we added categories related to work performance which are learned, rather than innate.

Crystallized intelligence

Cognitive ability is thought to comprise of both intelligence that is innate, and that which is learned (Cattell, 1963). 'Crystallised intelligence' refers to ability that has been acquired upon a foundational aptitude, through study and education, both formal and informal. An example might be literacy, vocabulary or maths ability.

Finally, we considered areas in which our extensive client base require support, have achieved great compensatory strategies or have outstanding abilities to provide a full range of behavioural analysis based on both nature and nurture.



Visual-motor integration

Our ability to see how things should move or fit and then move them accordingly is known as visual-motor integration (Beery & Beery, 2010). Visual motor integration is essential for the delivery of many roles, and can cover tasks as basics as typing and handwriting, all the way to surgery and crane operation.

Emotional intelligence

Salovey and Mayer introduced the theory of emotional intelligence (EI) in the late twentieth century (Salovey & Mayer, 1990), as a way of explaining how some people are able to display social skills in a way that translates into job performance. Emotional intelligence forms part of what we are measuring, but aims to divert away from the areas of EI that are related to socially and gender bound behaviour (e.g. all women are nurturers). Like crystallised intelligence, emotional intelligence can be learned and so neurological deficits do not necessarily predict performance here.

Sensory processing

Brown and Dunn (Brown & Dunn, 2002) defined the experience of heightened sensory processing within a scale, that allows us to categorise the full range of experience. It is important to note that sensory sensitivity can be both good and bad. If you are a chef or sommelier, enhanced taste is an advantage. If you are a regular employee who needs to eat at a cafeteria it can inhibit your inclusion.



Table 1: An overview of the theoretical constructs behind the Genius Finder

Factor	Theoretical construct
Sensory	Sensory processing
Literacy	Language, crystallised intelligence
Self-organising	Cold executive functions
Numeracy	Cold executive functions, crystallised intelligence
Creativity	Cold executive functions
Social communication	Language, cold executive functions, emotional intelligence
Movement	Cold executive functions, visual-motor integration
Memory	Cold executive functions
Reading for detail	Cold executive functions, crystallised intelligence
Dexterity	Visual-motor integration and cold executive functions
Typing	Visuo-motor integration, cold executive functions, crystallised intelligence
Emotions	Hot executive functions, emotional intelligence
Spatial Reasoning	Visual-motor integration and cold executive functions



Psychometric Principles

This section presents data on the psychometric properties of the Genius Finder. These data demonstrate that the Genius Finder meets the necessary technical requirements with regard to reliability and validity.

Before presenting the data on the psychometric properties of the Genius Finder, the concepts of standardization, reliability and validity will be briefly explained.



Standardisation

Normative data allows us to compare an individual's score on a standardised scale against the scores obtained from a clearly defined group of respondents (e.g., employees at different levels, different industries etc.). Because the Genius Finder is not standardised normative data, we have not compared with age norms, instead we have used demographics to ensure no adverse impact of race, gender, sexuality or disability. To enable any respondent's scores on the Genius Finder to be meaningfully interpreted, the responses should be interpreted as self-ratings of ability in context, i.e. compared to the norms of the role being conducted.



The reliability of a test assesses the extent to which variation in the test's scores is due to true differences between people on the characteristics being measured – in this case a set of 13 behavioural measures – or to random measurement error. Reliability is generally assessed using one of two different methods; one assesses the stability of the test's scores over time, the other assesses the internal consistency, or homogeneity, of the test's items. The Genius Finder has been assessed for internal consistency.



The fact that a test is reliable only means that the test is consistently measuring a construct, it does not indicate what construct the test is consistently measuring. The



concept of validity addresses this issue. As Kline (2016) notes "a test is said to be valid if it measures what it claims to measure". An important point is that a test's reliability sets an upper limit for its validity. That is to say a test cannot be more valid than it is reliable, because if it is not consistently measuring a construct it cannot be consistently measuring the construct it was developed to assess.

Construct validity assesses whether the characteristic which a test is measuring is psychologically meaningful and consistent with how that construct is defined. The most common way to assess the construct validity of a test is by exploratory and confirmatory factor analyses. A factor analysis explores the relationships between items in a factor, to assess whether or not they group together better than any other combination. This allows us to explore whether some of the items in the verbal skills category are actually dependent on the social interaction and vice versa. If there are numerically clean breaks between the items it helps us identify that the categories are distinct factors.

Criterion validity of a test involves demonstrating that the test meaningfully predicts some real-world criterion. There are two types of criterion validity - predictive validity and concurrent validity. Predictive validity assesses whether a test is capable of predicting an agreed criterion which will be available at some future point in time - e.g., can a test of memory predict the future success of job applicants. Concurrent validity, on the other hand, assesses whether a test can be used to predict a criterion which is available at the same time as the test was completed.

The Genius Finder has been assessed with exploratory and confirmatory factor analysis. The demographic data of the which neurotypes experienced difficulties in which areas also provides a form of concurrent validity.



Exploratory Factor Analysis

The internal consistency of twelve original Genius Finder categories was measured using a sample of 534 adult employees, based mainly in the UK. Table two shows the demographics of the sample. This is included to transparently map the development of the tool, Genius Finder results are below.

Table 2: Demographics for the sample used to test Genius Finder

Demographic	Representation
Gender	26% reported their birth gender as male with 71.7% female. 1.4% reported non-binary and 0.8% preferred not to say In terms of gender, 91.4% identified as cis-gender, with the remaining identifying as transgender (0.3%), non-binary (5.5%), other (0.9%), or preferred not to say (5.5%).
Race/ethnicity	There were 14 ethic categories reported, not including those that chose the "other" (1%) or who did not wish to disclose (1.2%). The largest ethnic groups were "White British/ European" (52.8%), "Asian – South" (27.5%), "African" (2.5%), "White American" (2.3%), and "British Asian" (2.1%).
	To assess for ethnic group differences these were grouped into seven categories: "Black" (6%), "Asian" (29.6%), "Mixed" (1.7%), "White" (57.8%), "Other" (3.7%), and "Prefer not to say" (1.2%). This compares to 84.5% in the UK in general (Office of
Sexuality	National Statistics, 2021) 75% heterosexual, 10% identify as gay, 9% as bisexual, 3% as lesbian and 3% as other.



Disability	• 18 people hearing impairment or Deaf (3.5%)
representation	• 11 people visual impairment or were blind (2.1%)
	• 25 people had muscular skeletal difficulties (4.9%)
	• 34 people had mental health diagnoses (6.6%)
	• 13 people had acquired brain injury (2.5%)
	• 72 people had chronic long-term illness (14%)
Neurominority	• 152 ADHD (29.5%)
representation	• 87 Autistic (16.9%)
	• 32 Dyscalculic (6.2%)
	• 92 Dyslexic (17.9%)
	• 23 Dyspraxic (4.5%)
	• 34 Sensory processing disorder (6.6%)
	• 7 Tic Disorder (1.4%)
Socio economic	55% had parents who are graduates or higher
status	31% had parents educated to high school
	5% had parents with no education
	The remainder ticked prefer not to say

The sample is deemed to be sufficiently representative for preliminary analysis.

Construct validity

A series of exploratory factor analyses (EFA) were carried on the 75 items from the Genius Finder using Principal Axis Factoring (Promax rotation). In total, 13 items were excluded due to cross-loadings, not loading, or poor internal reliability scores. Three of these were grouped and expanded to form a new, 13th Factor of spatial reasoning, as this is a core work performance capacity in manual labour and was not represented otherwise, combining three deleted items with two new items.

The final EFA reported .908 for Kaiser-Meyer-Olkin Measure of Sampling Adequacy indicating very strong partial correlations, and therefore appropriateness to carry out an EFA. This is further supported by Bartlett's Test of Sphericity where



 X^2 =17,472.91, df=1891, p<.001, indicating that the correlation matrix is not an identity matrix.

In total 12 factors were extracted and are presented in Table 4, with a cumulative percent of 54.65%. Nine factors had an eigenvalue above 1.00. The inflection point in the scree plot is not clear, and could occur after the second, fourth, or eight factor. Considering this information collectively, it was decided to retain 12 factors given its congruence with the initial model.

Table 4: Eigenvalues and % variance of extracted factors

Factor Number	Eigenvalue	% of variance	Cumulative %
Factor 1	12.75	20.57	20.57
Factor 2	4.61	7.43	28.00
Factor 3	3.65	5.88	33.88
Factor 4	3.23	5.21	39.09
Factor 5	2.05	3.31	42.40
Factor 6	1.69	2.72	45.13
Factor 7	1.43	2.31	47.44
Factor 8	1.36	2.20	49.64
Factor 9	1.00	1.61	51.25
Factor 10	0.85	1.37	52.62
Factor 11	0.69	1.11	53.73
Factor 12	0.57	0.92	54.65



Table 5 presents each factor, the number of items in each factor, and the lowest factor loading. It also shows adequate internal reliability for the factors in each factor. The factor loading for each item on their factor is presented in Appendix II.

Table 5: Details of the 12 factors and their reliability

Factor	Name	Number of	Lowest Factor	Cronbach's
Number		Items	Loading	Alpha
Factor 1	Sensory	6	.423	.878
Factor 2	Literacy	8	.382	.827
Factor 3	Self-organising	7	.407	.863
Factor 4	Numeracy	6	.448	.899
Factor 5	Creativity	7	.375	.815
Factor 6	Social communication	6	.374	.839
Factor 7	Movement	3	.807	.895
Factor 8	Memory	5	.551	.797
Factor 9	Reading for detail	4	.536	.837
Factor 10	Dexterity	3	.383	.704
Factor 11	Typing	3	.339	.605
Factor 12	Emotions	4	.381	.770



Confirmatory Factor Analysis

The sample consisted of 1,232 individuals working in various companies and departments. Participants were self-selecting adults of working age who voluntarily completed the assessment as part of a desire to improve workplace performance, and were obtained through an opportunistic sampling method. Of the individuals who responded to the questions, 760 (62%) identified as CIS-gendered, 3 (<1%) as trans, 24 (2%) as non-binary, 7 (1%) as other, and 36 (3%) preferred not to say. When asked about their birth gender, 376 (31%) reported that they were born male, 736 (60%) were born female, 22 (2%) non-binary, and 10 (1%) preferred not to say. The majority (n = 901, 76%) identified as heterosexual, with participants also identifying as lesbian (n = 23, 3%), bisexual (n = 65, 5%), gay (n = 31, 3%), queer (n = 19, 2%), pansexual (n = 22, 2%), or asexual (n = 15, 1%). Seven individuals (1%) responded "other", and 35 (3%) preferred not to say. When asked about their socio-economic group, of the individuals who responded, 27 (2%) reported "No education", 393 (32%) reported "High school level", 661 (54%) reported "Graduate, college degree or higher", and 43 (3%) responded "Prefer not to say".

Demographics relating to disability and/or neurodivergence are reported below (Table 2) and ethnicity is reported in Table 3.



