Neuromyths about neurodevelopmental disorders:

Misconceptions by educators and the general public

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Lay Abstract

Neuromyths are commonly held misconceptions about the brain believed by both the general public and educators. Less attention has been devoted to the prevalence of neuromyths about neurodevelopmental disorders, which have the potential to exacerbate stigma. In an online survey, 569 members of the general public and educators rated more myths about neurodevelopmental disorders to be true than those about the brain. This situation may be improved via provision of neuroeducational resources. [72 words]

Neuromyths about neurodevelopmental disorders: Misconceptions by educators and the general public

Abstract

Scientific Abstract

Neuromyths are commonly held misconceptions about the brain believed by both the general public and educators. While much research has investigated the prevalence of myths about the typically developing brain, less attention has been devoted to the pervasiveness of neuromyths about neurodevelopmental disorders, which have the potential to exacerbate stigma. This pre-registered study investigated to what extent neuromyths about neurodevelopmental disorders (namely dyslexia, Attention Deficit Hyperactivity Disorder, Autism Spectrum Disorders and Down Syndrome) are endorsed by two groups: the general public and those working in education. In an online survey, 366 members of the general public and 203 individuals working in education rated similar numbers of myths to be true, but more about neurodevelopmental disorders than general neuromyths. Since frequency of access to brain information emerged as a protective factor against endorsing myths in both populations, we argue this problem may be addressed via provision of neuroeducational resources. [150 words]

Keywords: neuromyths, educators, neurodevelopmental disorders, brain, neuroeducation

Introduction

General neuromyths

Despite an increase in research and dissemination of educational neuroscience (an emerging field that aims to design evidence-based guidelines for educational practices with a strong research foundation), misconceptions about the brain, or neuromyths, are prevalent (Dekker et al., 2012). Common neuromyths include: “students use only 10% of their brains”; “students have different learning styles (e.g., visual, auditory, kinaesthetic)”; or “water drinking enhances learning” (Howard-Jones, 2014).

Neuromyths originate from a variety of processes, including the oversimplification of scientific results, sensationalism, and omission of important information (Tardif et al., 2015). Despite having been repeatedly debunked in the scientific literature, their *myth* status meant that neuromyths are enduring and continue to circulate as scientifically based truths all over the world (Torrijos-Muelas et al., 2021).

Neuromyths are not only endorsed by the general population, but also by teachers, where their existence might be exacerbated by the “cultural distance” that exists between the fields of neuroscience and education (Howard-Jones, 2014, p. 817). The endorsement of neuromyths in teachers and educators has been extensively investigated (see Torrijos-Muelas et al., 2021 for a systematic review). For instance, a survey found that teachers in the UK and the Netherlands (n= 242) recognized only half of the neuromyths as incorrect (Dekker et al., 2012).

When it comes to spotting neuromyths, those working in education usually outperform the general public (Macdonald et al., 2017). Further research suggests that correct identification of neuromyths can be predicted by years spent in education and by the content of education (those who attended neuroscience courses performed better) (Macdonald et al., 2017; Ruhaak & Cook, 2018).

The circulation of neuromyths reflects an implicit belief that an understanding of brain mechanisms can inform educational practice. Researching what neuromyths are being held by different groups of people in relation to their previous education and experience can throw a spotlight on where further translation issues need to be addressed.

Neurodevelopmental disorders

To date, little research has focused on neuromyths surrounding neurodevelopmental disorders, and their endorsement among those working in education compared to those in the wider community. As misconceptions in this domain can form the basis of stigma (Corrigan & Watson, 2002), an investigation of the prevalence of neuromyths about developmental disorders in these two populations provides a helpful perspective on the topics that awareness campaigns should focus on.

According to DSM V criteria, ‘neurodevelopmental disorders’ include: intellectual disabilities, communication disorders, Autism Spectrum Disorders (ASD), Attention Deficit Hyperactivity Disorder (ADHD), specific learning disorders (such as dyslexia), motor disorders, Tourette’s, and tic disorders. Except for a handful of studies that have examined neuromyths about one neurodevelopmental disorder at a time, few studies have examined neuromyths related to neurodevelopmental disorders in a broader sense either in the general population or in teachers. The most common neurodevelopmental disorders in the UK include dyslexia, ASD, ADHD, whereas the most common genetically caused learning difficulty is Down Syndrome; therefore, these will form the focus of the current study.