Table 6. Demographic information: Disability and neurodivergence

Demographic	Category	n(%)
Chronic Illness	Disability	139 (11%)
Chronic-Neurological-Conditions or	Disability	27 (2%)
Brain-Injury		
Hearing Impairment or Deaf	Disability	46 (4%)
Psychiatric Disorder	Disability	97 (8%)
Visual impairment or blind	Disability	29 (2%)
Muscular-Skeletal	Disability	64 (5%)
Other*	Disability	51 (4%)
"I do not wish to disclose"	Disability	30 (2%)
ADHD	Neurodivergence	351 (28%
Autism	Neurodivergence	200 (16%)
Dyscalculia	Neurodivergence	53 (4%)
Dyslexia	Neurodivergence	186 (15%)
Dyspraxia	Neurodivergence	56 (5%)
Sensory-Processing Disorder	Neurodivergence	55 (4%
Tic Disorder (Incl. Tourette's)	Neurodivergence	14 (1%)
Other**	Neurodivergence	51 (4%)
"I do not wish to disclose"	Neurodivergence	31 (3%)

Note. *Includes e.g., anxiety, asthma, coeliac disease, chronic fatigue, diabetes, epilepsy, depression, tinnitus, migraine. **includes e.g., auditory processing disorder, dysgraphia, obsessive compulsive disorder, anxiety and high sensitivity



Table 7. Demographic information: Ethnicity

Demographic	n(%)
African	53 (4%)
African American	0 (0%)
African Caribbean	11 (1%)
American Asian	0 (0%)
Asian - east	15 (1%)
Asian - south	172 (14%)
Black British/European	11 (1%)
British Asian	39 (3%)
Indigenous/First Nations	2 (<1%)
Hispanic	3 (<1%)
Jewish	8 (1%)
Middle Eastern	17 (1%)
Mixed Heritage	18 (1%)
Oceanian	0 (0%)
White American	23 (2%)
White British/European	683 (55%)
White other	35 (3%)
European other	8 (1%)
Other*	18 (1%)
"I do not wish to disclose"	14 (1%)
Missing responses	102 (8%)



Note. *Includes e.g., Arab, Asian-Caribbean, Black British, Indian, Malay, Mixed, Latin, New Zealand European

Data Analysis

Data was first screened to ensure its suitability for a CFA. Outliers were not tested for, due to data being measured using a Likert scale. In addition to this, there were no missing values in the data; as a result, no data was removed, and the final sample size remained the same (N = 1,232). Analysis revealed a Kaiser-Meyer-Olkin (KMO) of 0.939, classed as 'marvellous' and indicating that the sample size was sufficient for a CFA (Kaiser, 1974; Kaiser & Rice, 1974).

The data was found to violate the assumption of normality. Univariate normality was estimated using the Shapiro-Wilk test, which indicated a deviation from univariate normality (p < .001). Additionally, Mardia's test of multivariate normality revealed a departure from multivariate normality (p < .001), indicating skewness and kurtosis. These findings were also supported by a visual inspection of histograms. As a result, although the findings from the CFA are not impacted by this, they cannot be generalised to a wider population (Field, 2018).

An inspection of the correlation matrix revealed that there was no evidence of multicollinearity or singularity (R < .9 in all cases). Data was inspected for floor and ceiling effects, defined as the proportion of participants scoring the highest or lowest scores exceeding 15%, of which none were found. Finally, Bartlett's test of sphericity indicated common variance amongst the variables (p < .001), and as such confirmed the suitability of the Genius Finder for factor analysis.

A CFA using the DWLS method with listwise deletion was conducted to estimate model parameters of the Genius Finder, testing the 13-factor model developed as a result of a previous EFA. Goodness-of-fit was assessed using the chi-square test along with RMSEA (Root Mean Square Error of Approximation) to assess absolute fit, and CFI (Comparative Fit Index) and TLI (Tucker-Lewis Index) to assess approximate incremental fit.

Analysis revealed an RMSEA of 0.07, indicating adequate fit of the overall theoretical model (Brown, 2015). The CFI and TLI fit indices indicated good fit of the model,



with values of 0.97 and 0.96 respectively (Brown, 2015). The chi-square test indicated a misfit of the model, with the null hypothesis being rejected, suggesting that the 13-factor model is unable to reproduce the covariance structure perfectly within the population.

Table 8. Overview of model fit

x ²	df	CFI	TLI	RMSEA (90% CI)
12691.78	1874*	0.965	0.962	0.069 (0.068 – 0.070)

^{*}p < .001

The analysis revealed that each item made a reasonable contribution towards the model, with all z-values > 0 (M = 45.55). Therefore, there is no reason to remove any of the items from the model. Factor loadings were high for all variables (> .40), except for Q144, Q152, and Q133. Residual variance was also high for these items (> .85; see Appendix 3), suggesting that a lot of the variance in each of these items is not captured by their respective factors.

Internal Consistency & Convergent Validity

Internal consistency of the Genius Finder was assessed by calculating Cronbach's alpha (a) and Omega Total (ω), and convergent validity was assessed through Average Variance Extracted (AVE). Cronbach's alpha indicated good internal reliability overall, with an average a of 0.787, as did Omega Total (ω = 0.935). Hair et al (2010) suggests that values of 0.70 or above are adequate for both omega and alpha values. Kline (1999) suggests that alpha values of 0.6 or over are acceptable for psychological constructs. For the majority of the factors, a ranged between 0.666 - 0.910. Two factors fell below this cutoff: Typing (a = 0.587) and Spatial Reasoning (a = 0.471). Deletion of items did not improve reliability for either factor. AVE for the entire sample was $\mathcal{M}=0.548$, indicating convergent validity of the Genius Finder (Fornell & Larcker, 1981).



Table 9. Model reliability & convergent validity

	Cronbach's α	AVE			
Sensory Needs	0.888	0.652			
Literacy	0.825	0.443			
Self-Organising	0.877	0.581			
Numeracy	0.910	0.710			
Creativity	0.809	0.489			
Social Communication	0.835	0.539			
Movement	0.896	0.816			
Memory	0.812	0.519			
Reading for Detail	0.856	0.657			
Manual Dexterity	0.690	0.540			
Typing	0.587	0.420			
Emotions	0.774	0.524			
Spatial Reasoning	0.471	0.237			



Discussion

The CFA showed good to satisfactory levels of goodness-of-fit for the 13-factor model of the Genius Finder on three out of four different fit indices. Although the chi-square index of global fit indicated poor fit, it is important to note that this test is very sensitive to large sample sizes (Babyak & Green, 2010), and as such it is recommended to assess model fit in combination with other measures (Alavi et al., 2020; Brown, 2015). With a sample of 1,232, it is therefore probable that the chisquare test was impacted by sample size, and so the Genius Finder 13-factor model has also been assessed in combination with other measurements in order to determine its' fit. In particular, previous studies have indicated that measures such as RMSEA and TLI are not impacted by sample size sensitivity and so are good measures to use alongside the chi-square test (Fan et al., 1999; Hu & Bentler, 1998, 1999; Jackson, 2007). Therefore, although the chi-square index of global fit indicated poor fit, the RMSEA measure of absolute fit, and the TLI and CFI measures of approximate incremental fit, indicated acceptable fit of the 13 factor model. Based on this, it can be determined that the Genius Finder indicates good construct validity overall.

To further improve the fit of the model, and to increase convergent validity of the Genius Finder, two items will be removed and one item will be modified due to their impact on AVE. These items belonged to Creativity (Q144), Typing (Q152), and Spatial Reasoning (Q133). The items belonging to Creativity and Spatial Reasoning have been removed, and modifications have been made to the item belonging to Typing (see Appendix 4). In addition to this, and to improve internal consistency of the tool, modifications have been made to one item belonging to Manual Dexterity (Q137; please see Appendix 4).

Concurrent validity

The factors of the Genius Finder have compared across seven neurodivergent conditions for concurrent validity. The differences observed are outlined below and presented in more detail in the appendix. All significant differences match the expectations associated with the specific diagnoses (Doyle et al., 2022).



Participants who reported ADHD scored the sensory (t(339.65)=8.475, p=0.001), literacy (t(513)=2.075, p=0.039), self-organising (t(343.51)=11.678, p=0.001), numeracy (t(513)=2.108, p=0.036), movement (t(513)=3.349, p=0.001), memory (t(513)=4.055, p<0.001), reading (t(513)=3.859, p<0.001), dexterity (t(513)=3.145, p=0.002), and emotions (t(513)=5.935, p<0.001) factors than those who did not report ADHD. Higher creativity was observed for those with ADHD than those without (t(513)=-4.766, p=0.001).

For Autism, participants who reported this scored higher on creativity than those who did not (t(513)=-2.679, p=.008). Participants reporting autism scored lower than those who did not report autism on sensory (t(160.97)=10.432, p<0.001), selforganising (t(513)=4.588, p<0.001), spoken language (t(513)=4.187, p<0.001), movement (t(513)=4.136, p<0.001), dexterity (t(513)=4.047, p<0.001), and emotions (t(513)=5.487, p<0.001).

Only two out of the twelve factors reported differences for Dyscalculia, where those who reported this scored lower on numeracy (t(513)=6.606, p<0.001) and reading (t(513)=2.060, p=0.040) than those who did not.

Participants reporting Dyslexia had lower scores on literacy (t(513)=10.867, p<.001), memory (t(513)=2.349, p=0.019), reading (t(513)=6.637, p>0.001), dexterity (t(513)=2.724, p=0.007), and dexterity2 (t(513)=5.076, p<0.001) that those without dyslexia. Higher levels of creativity was observed for those reporting Dyslexia than those without (t(513)=-2.2302, p=0.022).

In terms of Dyspraxia-DCD, only two factors observed differences whereby those reporting Dyspraxia-DCD had lower scores on movement (t(513)=4.246, p<0.001) and dexterity (t(513)=2.177, p=0.030) than those who did not report Dyspraxia-DCD.

Participants reporting a Sensory Processing Disorder scored lower on seven factors compared to those who did not report such a condition: sensory (t(513)=5.911, p<0.001), self-organising (t(513)=3.455, p<0.001), spoken language (t(513)=3.467, p<0.001), movement (t(513)=2.497, p=0.013), reading (t(513)=2.897, p=.004), dexterity (t(513)=4.341, p<0.001), and emotions



(t(513)=3.530, p<0.001). Higher levels of creativity was reported in those with a sensory processing disorder (t(513)=-2.332, p=0.020) than those without.

For Tic-Disorders (including Tourette's), the only two out of the twelve factors reporting a difference was where those reporting a disorder scored lower on spoken language (t(513)=2.541, p=.011) and dexterity 2 (t(513)=2.489, p=.013) than those without.

Adverse Impact

The factors of the Genius Finder have compared according to Socio-Economic Status, Gender (Birth), Gender, Sexuality, and Ethnicity (Appendix III).

For Socio-Economic Status, the only differences are where "Graduates" score higher than those whose highest qualification was "High School" on factors relating to literacy (F(3, 470) = 2.630, p=.050) and creativity (F(3, 470) = 3.828, p=.010). No differences were observed on any of the ten other factors.

For Gender (Birth), Males scored higher than Females on factors relating to numeracy (F(3, 484) = 10.291, p < 0.001), movement (F(3, 484) = 14.651, p < 0.001), dexterity (F(3, 484) = 10.883, p < 0.001), and emotions (F(3, 484) = 1.698, p = 0.003). Non-binary participants had higher levels of creativity than males (F(3, 484) = 2.883, p = 0.035). No differences were observed on any of the seven other factors. These results sadly converge with existing evidence on the gender-bound experiences of educational and occupational testing (Liell et al., 2022)...

For Gender Identity, transgender and non-binary participants had higher levels of creativity than cisgender participants (F(2,345) = 3.542, p=.030). No differences were observed on any of the 11 other factors. This is likely related to the higher than expected prevalence of Autism within this cohort (Warrier et al., 2020).

For Sexuality, heterosexual participants scored higher than not-heterosexual participants on factors relating to sensory (F(2, 475) = 7.426, p<.001), self-organising (F(2, 475) = 3.277, p=.039), movement (F(2, 475) = 4.260, p=.015), and emotions F(2, 475) = 4.042, p<.001). Not-heterosexual participants scored higher than heterosexual participants on creativity F(2, 475) = 8.430, p>.001. No differences were observed on any of the six other factors.



For ethnicity, no differences were reported on any of the 12 factors.

Disability factors were also considered and differences were broadly as expected.

For Chronic Illness, participants reported having a chronic illness scored lower on movement (t(513)=5.014, p<.001), self-organising (t(513)=2.141, p=.033), and dexterity (t(513)=2.787, p=.006) than those who did not report a chronic illness. No differences were reported on any of the other nine factors.

Participants who reported a Chronic Neurological Condition or Brain Injury scored lower on sensory (t(13.74)=4.072, p=.001), movement (t(513)=3.365, p<.001), memory (t(513)=2.448, p=.015), and emotions (t(13.71)=2.245, p=.042) than those who did not. No differences were reported on any of the other eight factors.

In terms of Hearing Impairment or Deafness, those who reported this scored lower on dexterity (t(513)=2.132, p=0.033) than those who did not. There were no differences on any of the remaining 11 factors.

For Muscular Skeletal Disability, participants who reported this scored lower on sensory (t(26.79)=3.189, p=.004), movement (t(513)=4.381, p=0.001), and dexterity (t(513)=2.233, p=.026) than those who did not. No differences were found on the other nine factors.

Participants who reported a psychiatric disorder scored lower on sensory (t(513)=3.213, p<.001), self-organising ((513)=3.717, p<.001), movement (t(513)=2.982, p=0.003), and emotions (t(513)=3.530, p<.001) that those who did not. There were no differences on the other eight factors.

For Visual Impairment or Blindness, those who reported such a disability scored lower than those who did not on sensory (t(513)=2.041, p=.042) and movement (t(513)=3.597, p=0.001) factors than those who did not. They also scored higher on creativity (t(513)=-2.515, p=.012) than those who did not. There were no differences on the remaining nine factors.



References

Stevens, J. P. (2002). Applied multivariate statistics for the social sciences (4th ed.). Hillsdale, NJ: Erlbaum.

Alavi, M., Visentin, D., Thapa, D. K., Hunt, G. E., Watson, R., & Cleary, M. (2020). Chisquare for model fit in confirmatory factor analysis. Journal of Advanced Nursing, 76(9), 2209-2211. https://doi.org/10.1111/jan.14399

Astle, D. E., Bathelt, J., & Holmes, J. (2019). Remapping the cognitive and neural profiles of children who struggle at school. Developmental Science, 22(1), 1–17. https://doi.org/10.1111/desc.12747

Babyak, M. A., & Green, S. B. (2010). Confirmatory Factor Analysis: an introduction for Psychosomatic medicine researchers. Psychosomatic Medicine, 72(6), 587–597. https://doi.org/10.1097/psy.0b013e3181de3f8a

Beery & Beery. (2010). 3. The Beery-Buktenica Developmental Test of Visual-Motor Integration, 6th Edition (VMI); Pearson Clinical Assessment.

Brown, T. A. (2015). Confirmatory factor analysis for applied research (2nd ed.). The Guilford Press.

C. Brown & W. Dunn. (2002). Adolescent/adult sensory profile. Psychological Corporation.

Cattell, R. B. (1963). Theory of fluid and crystallized intelligence: A critical experiment. Journal of Educational Psychology, 54(1), 1–22. https://doi.org/10.1037/h0046743

Doyle, N., Hough, L., Thorne, K., & Banfield, T. (2022). Neurodiversity Assessment in Forensic Contexts. In G. Liell, M. Fisher, & L. Jones (Eds.), Challenging Bias. Taylor and Francis.

EFPA Review Model for the Description and Evaluation of Psychological and Educational Tests, version 4.2.6. (2013).

Fan, X., Thompson, B., & Wang, L. (1999). Effects of sample size, estimation methods, and model specification on structural equation modeling fit indexes. Structural Equation Modeling, 6(1), 56-83. https://doi.org/10.1080/10705519909540119

Hu, L.-t., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. Psychological Methods, 3(4), 424–453. https://doi.org/10.1037/1082-989X.3.4.424



Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling: A Multidisciplinary Journal, 6(1), 1–55. https://doi.org/10.1080/10705519909540118

Hair, J.F., Black, W., Babin, B., & Anderson, R. (2010). Multivariate data analysis (7th ed.). Upper Saddle River, NJ: Prentice-Hall.

Jackson, D. L. (2007). The effect of the number of observations per parameter in misspecified confirmatory factor analytic models. Structural Equation Modeling: A Multidisciplinary Journal, 14(1), 48–76. https://doi.org/10.1080/10705510709336736Jones, J. S., the CALM Team, & Astle, D. E. (2021). A transdiagnostic data-driven study of children's behaviour and the functional connectome. Developmental Cognitive Neuroscience, 52, 101027. https://doi.org/10.1016/j.dcn.2021.101027

Kline, P. (2016). A Handbook of Test Construction: Introduction to Psychometric Design. Routledge.

Lewin, K. (1936). Principles of topographical psychology. McGraw-Hill.

Liell, G., Fisher, M., & Jones, L. (2022). Challenging Bias in Forensic Psychological Assessment and Testing Theoretical and Practical Approaches to Working with Diverse Populations. Routledge.

Nicolaidis, C., Raymaker, D. M., McDonald, K. E., Lund, E. M., Leotti, S., Kapp, S. K., Katz, M., Beers, L. M., Kripke, C., Maslak, J., Hunter, M., & Zhen, K. Y. (2020). Creating Accessible Survey Instruments for Use with Autistic Adults and People with Intellectual Disability: Lessons Learned and Recommendations. Autism in Adulthood, 2(1), 61–76. https://doi.org/10.1089/aut.2019.0074

Salovey, P & Mayer, J.D. (1990). Emotional intelligence. Imagination, Cognition, and Personality, 9, 185-211.

Singer, J. (1999). 'Why can't you be normal for once in your life?' From a problem with no name to the emergence of a new category of difference. In M. Corker & S. French (Eds.), Disability Discourse (pp. 59–67). Open University Press.

Siugzdaite, R., Bathelt, J., Holmes, J., & Astle, D. E. (2020). Transdiagnostic Brain Mapping in Developmental Disorders. Current Biology, 30(7), 1245-1257.e4. https://doi.org/10.1016/j.cub.2020.01.078

Stevens, J. P. (2002). Applied multivariate statistics for the social sciences (4th ed.). Hillsdale, NJ: Erlbaum.



Taylor, H., Fernandes, B., & Wraight, S. (2021). The Evolution of Complementary Cognition: Humans Cooperatively Adapt and Evolve through a System of Collective Cognitive Search. Cambridge Archaeological Journal, 1–17. https://doi.org/10.1017/s0959774321000329

Equality Act, (2010). http://www.legislation.gov.uk/ukpga/2010/15/introduction

Warrier, V., Greenberg, D. M., Weir, E., Buckingham, C., Smith, P., Lai, M.-C., Allison, C., & Baron-Cohen, S. (2020). Elevated rates of autism, other neurodevelopmental and psychiatric diagnoses, and autistic traits in transgender and gender-diverse individuals. Nature Communications, 11(1), 3959. https://doi.org/10.1038/s41467-020-17794-1

Wechsler, D. (2008). WAIS-IV administration and scoring manual. Psychological Corporation.



Appendix

Factor Loadings from CFA

						nfidence erval
Factor	Indicator	Estimate	Std. Error	z-value	Lower	Upper
Sensory Needs	Q 128	0.856	0.011	77.583	0.834	0.878
	Q 130	0.857	0.01	82.703	0.837	0.878
	Q 127	0.860	0.011	78.668	0.838	0.881
	Q 153	0.672	0.019	-34.762	-0.710	-0.634
	Q 129	0.893	0.011	80.089	0.871	0.915
	Q 119	0.676	0.021	32.917	0.636	0.717
Literacy	Q 87	0.653	0.021	31.074	0.612	0.695
	Q 100	0.734	0.019	39.126	0.697	0.771
	Q 99	0.863	0.014	59.928	0.835	0.892
	Q 86	0.527	0.026	19.958	0.475	0.579
	Q 88	0.467	0.026	17.878	0.416	0.518
	Q 85	0.672	0.021	32.146	0.631	0.713
	Q 95	0.537	0.025	21.518	0.488	0.586
	Q 89	0.771	0.022	35.225	0.728	0.813
Self-Organising	Q 104	0.836	0.012	72.015	0.813	0.858
	Q 103	0.838	0.011	74.714	0.816	0.860
	Q 108	0.689	0.018	39.245	0.655	0.724
	Q 102	0.607	0.022	27.858	0.564	0.650
	Q 106	0.726	0.019	39.118	0.690	0.762
	Q 123	0.768	0.016	47.359	0.736	0.799
	Q 105	0.841	0.016	52.672	0.809	0.872
Numeracy	Q 93	0.861	0.009	97.143	0.844	0.878
-	Q 92	0.925	0.008	112.135	0.909	0.941
	Q 94	0.876	0.01	86.999	0.857	0.896
	Q 90	0.846	0.011	80.087	0.825	0.867
	Q 91	0.829	0.012	68.523	0.805	0.853
	Q 142	0.700	0.022	32.107	0.657	0.743
Creativity	Q 145	0.824	0.013	65.031	0.799	0.849
-	Q 147	0.879	0.01	86.567	0.859	0.899
	Q 154	0.747	0.016	45.898	0.715	0.779
	Q 148	0.740	0.016	45.982	0.709	0.772
	Q 150	0.629	0.021	29.259	0.587	0.671
	Q 149	0.630	0.021	30.193	0.589	0.671
	Q 144	0.269	0.029	9.42	0.213	0.325
Social Communication	Q 118	0.739	0.017	44.616	0.707	0.772
	Q 82	0.682	0.019	35.705	0.645	0.720
	Q 77	0.806	0.014	56.648	0.778	0.834
	Q 116	0.735	0.02	36.033	0.695	0.775
	Q 76	0.598	0.025	24.246	0.549	0.646



	Q 81	0.823	0.021	39.993	0.783	0.864
Movement	Q 135	0.912	0.011	83.419	0.890	0.933
	Q 131	0.875	0.012	72.349	0.852	0.899
	Q 132	0.922	0.011	87.079	0.901	0.943
Memory	Q 111	0.836	0.017	48.584	0.802	0.869
	Q 110	0.770	0.017	44.575	0.737	0.804
	Q 112	0.695	0.021	33.268	0.654	0.736
	Q 113	0.482	0.026	18.529	0.431	0.533
	Q 114	0.767	0.02	37.506	0.727	0.807
Reading for Detail	Q 97	0.731	0.017	43.602	0.698	0.764
	Q 96	0.891	0.012	76.787	0.868	0.913
	Q 98	0.730	0.017	43.522	0.697	0.763
	Q 101	0.877	0.012	71.737	0.853	0.901
Manual Dexterity	Q 138	0.772	0.02	38.243	0.733	0.812
	Q 141	0.640	0.024	27.036	0.594	0.687
	Q 137	0.783	0.025	31.25	0.734	0.832
Typing	Q 136	0.519	0.033	15.822	0.455	0.583
	Q 152	0.385	0.036	10.716	0.314	0.455
	Q 151	0.917	0.042	22.093	0.836	0.999
Emotions	Q 122	0.729	0.018	41.527	0.695	0.764
	Q 121	0.698	0.019	36.834	0.661	0.735
	Q 115	0.786	0.016	50.377	0.755	0.816
	Q 125	0.679	0.021	32.576	0.638	0.720
Spatial Reasoning	Q 133*	0.086	0.036	2.418	0.016	0.156
	Q 134	0.636	0.032	19.616	0.572	0.700
	Q 140	0.546	0.031	17.493	0.485	0.608

Note. The table presents standardised factor loadings. P values were < .001 for all values except those marked with an asterisk, where p < .016.