Neuromyths on dyslexia, ASD, ADHD and Down Syndrome

Dyslexia is a learning difficulty affecting reading and spelling (American Psychiatric Association, 2013) affecting up to 1 in 10 people in the UK (Snowling, 2013). One in two people believe that children with dyslexia *see* letters backwards (like letter-reversals, where *b* becomes *d*) (Macdonald et al., 2017). While it is true that children with dyslexia make letter reversals in their writing, so do their typically developing peers – especially in the first stages of reading development; and the hypothesis that all children with dyslexia see letters backwards has been dismissed (Wolff & Melngailis, 1996). Nevertheless, the majority of UK teachers (91%) believe dyslexia to include visual perception difficulties, including letter-reversals (Washburn et al., 2014). Such myths can be detrimental to obtaining a diagnosis, as parents and educators might hesitate to refer the child for further assessment, if the child does not present what they consider key symptoms such as letter reversals (Macdonald et al., 2017).

ASD is found in around 1% of the population (Russell et al., 2014) and includes a range of social communication difficulties, restricted interests and highly repetitive behaviours (American Psychiatric Association, 2013). A focus group showed seven common ASD neuromyths (John et al., 2017): four of them were related to the social dimension of the disorder, including beliefs that children on the spectrum do not like to be touched or are disinterested in any social relationship. Yet, John and colleagues (2017) did not compare how common these beliefs are or how these beliefs relate to exposure to neuroscience or professional occupation.

ADHD is a neurodevelopmental condition characterized by persistent inattention, hyperactivity and impulsivity (American Psychiatric Association, 2013) with a 1.4% prevalence in the UK (Russell et al., 2014). Some of the most common misconceptions parents and teachers hold about ADHD regard the treatment and characteristics of the disorder. For example, West et al. (2005) found that teachers incorrectly identified special diets as an effective form of treatment for ADHD. Misconceptions might influence parents' acceptance of different treatments: lower levels of misconceptions were associated with more positive attitudes towards stimulant medication (Sciutto, 2013). West and colleagues' (2005) study included beliefs from parents and their child's teacher: two groups who are knowledgeable about ADHD. This might suggest that an even higher incidence of neuromyths about the disorder in the general population may exist.

Research on neuromyths related to genetic disorders, such as Down Syndrome, is even scarcer. Down syndrome (DS) is a genetic condition caused by extra genetic material or translocation of genetic material on chromosome 21 and is one of the most common chromosomal disorders in the UK, with a prevalence 1 in every 1000 babies born (Lakhanpaul, 2020). Some of the most common myths regarding individuals with DS concern their language ability (e.g., "What a child with learning difficulties can understand can be measured by what that child can say") (Cologon, 2013). In semi-structured interviews of pregnant women in Australia, knowledge of DS was higher in those who had experience of other genetic disorders (Long et al., 2018), suggesting a protective role of familiarity against misconceptions.

Neurodevelopmental disorders in the classroom

Following the Salamanca Statement (1994), all children have the right to be included in mainstream education, including those with neurodevelopmental disorders, and therefore, it is likely teachers encounter children with these diagnoses in their classrooms. As such, every qualified teacher training program in the UK usually includes training about how those with learning needs can proceed in the curriculum (Department for Education, 2021). It can thus be predicted that those working in an educational setting should have fewer incorrect beliefs related to both general and neurodevelopmental neuromyths compared to the general population.

Although no consensus has been reached regarding the extent to which neuromyths are detrimental to pupils' learning, studies have highlighted that teachers who endorse neuromyths often adopt practices linked to these incorrect beliefs (Lethaby & Harries, 2016). For example, teachers may assess students for their learning style or provide learning activities relevant to a particular learning style. While neuromyths may reflect a positive, implicit assumption that an understanding of brain mechanism can inform educational practice, the prevalence of neuromyths in educational settings demands attention to ensure no pupil is exposed to impoverished education.

The current study

The current research compared beliefs about the typically developing brain ("general neuromyths") to those relating to neurodevelopmental disorders ("neurodevelopmental neuromyths"). By recruiting a UK-based sample of members of the general public and those working in education, it explored the following hypotheses:

1) Based on the existing literature, it was predicted that all groups would endorse at least some neuromyths but that neuromyths related to neurodevelopmental disorders would be more common.
2) Based on exposure to educational training and/or direct experience, it was predicted that mainstream class teachers would hold fewer incorrect beliefs than the general public, and that Special Education Needs and Disabilities (SEND) teachers would hold fewer incorrect beliefs than mainstream classroom teachers.

We therefore predicted an interaction between myth type (general vs. neurodevelopmental disorder) and group (public vs. mainstream teacher vs. SEND teacher).

3) With respect to the role of familiarity with disorders, and the role of interest in the brain, based on previous studies (e.g., Dekker et al., 2012; though see Herculano-

Houzel, 2002), we predicted that those with more familiarity with a disorder would hold fewer incorrect beliefs; and that those with an interest in the brain, and those who regularly access information about the brain, would hold more incorrect beliefs. These predictions were tested separately for the general public and for those working in education.

Methods

Participants

Participants were recruited through opportunity sampling by circulating a link to the survey to databases from different research centres, as well as on social media such as Twitter and Facebook.