Factor covariances

						Confi	5% dence erval
			Estimate	Std. Error	z- value	Lower	Upper
Sensory Needs	\leftrightarrow	Literacy	0.37	0.008	46.328	0.355	0.386
Sensory Needs	\leftrightarrow	Self-organising	0.638	0.007	93.056	0.625	0.652
Sensory Needs	\leftrightarrow	Numeracy	0.229	0.007	30.935	0.214	0.243
Sensory Needs	\leftrightarrow	Creativity	-0.133	0.008	- 16.575	-0.148	-0.117
Sensory Needs	\leftrightarrow	Social Communication	0.521	0.008	64.005	0.505	0.537
Sensory Needs	\leftrightarrow	Movement	0.464	0.009	51.193	0.446	0.482
Sensory Needs	\leftrightarrow	Memory	0.441	0.009	49.12	0.423	0.459
Sensory Needs	\leftrightarrow	Reading for detail	0.525	0.009	60.178	0.508	0.542
Sensory Needs	\leftrightarrow	Manual Dexterity	0.495	0.012	40.541	0.471	0.519
Sensory Needs	\leftrightarrow	Typing	0.332	0.015	22.414	0.303	0.361
Sensory Needs	\leftrightarrow	Emotions	0.776	0.011	72.728	0.755	0.797
Sensory Needs	\leftrightarrow	Spatial Reasoning	0.456	0.025	18.319	0.407	0.505
Literacy	\leftrightarrow	Self-organising	0.453	0.008	56.924	0.437	0.468
Literacy	\leftrightarrow	Numeracy	0.278	0.008	36.022	0.263	0.293
Literacy	\leftrightarrow	Creativity	0.146	0.009	16.942	0.129	0.163
Literacy	\leftrightarrow	Social Communication	0.423	0.009	47.79	0.406	0.441
Literacy	\leftrightarrow	Movement	0.3	0.01	29.727	0.281	0.32
Literacy	\leftrightarrow	Memory	0.422	0.01	42.932	0.403	0.442
Literacy	\leftrightarrow	Reading for detail	0.814	0.01	84.601	0.795	0.833



Literacy	\leftrightarrow	Manual Dexterity	0.404	0.013	31.52	0.379	0.429
Literacy	\leftrightarrow	Typing	0.519	0.018	29.097	0.484	0.554
Literacy	\leftrightarrow	Emotions	0.439	0.011	38.92	0.417	0.461
Literacy	\leftrightarrow	Spatial Reasoning	0.331	0.023	14.619	0.287	0.375
Self-organising	\leftrightarrow	Numeracy	0.298	0.007	41.516	0.284	0.312
Self-organising	\leftrightarrow	Creativity*	-0.004	0.008	-0.546	-0.02	0.011
Self-organising	\leftrightarrow	Social Communication	0.469	0.008	57.198	0.453	0.485
Self-organising	\leftrightarrow	Movement	0.481	0.009	53.341	0.463	0.499
Self-organising	\leftrightarrow	Memory	0.6	0.009	66.732	0.582	0.618
Self-organising	\leftrightarrow	Reading for detail	0.582	0.009	67.282	0.565	0.599
Self-organising	\leftrightarrow	Manual Dexterity	0.437	0.012	36.615	0.413	0.46
Self-organising	\leftrightarrow	Typing	0.391	0.015	25.394	0.361	0.421
Self-organising	\leftrightarrow	Emotions	0.748	0.011	69.367	0.726	0.769
Self-organising	\leftrightarrow	Spatial Reasoning	0.515	0.026	19.496	0.463	0.567
Numeracy	\leftrightarrow	Creativity	0.185	0.008	23.916	0.169	0.2
Numeracy	\leftrightarrow	Social Communication	0.247	0.008	30.773	0.231	0.262
Numeracy	\leftrightarrow	Movement	0.223	0.009	24.191	0.205	0.241
Numeracy	\leftrightarrow	Memory	0.333	0.009	38.12	0.316	0.35
Numeracy	\leftrightarrow	Reading for detail	0.333	0.009	38.028	0.316	0.35



Numeracy	\leftrightarrow	Manual Dexterity	0.433	0.012	37.128	0.41	0.456
Numeracy	\leftrightarrow	Typing	0.282	0.014	19.879	0.254	0.31
Numeracy	\leftrightarrow	Emotions	0.243	0.01	23.651	0.223	0.263
Numeracy	\leftrightarrow	Spatial Reasoning	0.453	0.024	18.678	0.406	0.501
Creativity	\leftrightarrow	Social Communication	0.371	0.009	41.49	0.354	0.389
Creativity	\leftrightarrow	Movement**	-0.031	0.011	-2.915	-0.052	-0.01
Creativity	\leftrightarrow	Memory	0.253	0.01	26.284	0.234	0.272
Creativity	\leftrightarrow	Reading for detail	0.112	0.01	11.414	0.093	0.131
Creativity	\leftrightarrow	Manual Dexterity	0.19	0.013	15.188	0.166	0.215
Creativity	\leftrightarrow	Typing	0.126	0.015	8.62	0.098	0.155
Creativity	\leftrightarrow	Emotions***	0.004	0.011	0.309	-0.019	0.026
Creativity	\leftrightarrow	Spatial Reasoning	0.364	0.024	15.344	0.318	0.411
Social Communicatio n Social	\leftrightarrow	Movement	0.341	0.01	33.001	0.321	0.361
Communicatio n	\leftrightarrow	Memory	0.444	0.01	43.952	0.424	0.463
Social				0.01			
Communicatio n	\leftrightarrow	Reading for detail	0.525	0.01	52.986	0.506	0.545
	\leftrightarrow		0.525		52.986 27.494		0.545
n Social Communicatio	\leftrightarrow	detail Manual Dexterity		0.01			
n Social Communicatio n Social Communicatio n Social	\leftrightarrow	detail Manual Dexterity	0.364	0.01	27.494	0.338	0.39
n Social Communicatio n Social Communicatio n Social Communicatio	\leftrightarrow	detail Manual Dexterity Typing	0.364	0.01 0.013 0.016	27.494 19.343	0.338	0.39



Movement	\leftrightarrow	Reading for detail	0.284	0.012	24.167	0.261	0.307
Movement	\leftrightarrow	Manual Dexterity	0.427	0.015	28.252	0.397	0.456
Movement	\leftrightarrow	Typing	0.397	0.018	21.974	0.361	0.432
Movement	\leftrightarrow	Emotions	0.522	0.013	40.652	0.497	0.548
Movement	\leftrightarrow	Spatial Reasoning	0.531	0.03	17.611	0.472	0.59
Memory	\leftrightarrow	Reading for detail	0.537	0.011	50.284	0.517	0.558
Memory	\leftrightarrow	Manual Dexterity	0.369	0.014	25.866	0.341	0.397
Memory Memory	$\leftrightarrow \longleftrightarrow$	Typing Emotions	0.302 0.466	0.017 0.013	17.469 36.908	0.268 0.441	0.336 0.49
Memory	\leftrightarrow	Spatial Reasoning	0.54	0.03	18.144	0.482	0.598
Reading for detail	\leftrightarrow	Manual Dexterity	0.41	0.015	28.293	0.382	0.439
Reading for detail	\leftrightarrow	Typing	0.418	0.018	23.123	0.382	0.453
Reading for detail	\leftrightarrow	Emotions	0.534	0.012	42.973	0.51	0.558
Reading for detail	\leftrightarrow	Spatial Reasoning	0.378	0.026	14.594	0.327	0.428
Manual Dexterity	\leftrightarrow	Typing	0.573	0.023	24.541	0.527	0.619
Manual Dexterity	\leftrightarrow	Emotions	0.468	0.016	28.462	0.436	0.501
Manual Dexterity	\leftrightarrow	Spatial Reasoning	0.672	0.037	18.021	0.599	0.745
Typing	\leftrightarrow	Emotions	0.347	0.02	17.652	0.309	0.386
Typing	\leftrightarrow	Spatial Reasoning	0.352	0.034	10.316	0.285	0.419
Emotions	\leftrightarrow	Spatial Reasoning	0.494	0.031	15.899	0.433	0.554

Note. p values were < .001 for all values except those marked with an asterisk, where *p < .585, *** p < .004, *** p < .757.



Appendix 3. Residual variances

Factor	Item	Estimate
	Q 128	0.267
	Q 130	0.265
Company Nooda	Q 127	0.261
Sensory Needs	Q153	0.548
	Q 129	0.203
	Q 119	0.542
	Q 87	0.573
	Q 100	0.461
	Q 99	0.255
Chausan.	Q 86	0.722
Literacy	Q 88	0.782
	Q 85	0.549
	Q 95	0.711
	Q 89	0.406
	Q 104	0.302
	Q 103	0.298
	Q 108	0.525
Self-organising	Q 102	0.631
	Q 106	0.473
	Q 123	0.411
	Q 105	0.293
	Q 93	0.259
	Q 92	0.144
Niversaus	Q 94	0.232
Numeracy	Q 90	0.284
	Q 91	0.313
	Q 142	0.510
	Q 145	0.321
	Q 147	0.228
	Q 154	0.442
Creativity	Q 148	0.452
	Q 150	0.605
	Q 149	0.603
	Q 144	0.928
	Q 118	0.453
	Q 82	0.534
Social	Q 77	0.351
Communication	Q 116	0.460
	Q 76	0.643
	Q 81	0.322
	Q 135	0.169
Movement	Q 131	0.234
	Q 132	0.150
N.A. o ma o m	Q 111	0.302
Memory	Q 110	0.407



Q 112				
Q 114 0.411 Q 97 0.466 Reading for Q 96 0.207 Detail Q 98 0.467 Q 101 0.231 Manual Q 138 0.404 Dexterity Q 137 0.387 Q 136 0.731 Typing Q 152 0.852 Q 151 0.159 Q 122 0.468 Q 121 0.512 Q 115 0.382 Q 125 0.539 Spatial Reasoning Q 134 0.595		Q 112	0.517	
Q 97 0.466 Reading for Q 96 0.207 Detail Q 98 0.467 Q 101 0.231 Manual Q 141 0.590 Dexterity Q 137 0.387 Q 136 0.731 Typing Q 152 0.852 Q 151 0.159 Q 122 0.468 Q 121 0.512 Q 115 0.382 Q 125 0.539 Spatial Reasoning Q 134 0.595		Q 113	0.768	
Reading for Q 96 0.207 Detail Q 98 0.467 Q 101 0.231 Manual Q 138 0.404 Dexterity Q 137 0.387 Q 136 0.731 Typing Q 152 0.852 Q 151 0.159 Q 122 0.468 Q 121 0.512 Q 115 0.382 Q 125 0.539 Spatial Reasoning Q 134 0.595		Q 114	0.411	
Detail Q 98 0.467 Q 101 0.231 Manual Q 138 0.404 Dexterity Q 137 0.387 Q 136 0.731 Typing Q 152 0.852 Q 151 0.159 Q 122 0.468 Q 121 0.512 Q 115 0.382 Q 125 0.539 Spatial Reasoning Q 134 0.595		Q 97	0.466	
Q 101	Reading for	Q 96	0.207	
Manual Dexterity Q 138 Q 141 Q 141 Q 137 Q 136 Q 136 Q 152 Q 151 Q 151 Q 152 Q 151 Q 122 Q 148 Q 121 Q 121 Q 121 Q 125 Q	Detail	Q 98	0.467	
Manual Dexterity Q 141 0.590 Q 137 0.387 Q 136 0.731 Typing Q 152 0.852 Q 151 0.159 Q 122 0.468 Q 121 0.512 Q 115 0.382 Q 125 0.539 Spatial Reasoning Q 134 Q 134 0.595		Q 101	0.231	
Dexterity Q 141 0.590 Q 137 0.387 Q 136 0.731 Typing Q 152 0.852 Q 151 0.159 Q 122 0.468 Q 121 0.512 Q 115 0.382 Q 125 0.539 Spatial Q 133 0.993 Reasoning Q 134 0.595	Name	Q 138	0.404	
Q 137		Q 141	0.590	
Typing Q 152 0.852 Q 151 0.159 Q 122 0.468 Q 121 0.512 Q 115 0.382 Q 125 0.539 Spatial Q 133 0.993 Reasoning Q 134 0.595	Dexterity	Q 137	0.387	
Q 151 0.159 Q 122 0.468 Q 121 0.512 Q 115 0.382 Q 125 0.539 Q 133 0.993 Spatial Reasoning Q 134 0.595		Q 136	0.731	
Q 122 0.468 Q 121 0.512 Q 115 0.382 Q 125 0.539 Q 133 0.993 Spatial Reasoning Q 134 0.595	Typing	Q 152	0.852	
Emotions Q 121 0.512 Q 115 0.382 Q 125 0.539 Spatial Reasoning Q 133 0.993 Q 134 0.595		Q 151	0.159	
Q 115 0.382 Q 125 0.539 Spatial Reasoning Q 133 0.993 Q 134 0.595		Q 122	0.468	
Q 115 0.382 Q 125 0.539 Q 133 0.993 Spatial Q 134 0.595 Reasoning	Functions	Q 121	0.512	
Spatial Q 133 0.993 Reasoning Q 134 0.595	Emotions	Q 115	0.382	
Spatial Q 134 0.595 Reasoning		Q 125	0.539	
Reasoning Q 134 0.595	Cnatial	Q 133	0.993	_
neasuiiiig	•	Q 134	0.595	
Q 140 0.701	neasoning	Q 140	0.701	



Differences on Factors based on Disabilities - Chronic-Illness

	N	Mean	SD	Significance Testing
No	443	2.49	0.89	No difference
Yes	72	2.32	0.93	t(513)=1.521, p>.05
No	443	3.52	0.75	No difference
Yes	72	3.56	0.76	t(513)=-0.452, p>.05
No	443	2.74	0.80	No illness scored higher
Yes	72	2.52	0.80	t(513)=2.141, p=.033
No	443	3.36	0.99	No difference
Yes	72	3.21	1.03	t(513)=1.137, p>.05
No	443	3.64	0.67	No difference
Yes	72	3.73	0.69	t(513)=-1.034, p>.05
No	443	3.15	0.80	No difference
Yes	72	3.19	0.77	t(513)=-0.444, p>.05
No	443	3.56	1.11	No illness scored higher
Yes	72	2.86	1.03	t(513)=5.014, p<.001
No	443	3.24	0.74	No difference
Yes	72	3.06	0.70	t(513)=1.950, p>.05
No	443	2.88	0.93	No difference
Yes	72	3.03	0.85	t(513)=-1.299, p>.05
No	443	3.33	0.83	No illness scored higher
Yes	72	3.03	0.94	t(513)=2.787, p=.006
No	443	3.60	0.89	No difference
Yes	72	3.50	0.84	t(513)=0.927, p>.05
No	443	2.67	0.89	No difference
Yes	72	2.53	0.78	t(513)=1.177, p>.05
	Yes No	No 443 Yes 72 No 443	No 443 2.49 Yes 72 2.32 No 443 3.52 Yes 72 3.56 No 443 2.74 Yes 72 2.52 No 443 3.36 Yes 72 3.21 No 443 3.64 Yes 72 3.73 No 443 3.15 Yes 72 3.19 No 443 3.56 Yes 72 2.86 No 443 3.24 Yes 72 3.06 No 443 2.88 Yes 72 3.03 No 443 3.60 Yes 72 3.50 No 443 3.60 Yes 72 3.50 No 443 3.60 Yes 72 3.50 No 443 2.67	No 443 2.49 0.89 Yes 72 2.32 0.93 No 443 3.52 0.75 Yes 72 3.56 0.76 No 443 2.74 0.80 Yes 72 2.52 0.80 No 443 3.36 0.99 Yes 72 3.21 1.03 No 443 3.64 0.67 Yes 72 3.73 0.69 No 443 3.15 0.80 Yes 72 3.19 0.77 No 443 3.56 1.11 Yes 72 2.86 1.03 No 443 3.24 0.74 Yes 72 3.06 0.70 No 443 2.88 0.93 Yes 72 3.03 0.85 No 443 3.60 0.89 Yes 72 3.50 </td



Differences on Factors based on Disabilities - Chronic-Neurological-Conditions-Or-Brain-Injury

Chronic-Neurolo Conditions-Or-Brain	•	N	Mean	SD	Significance Testing
Sensory	No	502	2.48	0.90	No disability scored higher
	Yes	13	1.85	0.55	t(13.74)=4.072, p=.001
Literacy	No	502	3.52	0.75	No difference
	Yes	13	3.74	0.62	t(513)=-1.068, p>.05
Self-Organizing	No	502	2.72	0.81	No difference
	Yes	13	2.42	0.51	t(513)=1.366, p>.05
Numeracy	No	502	3.34	1.00	No difference
	Yes	13	3.17	1.01	t(513)=0.622, p>.05
Creativity	No	502	3.65	0.68	No difference
	Yes	13	3.56	0.59	t(513)=0.494, p>.05
Social communication	No	502	3.17	0.79	No difference
	Yes	13	2.79	0.64	t(513)=1.669, p>.05
Movement	No	502	3.49	1.10	No disability scored higher
	Yes	13	2.36	1.37	t(513)=3.365, p<.001
Memory	No	502	3.23	0.73	No disability scored higher
	Yes	13	2.72	0.78	t(513)=2.448, p=.015
Reading	No	502	2.91	0.92	No difference
	Yes	13	2.69	0.69	t(513)=0.830, p>.05
Dexterity	No	502	3.30	0.86	No difference
	Yes	13	2.92	0.76	t(513)=1.574, p>.05
Typing	No	502	3.58	0.89	No difference
	Yes	13	3.62	0.90	t(513)=-0.125, p>.05
Emotions	No	502	2.66	0.88	No disability scored higher
	Yes	13	2.31	0.54	t(13.71)=2.245, p=.042



Differences on Factors based on Disabilities - Hearing-Impairment-Or-Deaf

Hearing-Impairmer	nt-Or-	N	Mean	SD	Significance Testing
Deaf					
	No	497	2.48	0.90	No difference
Sensory	Yes	18	2.11	0.76	t(513)=1.724, p>.05
	No	497	3.52	0.75	No difference
Literacy	Yes	18	3.67	0.74	t(513)=-0.876, p>.05
	No	497	2.72	0.80	No difference
Self-Organizing	Yes	18	2.53	0.73	t(513)=0.965, p>.05
	No	497	3.34	1.00	No difference
Numeracy	Yes	18	3.15	1.04	t(513)=0.816, p>.05
0	No	497	3.65	0.68	No difference
Creativity	Yes	18	3.72	0.56	t(513)=-0.450, p>.05
Control or or or other transfer	No	497	3.15	0.80	No difference
Social communication	Yes	18	3.25	0.68	t(513)=-0.513, p>.05
D. A. company to	No	497	3.47	1.12	No difference
Movement	Yes	18	3.31	1.12	t(513)=0.565, p>.05
	No	497	3.22	0.74	No difference
Memory	Yes	18	3.12	0.63	t(513)=0.544, p>.05
	No	497	2.91	0.92	No difference
Reading	Yes	18	2.69	0.96	t(513)=0.971, p>.05
	No	497	3.31	0.85	No disability scored
Dexterity					higher
	Yes	18	2.87	0.83	t(513)=2.132, p=0.033
	No	497	3.60	0.88	No difference



Typing	Yes	18	3.30	0.96	t(513)=1.410, p>.05
Emotions	No	497	2.65	0.87	No difference
Emotions	Yes	18	2.51	0.98	t(513)=0.657, p>.05



Differences on Factors based on Disabilities - Muscular-Skeletal-Disability

Muscular-Skele	tal-	N	Mean	SD	Significant
Disability					
	No	490	2.50	0.89	No disability scored
Sensory					higher
	Yes	25	1.94	0.85	t(26.79)=3.189, p=.004
Literacy	No	490	3.51	0.75	No difference
Literacy	Yes	25	3.67	0.60	t(513)=-1.015, p>.05
Solf Organizing	No	490	2.73	0.81	No difference
Self-Organizing	Yes	25	2.41	0.67	t(513)=1.955, p>.05
Numaragy	No	490	3.36	0.98	No difference
Numeracy	Yes	25	2.98	1.28	t(25.47)=1.449, p>.05
Croativity	No	490	3.65	0.68	No difference
Creativity	Yes	25	3.73	0.59	t(513)=-0.560, p>.05
Social	No	490	3.16	0.79	No difference
communication	Yes	25	3.00	0.76	t(513)=1.010, p>.05
	No	490	3.51	1.10	No disability scored
Movement					higher
	Yes	25	2.52	1.09	t(513)=4.381, p=0.001
Momony	No	490	3.22	0.73	No difference
Memory	Yes	25	3.12	0.80	t(513)=0.661, p>.05
D. a.d.	No	490	2.90	0.92	No difference
Reading	Yes	25	2.88	0.86	t(513)=0.117, p>.05
	No	490	3.31	0.85	No disability scored
Dexterity					higher
	Yes	25	2.92	0.87	t(513)=2.233, p=.026



Tuning	No	490	3.58	0.90	No difference
Typing	Yes 25	3.69	0.60	t(29.77)=-0.898, p>.05	
Emotions	No	490	2.66	0.88	No difference
LITIOUOIIS	Yes	25	2.36	0.78	t(513)=1.682, p>.05



Differences on Factors based on Disabilities - Psychiatric-Disorders

Psychiatric-Dis	sorders	N	Mean	SD	Significance Testing
Sensory	No	481	2.50	0.89	No disability scored higher
	Yes	34	2.00	0.88	t(513)=3.213, p<.001
Litorogy	No	481	3.51	0.75	No difference
Literacy	Yes	34	3.73	0.72	t(513)=-1.666, p>.05
Self-Organizing	No	481	2.75	0.80	No disability scored higher
	Yes	34	2.22	0.74	t(513)=3.717, p<.001
Numeracy	No	481	3.34	1.00	No difference
Numeracy	Yes	34	3.30	1.07	t(513)=0.201, p>.05
Creativity	No	481	3.65	0.68	No difference
Creativity	Yes	34	3.70	0.64	t(513)=-0.445, p>.05
Social	No	481	3.17	0.79	No difference
communication	Yes	34	2.96	0.78	t(513)=1.527, p>.05
Movement	No	481	3.50	1.11	No disability scored higher
	Yes	34	2.91	1.10	t(513)=2.982, p=0.003
Maman	No	481	3.21	0.74	No difference
Memory	Yes	34	3.35	0.70	t(513)=-1.079, p>.05
Reading	No	481	2.89	0.91	No difference
Reduing	Yes	34	3.03	0.97	t(513)=-0.844, p>.05
Dexterity	No	481	3.29	0.86	No difference
	Yes	34	3.28	0.80	t(513)=-0.049, p>.05



Tuning	No	481	3.59	0.88	No difference
Typing	Yes	34	4 3.52 0	0.99	t(513)=0.446, p>.05
Emotions	No	481	2.68	0.87	No disability scored higher
	Yes	34	2.14	0.81	t(513)=3.530, p<.001



Differences on Factors based on Disabilities - Visual-Impairment-Or-Blind

Visual-Impairment-Or-		N	Mean	SD	Significance Testing
Blind					
	No	504	2.48	0.89	No disability scored
Sensory					higher
	Yes	11	1.92	0.92	t(513)=2.041, p=.042
Liboroov	No	504	3.53	0.75	No difference
Literacy	Yes	11	3.38	0.76	t(513)=0.660, p>.05
Self-Organizing	No	504	2.72	0.80	No difference
Sell-Organizing	Yes	11	2.52	0.73	t(513)=0.800, p>.05
Numoracy	No	504	3.34	1.01	No difference
Numeracy	Yes	11	3.18	0.76	t(513)=0.520, p>.05
	No	504	3.64	0.67	No disability scored
Creativity					lower
	Yes	11	4.16	0.61	t(513)=-2.515, p=.012
Social	No	504	3.16	0.79	No difference
communication	Yes	11	3.18	0.88	t(513)=-0.109, p>.05
	No	504	3.49	1.11	No disability scored
Movement					higher
	Yes	11	2.27	1.10	t(513)=3.597, p=0.001
Momony	No	504	3.21	0.74	No difference
Memory	Yes	11	3.64	0.73	t(513)=-1.920, p>.05
Ponding	No	504	2.89	0.91	No difference
Reading	Yes	11	3.23	1.16	t(513)=-1.192, p>.05
Doytority	No	504	3.30	0.85	No difference
Dexterity	Yes	11	2.97	0.98	t(513)=1.261, p>.05



Typing	No	504	3.59	0.88	No difference
туртів	Yes	11	3.33	0.94	t(513)=0.953, p>.05
Emotions	No	504	2.65	0.88	No difference
LITIOUOTIS	Yes	11	2.41	0.59	t(513)=0.911, p>.05



Differences on Factors based on Neurodivergence - ADHD

ADHD		N	Mean	SD	Significant
	No	363	2.66	0.89	No neurodivergence scored
Sensory					higher
	Yes	152	2.02	0.74	t(339.65)=8.475, p=0.001
	No	363	3.57	0.73	No neurodivergence scored
Literacy					higher
	Yes	152	3.42	0.77	t(513)=2.075, p=0.039
	No	363	2.93	0.76	No neurodivergence scored
Self-Organizing					higher
	Yes	152	2.18	0.62	t(343.51)=11.678, p=0.001
	No	363	3.40	0.97	No neurodivergence scored
Numeracy					higher
	Yes	152	3.19	1.05	t(513)=2.108, p=0.036
Creativity	No	363	3.56	0.65	Neurodivergence scored higher
Creativity	Yes	152	3.87	0.69	t(513)=-4.766, p=0.001
Social	No	363	3.19	0.79	No difference
communication	Yes	152	3.06	0.78	t(513)=1.717, p>.05
	No	363	3.57	1.12	No neurodivergence scored
Movement					higher
	Yes	152	3.21	1.09	t(513)=3.349, p=0.001
	No	363	3.30	0.73	No neurodivergence scored
Memory					higher
	Yes	152	3.01	0.72	t(513)=4.055, p<0.001
	No	363	3.00	0.93	No neurodivergence scored
Reading					higher
	Yes	152	2.66	0.84	t(513)=3.859, p<0.001



Dexterity	No	363	3.37	0.87	No neurodivergence scored higher
	Yes	152	3.11	0.81	t(513)=3.145, p=0.002
Tuning	No	363	3.61	0.89	No difference
Typing	Yes	152	3.53	0.87	t(513)=0.866, p>.05
	No	363	2.78	0.89	No neurodivergence scored
Emotions					higher
	Yes	152	2.32	0.77	t(513)=5.935, p<0.001



Differences on Factors based on Neurodivergence – Autism

Autism		N	Mean	SD	Significant
	No	428	2.61	0.88	No neurodivergence scored higher
Sensory	Yes	87	1.77	0.63	t(160.97)=10.432, p<0.001
	No	428	3.51	0.74	No difference
Literacy	Yes	87	3.56	0.79	t(513)=-0.563, p>.05
Calf Organizing	No	428	2.78	0.81	No neurodivergence scored higher
Self-Organizing	Yes	87	2.36	0.67	t(513)=4.588, p<0.001
Numoracy	No	428	3.35	0.98	No difference
Numeracy	Yes	87	3.30	1.10	t(513)=0.431, p>.05
Creativity	No	428	3.62	0.67	No neurodivergence scored lower
	Yes	87	3.83	0.68	t(513)=-2.679, p=.008
Social	No	428	3.22	0.80	No neurodivergence scored higher
communication	Yes	87	2.84	0.68	t(513)=4.187, p<0.001
Movement	No	428	3.55	1.11	No neurodivergence scored higher
Movement	Yes	87	3.02	1.07	t(513)=4.136, p<0.001
Momory	No	428	3.22	0.73	No difference
Memory	Yes	87	3.19	0.78	t(513)=0.306, p>.05
Dooding	No	428	2.92	0.92	No difference
Reading	Yes	87	2.82	0.92	t(513)=0.914, p>.05
Doutority	No	428	3.36	0.84	No neurodivergence scored higher
Dexterity	Yes	87	2.96	0.85	t(513)=4.047, p<0.001
Tuning	No	428	3.60	0.88	No difference
Typing	Yes	87	3.51	0.93	t(513)=0.828, p>.05
	No	428	2.74	0.88	No neurodivergence scored higher



Emotions Yes 87 2.19 0.72 t(513)=5.487, p<0.001



Differences on Factors based on Neurodivergence – Dyscalculia

Dyscalculia		N	Mean	SD	Significance Testing
Sensory	No	483	2.48	0.90	No difference
SCIISOI Y	Yes	32	2.23	0.86	t(513)=1.526, p>.05
Literacy	No	483	3.54	0.75	No difference
	Yes	32	3.32	0.70	t(513)=1.581, p>.05
Self-Organizing	No	483	2.72	0.80	No difference
Jen Organizing	Yes	32	2.53	0.83	t(513)=1.309, p>.05
	No	483	3.41	0.96	No neurodivergence scored
Numeracy					higher
	Yes	32	2.25	1.05	t(513)=6.606, p<0.001
	No	483	3.64	0.68	No difference
Creativity	Yes	32	3.80	0.62	t(513)=-1.274, p>.05
Social	No	483	3.16	0.79	No difference
communication	Yes	32	3.08	0.77	t(513)=0.574, p>.05
Movement	No	483	3.47	1.13	No difference
Movement	Yes	32	3.41	1.04	t(513)=0.288, p>.05
Managan	No	483	3.23	0.74	No difference
Memory	Yes	32	3.06	0.68	t(513)=1.209, p>.05
	No	483	2.92	0.92	No neurodivergence scored
Reading					higher
	Yes	32	2.58	0.84	t(513)=2.060, p=0.040
	No	483	3.31	0.85	No difference
Dexterity	Yes	32	3.02	0.95	t(513)=1.851, p>.05
	No	483	3.60	0.88	No difference



Typing	Yes	32	3.31	0.96	t(513)=1.802, p>.05
Emotions	No	483	2.65	0.88	No difference
	Yes	32	2.61	0.84	t(513)=0.254, p>.05



Differences on Factors based on Neurodivergence – Dyslexia

Dyslexia		N	Mean	SD	Significance Testing
Sensory	No	423	2.49	0.91	No difference
Sensory	Yes	92	2.35	0.82	t(513)=1.380, p>.05
	No	423	3.67	0.67	No neurodivergence scored
Literacy					higher
	Yes	92	2.83	0.68	t(513)=10.867, p<.001
Colf Organizing	No	423	2.74	0.80	No difference
Self-Organizing	Yes	92	2.58	0.80	t(513)=1.762, p>.05
Number	No	423	3.38	0.98	No difference
Numeracy	Yes	92	3.16	1.07	t(513)=1.924, p>.05
Constitute	No	423	3.62	0.66	No neurodivergence scored lower
Creativity	Yes	92	3.80	0.71	t(513)=-2.2302, p=0.022
Social	No	423	3.17	0.80	No difference
communication	Yes	92	3.09	0.77	t(513)=0.923, p>.05
Movement	No	423	3.48	1.12	No difference
Movement	Yes	92	3.38	1.13	t(513)=0.731, p>.05
	No	423	3.25	0.73	No neurodivergence scored
Memory					higher
	Yes	92	3.05	0.74	t(513)=2.349, p=0.019
	No	423	3.02	0.89	No neurodivergence scored
Reading					higher
	Yes	92	2.35	0.83	t(513)=6.637, p>0.001
	No	423	3.34	0.84	No neurodivergence scored
Dexterity					higher
	Yes	92	3.07	0.88	t(513)=2.724, p=0.007



Typing	No	423	3.68	0.85	No neurodivergence scored higher
	Yes	92	3.17	0.94	t(513)=5.076, p<0.001
Emotions	No	423	2.68	0.89	No difference
LITIOUOIIS	Yes	92	2.49	0.78	t(513)=1.849, p>.05



Differences on Factors based on Neurodivergence - Dyspraxia-DCD

Dyspraxia-DCD		N	Mean	SD	Significant
Sensory	No	492	2.48	0.90	No difference
Sensory	Yes	23	2.15	0.77	t(513)=1.733, p>.05
Literacy	No	492	3.53	0.74	No difference
Literacy	Yes	23	3.35	0.80	t(513)=1.145, p>.05
Self-Organizing	No	492	2.72	0.80	No difference
Jen Organizing	Yes	23	2.42	0.78	t(513)=1.769, p>.05
Numeracy	No	492	3.35	0.99	No difference
rumeracy	Yes	23	3.03	1.09	t(513)=1.514, p>.05
Creativity	No	492	3.64	0.68	No difference
Cicativity	Yes	23	3.83	0.61	t(513)=-1.312, p>.05
Social communication	No	492	3.15	0.80	No difference
Social communication	Yes	23	3.21	0.68	t(513)=-0.335, p>.05
	No	492	3.51	1.11	No neurodivergence scored
Movement					higher
	Yes	23	2.51	0.96	t(513)=4.246, p<0.001
	No	492	3.22	0.74	No difference
Memory	Yes	23	3.15	0.63	t(513)=0.448, p>.05
D. addiso	No	492	2.91	0.91	No difference
Reading	Yes	23	2.78	1.05	t(513)=0.632, p>.05
	No	492	3.31	0.86	No neurodivergence scored
Dexterity					higher
	Yes	23	2.91	0.68	t(513)=2.177, p=0.030
	No	492	3.60	0.88	No difference



Typing	Yes	23	3.26	1.02	t(513)=1.801, p>.05
Emotions	No	492	2.66	0.88	No difference
Emotions	Yes	23	2.47	0.79	t(513)=1.007, p>.05



Differences on Factors based on Neurodivergence - Sensory-Processing-Disorder

Sensory-Processing	g-	N	Mean	SD	Significance Testing
Disorder					
	No	481	2.53	0.88	No neurodivergence scored
Sensory					higher
	Yes	34	1.62	0.70	t(513)=5.911, p<0.001
Literacy	No	481	3.52	0.75	No difference
Literacy	Yes	34	3.49	0.68	t(513)=0.297, p>.05
	No	481	2.74	0.80	No neurodivergence scored
Self-Organizing					higher
	Yes	34	2.26	0.70	t(513)=3.455, p<0.001
Numaracy	No	481	3.36	0.98	No difference
Numeracy	Yes	34	2.95	1.19	t(36.22)=1.974, p>.05
	No	481	3.63	0.68	No neurodivergence scored
Creativity					lower
	Yes	34	3.91	0.55	t(513)=-2.332, p=0.020
	No	481	3.19	0.79	No neurodivergence scored
Social communication					higher
	Yes	34	2.71	0.69	t(513)=3.467, p<0.001
	No	481	3.49	1.12	No neurodivergence scored
Movement					higher
	Yes	34	3.00	1.12	t(513)=2.497, p=0.013
N.A	No	481	3.23	0.74	No difference
Memory	Yes	34	3.06	0.73	t(513)=1.280, p>.05
Pooding	No	481	2.93	0.91	No neurodivergence scored
Reading					higher



	Yes	34	2.46	0.92	t(513)=2.897, p=.004
Dexterity	No	481	3.33	0.84	No neurodivergence scored higher
Dexterity	Yes	34	2.69	0.91	t(513)=4.341, p<0.001
Typing	No	481	3.60	0.89	No difference
туршу	Yes	34	3.37	0.85	t(513)=1.450, p>.05
Emotions	No	481	2.68	0.87	No neurodivergence scored higher
	Yes	34	1 3.33 0.84 No neurodiverg higher 2.69 0.91 t(513)=4.341, p< 1 3.60 0.89 No difference 3.37 0.85 t(513)=1.450, p> 1 2.68 0.87 No neurodiverg higher	t(513)=3.530, p<0.001	



Differences on Factors based on Neurodivergence - Tic-Disorder inc. Tourette's

Tic-Disorder Inc.		N	Mean	SD	Significance Testing
Tourette's					
-	No	508	2.48	0.89	No difference
Sensory	Yes	7	1.88	0.95	t(513)=1.749, p>.05
Literacy	No	508	3.53	0.74	No difference
Literacy	Yes	7	3.09	0.88	t(513)=1.546, p>.05
Self-Organizing	No	508	2.72	0.80	No difference
Self-Organizing	Yes	7	2.27	0.55	t(513)=1.481, p>.05
Numeracy	No	508	3.33	1.00	No difference
Numeracy	Yes	7	3.62	1.34	t(513)=-0.750, p>.05
Creativity	No	508	3.65	0.68	No difference
Creativity	Yes	7	3.76	0.74	t(513)=-0.407, p>.05
Social	No	508	3.17	0.79	No neurodivergence scored
communication					higher
	Yes	7	2.40	0.51	t(513)=2.541, p=.011
Movement	No	508	3.47	1.12	No difference
Wovement	Yes	7	2.81	1.17	t(513)=1.552, p>.05
Memory	No	508	3.22	0.74	No difference
Memory	Yes	7	3.06	0.62	t(513)=0.570, p>.05
Peading	No	508	2.91	0.92	No difference
Reading	Yes	7	2.46	0.76	t(513)=1.268, p>.05
Dexterity	No	508	3.30	0.85	No difference
Dexterity	Yes	7	2.71	0.85	t(513)=1.801, p>.05



Typing	No	508	3.60	0.88	No neurodivergence scored higher
	Yes	7	2.76	1.20	t(513)=2.489, p=.013
Emotions	No	508	2.65	0.88	No difference
Linotions	Yes	7	2.25	0.83	t(513)=0.513, p>.05



Differences on Factors based on Socio-Economic Status

Factor	Significance	Grouping	N	Mean	SD
	Testing				
Sensory	No difference	No Education	9	1.93	0.76
	F(3, 470) = 1.562, p> .05	High School	205	2.53	0.89
		Graduate	246	2.43	0.92
		Prefer not to say	14	2.50	0.65
		Total	474	2.47	0.90
Literacy	"Graduate"	No Education	9	3.57	0.54
	score higher than "High	High School	205	3.45	0.75
	School"	Graduate	246	3.64	0.73
	F(3, 470) =	Prefer not to say	14	3.41	0.69
	2.630, p=.050	Total	474	3.55	0.74
Self-Organizing	No difference	No Education	9	2.63	0.69
	F(3, 470) =	High School	205	2.76	0.78
	1.303, p> .05	Graduate	246	2.70	0.83
		Prefer not to say	14	2.35	0.79
		Total	474	2.71	0.80
Numeracy	No difference	No Education	9	2.96	1.18
	F(3, 470) = 1.536, p> .05	High School	205	3.33	1.03
	-, [-	Graduate	246	3.39	0.99
		Prefer not to say	14	2.89	0.90
		Total	474	3.34	1.01



Creativity	"Graduate"	No Education	9	3.86	0.61
	score higher than "High	High School	205	3.55	0.69
	School"	Graduate	246	3.75	0.66
	F(3, 470) =	Prefer not to say	14	3.73	0.59
	3.828, p=.010	Total	474	3.66	0.67
Social	No difference	No Education	9	3.22	0.74
communication	F(3, 470) = 0.686, p> .05	High School	205	3.11	0.81
		Graduate	246	3.22	0.78
		Prefer not to say	14	3.26	0.68
		Total	474	3.17	0.79
Movement	No difference	No Education	9	3.37	1.14
	F(3, 470) = 0.049, p> .05	High School	205	3.49	1.13
		Graduate	246	3.49	1.09
		Prefer not to say	14	3.55	1.13
		Total	474	3.49	1.11
	No difference	N El e	•	2.62	0.60
Memory	No difference	No Education	9	2.62	0.60
	F(3, 470) = 2.469, p> .05	High School	205	3.17	0.78
		Graduate	246	3.26	0.71
		Prefer not to say	14	3.24	0.82
		Total	474	3.21	0.75
Reading	No difference	No Education	9	2.64	0.96
recounty	F(3, 470) =				
	1.173, p> .05	High School	205	2.87	0.89
		Graduate	246	3.00	0.91



		Prefer not to say	14	3.04	1.02
		Total	474	2.94	0.90
Doubouite	No difference	No Education	0	2.00	0.00
Dexterity	No difference	No Education	9	2.89	0.96
	F(3, 470) = 1.414, p> .05	High School	205	3.33	0.85
		Graduate	246	3.29	0.86
		Prefer not to say	14	2.98	0.97
		Total	474	3.29	0.86
Typing	No difference	No Education	9	3.04	0.81
	F(3, 470) = 1.293, p> .05	High School	205	3.61	0.83
		Graduate	246	3.62	0.91
		Prefer not to say	14	3.55	0.97
		Total	474	3.60	0.88
Emotions	No difference	No Education	9	2.47	0.91
	F(3, 470) = 1.284, p> .05	High School	205	2.70	0.84
	, ,	Graduate	246	2.67	0.91
		Prefer not to say	14	2.25	0.73
		Total	474	2.67	0.87



Differences on Factors based on Differences on Factors based on Gender (Birth)

Factor	Significance Testing	Grouping	N	Mean	SD
Sensory	No difference	Male	127	2.58	0.80
	F(3, 484) = 0.982, p> .05	Female	350	2.44	0.93
		Non-Binary	7	2.26	1.07
		Prefer Not to Say	4	2.29	0.67
		Total	488	2.47	0.90
Literacy	No difference	Male	127	3.50	0.77
	F(3, 484) = 0.446, p> .05	Female	350	3.54	0.74
		Non-Binary	7	3.66	0.72
		Prefer Not to Say	4	3.88	0.31
		Total	488	3.53	0.75
Self Organizing	No difference	Male	127	2.66	0.77
	F(3, 484) = 0.270, p> .05	Female	350	2.73	0.82
		Non-Binary	7	2.67	0.66
		Prefer Not to Say	4	2.71	0.49
		Total	488	2.71	0.80
Numeracy	"Male" scored	Male	127	3.72	0.98
	higher than "Female"	Female	350	3.19	0.99
	remaie	Non-Binary	7	4.05	0.84
	F(3, 484) =	Prefer Not to Say	4	3.21	0.55
	10.291,	Total	488	3.34	1.01
	p< 0.001				
Creativity		Male	127	3.60	0.66
		Female	350	3.67	0.68



	"Non-binary"	Non-Binary	7	4.33	0.23
	scored higher than "Male"	Prefer Not to Say	4	3.93	0.78
		Total	488	3.67	0.68
	F(3, 484) = 2.883, p=0.035				
Social	No difference	Male	127	3.17	0.80
communication	F(3, 484) = 0.570, p> .05	Female	350	3.16	0.79
	, p	Non-Binary	7	3.26	0.71
		Prefer Not to Say	4	3.67	0.85
		Total	488	3.17	0.79
Movement	"Male" scored	Male	127	3.99	0.93
	higher than "Female"	Female	350	3.28	1.12
	remale	Non-Binary	7	3.38	1.21
	F(3, 484) =	Prefer Not to Say	4	4.50	0.43
	14.651,	Total	488	3.48	1.12
	p< 0.001				
Memory	No difference	Male	127	3.15	0.76
	F(3, 484) = 0.506, p> .05	Female	350	3.24	0.74
	0.500, με .05	Non-Binary	7	3.23	0.41
		Prefer Not to Say	4	3.10	0.53
		Total	488	3.22	0.74
Reading	No difference	Male	127	2.83	0.89
	F(3, 484) = 1.252, p> .05	Female	350	2.93	0.93
	1.232, μ/ .03	Non-Binary	7	3.29	0.76
		Prefer Not to Say	4	3.44	0.88
		Total	488	2.91	0.92
Dexterity		Male	127	3.64	0.80



"Male" scored higher than "Female"	Female Non-Binary Prefer Not to Say	350 7 4	3.16	0.84
			3.24	0.53
	Prefer Not to Say	1		
		4	3.75	0.50
F(3, 484) = 10.883,	Total	488	3.29	0.85
p< 0.001				
No difference	Male	127	3.50	0.93
F(3, 484) = 1.225, p> .05	Female	350	3.64	0.86
	Non-Binary	7	4.00	0.69
	Prefer Not to Say	4	3.75	0.42
	Total	488	3.61	0.87
"Male" scored	Male	127	2.86	0.89
"Female"	Female	350	2.59	0.87
	Non-Binary	7	2.54	0.60
F(3, 484) =	Prefer Not to Say	4	3.63	0.43
1.698, p=0.003	Total	488	2.66	0.88
	10.883, p< 0.001 No difference F(3, 484) = 1.225, p> .05 "Male" scored higher than "Female" F(3, 484) =	F(3, 484) = 10.883, p< 0.001 No difference Male F(3, 484) = 1.225, p> .05 Non-Binary Prefer Not to Say Total "Male" scored Male higher than "Female" Non-Binary Prefer Not to Say Total Total	F(3, 484) = 10.883, p< 0.001 No difference	F(3, 484) = 10.883, p< 0.001 No difference Male 127 3.50 F(3, 484) = 1.225, p> .05 Non-Binary 7 4.00 Prefer Not to Say 4 3.75 Total 488 3.61 "Male" scored Male 127 2.86 higher than "Female" Non-Binary 7 2.54 Female 350 2.59 Female 350 2.59 Frefer Not to Say 4 3.63



Differences on Factors based on Gender

Factor	Significance Testing	Grouping	N	Mean	SD
Sensory	No Difference	Cisgender	318	2.45	0.89
		Not cisgender	11	1.98	0.94
	F(2, 345) = 2.135	Prefer not to say	19	2.18	0.92
	p>.05	Total	348	2.42	0.90
Literacy	No Difference	Cisgender	318	3.57	0.73
		Not cisgender	11	3.57	0.73
	F(2, 345) =	Prefer not to say	19	3.53	0.83
	0.032 p>.05	Total	348	3.57	0.73
Self-	No Difference	Cisgender	318	2.65	0.81
Organizing		Not cisgender	11	2.51	0.64
	F(2, 345) = 0.510	Prefer not to say	19	2.48	0.75
	p>.05	Total	348	2.63	0.80
Numeracy	No Difference	Cisgender	318	3.34	0.99
		Not cisgender	11	3.77	1.07
	F(2, 345) = 1.073	Prefer not to say	19	3.25	1.21
	p>.05	Total	348	3.35	1.00
Creativity	"Not-cisgender"	Cisgender	318	3.68	0.66
	scored higher than	Not cisgender	11	4.19	0.35
	"Cisgender"	Prefer not to say	19	3.59	0.75
		Total	348	3.69	0.66



	F(2,345) =				
	3.542				
	p=.030				
Social	No Difference	Cisgender	318	3.17	0.78
communication		Not cisgender	11	2.97	0.78
	F(2, 345) =	Prefer not to say	19	3.11	0.98
	0.390	Total	348	3.16	0.79
	p>.05				
Movement	No Difference	Cisgender	318	3.43	1.12
		Not cisgender	11	3.36	1.13
	F(2, 345) =	Prefer not to say	19	3.44	1.27
	0.019	Total	348	3.43	1.12
	p>.05				
Memory	No Difference	Cisgender	318	3.20	0.74
		Not cisgender	11	3.18	0.84
	F(2, 345) =	Prefer not to say	19	3.06	0.85
	0.314	Total	348	3.19	0.75
	p>.05				
Reading	No Difference	Cisgender	318	2.94	0.91
		Not cisgender	11	3.00	1.04
	F(2, 345) =	Prefer not to say	19	2.64	1.08
	0.960	Total	348	2.93	0.92
	p>.05				
Dexterity	No Difference	Cisgender	318	3.31	0.85
		Not cisgender	11	2.91	0.84
	F(2, 345) =	Prefer not to say	19	3.28	0.88
	1.200	Total	348	3.30	0.85
	p>.05				
Typing	No Difference	Cisgender	318	3.64	0.89
		Not cisgender	11	3.94	1.07



	F(2, 345) =	Prefer not to say	19	3.68	0.83
	0.613	Total	348	3.65	0.89
	p>.05				
Emotions	No Difference	Cisgender	318	2.62	0.88
		Not cisgender	11	2.57	0.55
	F(2, 345) =				
	2.135	Prefer not to say	19	2.58	0.95
	p>.05	Total	348	2.61	0.88



Differences on Factors based on Sexuality

Factor	Significance	Grouping	N	Mean	SD
	Testing				
Sensory	"Heterosexual"	Heterosexual	388	2.55	0.89
	scored higher than "not-	Not-heterosexual	84	2.17	0.86
	heterosexual"	Prefer not to say	6	1.89	0.74
		Total	478	2.47	0.90
	F(2, 475) = 7.426				
	p<.001				
Literacy	No Difference	Heterosexual	388	3.54	0.72
		Not-heterosexual	84	3.49	0.77
	F(2, 475) =	Prefer not to say	6	3.56	0.64
	0.175 p>.05	Total	478	3.53	0.73
Self-Organizing	"Heterosexual"	Heterosexual	388	2.75	0.80
	scored higher than "not-	Not-heterosexual	84	2.51	0.82
	heterosexual"	Prefer not to say	6	2.50	0.70
	F(2, 475) = 3.277 p=.039	Total	478	2.71	0.80
Numeracy	No Difference	Heterosexual	388	3.34	1.01
	Sinci circo	Not-heterosexual	84	3.37	0.97
	F(2, 475) = 0.573	Prefer not to say	6	2.92	1.10
	0.573 P>.05	Total	478	3.34	1.00
Creativity		Heterosexual	388	3.60	0.68



	"Not- heterosexual"	Not-heterosexual	84	3.90	0.61
	scored higher	Prefer not to say	6	4.12	0.57
	than "Heterosexual"	Total	478	3.66	0.68
	F(2, 475) = 8.430				
	p<.001				
Social	No Difference	Heterosexual	388	3.20	0.77
communication		Not-heterosexual	84	3.07	0.79
	F(2, 475) =	Prefer not to say	6	2.69	0.58
	2.265 p>.05	Total	478	3.17	0.78
Movement	"Heterosexual"	Heterosexual	388	3.54	1.12
	scored higher than "not-	Not-heterosexual	84	3.19	1.10
	heterosexual"	Prefer not to say	6	2.89	1.05
		Total	478	3.47	1.12
	F(2, 475) = 4.260				
	p=.015				
Memory	No Difference	Heterosexual	388	3.22	0.76
		Not-heterosexual	84	3.14	0.65
	F(2, 475) =	Prefer not to say	6	3.13	0.97
	0.460 p>.05	Total	478	3.21	0.74
Reading	No Difference	Heterosexual	388	2.93	0.91
		Not-heterosexual	84	2.84	0.95



	F(2, 475) =	Total	478	2.91	0.92
	0.447				
	p>.05				
Dexterity	No Difference	Heterosexual	388	3.31	0.86
		Not-heterosexual	84	3.18	0.83
	F(2, 475) = 1.026	Prefer not to say	6	3.06	0.39
	1.020	Total	478	3.29	0.85
	p>.05				
Typing	No Difference	Heterosexual	388	3.58	0.89
		Not-heterosexual	84	3.63	0.88
	F(2, 475) = 0.126	Prefer not to say	6	3.67	0.63
	p>.05	Total	478	3.59	0.88
Emotions	"Heterosexual"	Heterosexual	388	2.71	0.88
	scored higher than "not-	Not-heterosexual	84	2.42	0.86
	heterosexual"	Prefer not to say	6	2.54	0.29
		Total	478	2.66	0.88
	F(2, 475) =				
	4.042				
	p<.001				



Differences on Factors based on Ethnicity

Factor	Significance	Grouping	N	Mean	SD
	Testing				
Sensory	No Difference	Black	29	2.58	0.80
		Asian	143	2.44	0.91
	F(5, 477) = 0.258	Mixed	8	2.27	0.78
	p>.05	White	279	2.48	0.92
		Other	18	2.46	0.88
		Prefer not to say	6	2.67	0.99
		Total	483	2.47	0.90
Literacy	No Difference	Black	29	3.39	0.69
		Asian	143	3.45	0.79
	F(5, 477) = 1.817	Mixed	8	3.09	0.56
	p>.05	White	279	3.61	0.72
		Other	18	3.51	0.68
		Prefer not to say	6	3.44	0.71
		Total	483	3.53	0.74
Self-	No Difference	Black	29	2.59	0.77
Organizing		Asian	143	2.70	0.85
	F(5, 477) = 0.274	Mixed	8	2.59	0.70
	p>.05	White	279	2.74	0.80
		Other	18	2.74	0.69
		Prefer not to say	6	2.79	0.70
		Total	483	2.72	0.80
Numeracy	No Difference	Black	29	3.28	1.05
		Asian	143	3.29	1.04



F(5, 477) = 0.678	Mixed	8	3.08	1.14
p>.05	White	279	3.34	1.00
	Other	18	3.52	0.98
	Prefer not to say	6	3.92	0.79
	Total	483	3.34	1.01
No Difference	Black	29	3.77	0.68
	Asian	143	3.65	0.74
F(5, 477) = 0.385	Mixed	8	3.52	0.51
p>.05	White	279	3.66	0.65
	Other	18	3.63	0.73
	Prefer not to say	6	3.90	0.62
	Total	483	3.66	0.68
No Difference	Black	29	3.13	0.75
	Asian	143	3.14	0.86
F(5, 477) = 0.374	Mixed	8	3.13	0.70
p>.05	White	279	3.18	0.76
	Other	18	3.04	0.88
	Prefer not to say	6	3.50	0.46
	Total	483	3.17	0.79
No Difference	Black	29	3.83	1.03
	Asian	143	3.40	1.14
F(5, 477) = 1.041	Mixed	8	3.25	1.04
p>.05	White	279	3.49	1.09
	Other	18	3.59	1.49
	Prefer not to say	6	3.94	0.90
	Total	483	3.49	1.11
_	p>.05 No Difference F(5, 477) = 0.385 p>.05 No Difference F(5, 477) = 0.374 p>.05 No Difference F(5, 477) = 1.041	P>.05 White Other Prefer not to say Total	p>.05 White 279 Other 18 Prefer not to say 6 Total 483 No Difference Black 29 Asian 143 F(5, 477) = 0.385 Mixed 8 P>.05 White 279 Other 18 Prefer not to say 6 Total 483 No Difference Black 29 Asian 143 F(5, 477) = 0.374 Mixed 8 Prefer not to say 6 Total 483 No Difference Black 29 Other 18 Prefer not to say 6 Total 483 No Difference Black 29 Asian 143 F(5, 477) = 1.041 Mixed 8 P>.05 White 279 Other 18 Prefer not to say 6	P>.05 White 279 3.34 Other 18 3.52 Prefer not to say 6 3.92 Total 483 3.34 No Difference Black 29 3.77 Asian 143 3.65 F(5, 477) = 0.385 Mixed 8 3.52 p>.05 White 279 3.66 Other 18 3.63 Prefer not to say 6 3.90 Total 483 3.66 No Difference Black 29 3.13 Asian 143 3.14 F(5, 477) = 0.374 Mixed 8 3.13 Prefer not to say 6 3.50 Total 483 3.17 No Difference Black 29 3.83 Asian 143 3.40 F(5, 477) = 1.041 Mixed 8 3.25 P>.05 White 279 3.49 Other 18 3.59 Prefer not to say 6 3.94



		Asian	143	3.16	0.76
	F(5, 477) = 0.662	Mixed	8	3.23	0.52
	p>.05	White	279	3.22	0.75
		Other	18	3.39	0.80
		Prefer not to say	6	3.23	0.54
		Total	483	3.21	0.74
Reading	No Difference	Black	29	2.87	0.86
		Asian	143	2.88	0.96
	F(5, 477) = 0.323	Mixed	8	2.66	0.50
	p>.05	White	279	2.95	0.91
		Other	18	2.96	0.98
		Prefer not to say	6	2.71	0.89
		Total	483	2.92	0.92
Dexterity	No Difference	Black	29	3.28	0.90
		Asian	143	3.33	0.85
	F(5, 477) = 1.277	Mixed	8	2.58	0.83
	p>.05	White	279	3.27	0.84
		Other	18	3.41	0.88
		Prefer not to say	6	3.17	1.24
		Total	483	3.28	0.86
Typing	No Difference	Black	29	3.52	0.83
		Asian	143	3.55	0.94
	F(5, 477) = 0.763	Mixed	8	3.33	1.01
	p>.05	White	279	3.64	0.84
		Other	18	3.83	0.92
		Prefer not to say	6	3.33	1.19
		Total	483	3.60	0.88



Emotions	No Difference	Black	29	2.65	0.87
		Asian	143	2.65	0.86
	F(5, 477) = 0.257	Mixed	8	2.84	0.72
	p>.05	White	279	2.69	0.89
		Other	18	2.51	1.07
		Prefer not to say	6	2.50	0.88
		Total	483	2.67	0.88