Five-hundred-and-seventy-five participants from the UK completed the study. Six were excluded because they were under the age of 18, leaving a final sample of 569 (16% male). The majority of respondents were English native speakers (84%). Table 1 summarises main demographic characteristics of the sample. There was a significant difference in levels of education between those who worked in education and those who did not; X^2 (1,7)= 28.07, $p < .001$, with those working in education having higher levels of education.

Table 1 about here

As can be seen in Figure 1, most of those who were employed in education were teachers.

Figure 1 about here

Materials

General neuromyths. The study adopted the "Brain knowledge statements survey" presented as part of the Ruhaak and Cook (2018) questionnaire. It consisted of 15 statements (9 correct, 6 incorrect) about the brain.

Neurodevelopmental neuromyths. This questionnaire consisted of 30 statements about neurodevelopmental disorders including: non-specific neurodevelopmental neuromyths that applied to more than one neurodevelopmental disorder, and statements referred to specific neurodevelopmental disorders (including ASD, ADHD, Down syndrome, and dyslexia). The statements derived from a number of previous studies that had mostly focused on neuromyths pertaining to individual disorders (see Table 2 for the statements and their sources). Compared to general neuromyths, there was a higher ratio of false statements (n= 21) compared to true statements (n= 9), seeing that most of the previous studies had focused on incorrect beliefs around neurodevelopmental disorders (e.g. John et al., 2018; Washburn et al., 2014).

Table 2 about here

For both types of neuromyths, participants rated each statement on a 4-point Likert scale ("True", "Probably true", "Probably false", "False") rather than a 2-point (True/False) scale as the current evidence base for some of the neuromyths about neurodevelopmental disorders discussed below is still developing and we anticipated that participants might be reticent to give definite answers for all of them.

The overall reliability for the survey was .73, with a reliability of .55 for general myths .55 (in line with Horvath et al., 2018) and .67 for the neurodevelopmental neuromyths.

Familiarity with developmental disorders was measured by the average familiarity score (0 not familiar at all, 1 somewhat familiar, 2 very familiar) for the seven groups for the question: “How familiar are you with each of the following disorder group?” and seven disorder groups were provided: ADHD, autism, dyscalculia, dyslexia, dyspraxia, Down Syndrome, others.

Respondents’ interest in neuroscience was measured by the reported level of agreement (1 strongly disagree to 7 strongly agree) related to the statement: “I find scientific knowledge about the brain and its influence on learning interesting”.

Accessing information about the brain was based on reported frequency of how often information about the brain was accessed: weekly, monthly, every 3-6 months, once per year, hardly ever or never.

Procedure

Participants completed an online survey that was distributed via the online survey platform Qualtrics. Participants were asked to consent to take part in the study by completing an opt-in consent form. The survey took 15-30 minutes to complete.

Participants first completed the two sections about general neuromyths and neurodevelopmental neuromyths. These statements were presented in random order. Next, participants completed a section where demographic information including age category, highest level of education, and career. Those who reported to be working in the education sector were presented with additional questions about their role within the school and experience working with SEND children.

The study, the survey, and analyses were pre-registered via the Open Science Framework (see osf.io/acztx).

Scoring. In order to compare scores across the different neuromyths, all answers were recoded using a scale of 1-to-4 from least to most correct answer, thereby generating a total score for the overall correct belief of neuromyths, with lower scores indicating higher acceptance of neuromyths. However, for ordinal regression analyses raw scores from 1 to 4 were used as outcome variables.

Results

Confirmatory analyses

In the pre-registered hypotheses, we predicted that mainstream teachers would hold more incorrect beliefs than SEND teachers. However, we did not recruit enough SEND teachers (see Figure 1) and thus the analyses focused only on the data from mainstream teachers.

In line with hypotheses 1 and 2, we compared beliefs about general versus neurodevelopmental neuromyths for those working in education versus general population. Table 3 gives a summary of responses. Chronbach's alpha across General neuromyths was $r(14)= .55$, and for SEN neuromyths $r(29)= .67$, indicating an acceptable degree of internal consistency between items, particularly for SEN items. Significant correlations were evident between accuracy on general and neurodevelopmental neuromyths for those in education; $r(201) = .46$ (95%CI .34 -.56), $p< .001$ and for those not in education: $r(364) = .33$ (95%CI .23 - .42), $p< .001$. In addition, as can be seen in Figure 2 there were no ceiling effects, in that none of the participants scored all questions correct (mean score of 4).

Table 3 about here

Figure 2 about here

A linear regression was run to assess the predictive ability of the type of neuromyth (Type: General vs SEN) and whether respondents worked in education or not (Work) on responses (see Table 4). Type significantly predicted response accuracy, indicating that more erroneous beliefs were held for neurodevelopmental disorders than general neuromyths. In contrast to our hypothesis, participants' involvement in education (Work) did not influence beliefs in neuromyths, or modulate the respective beliefs in different types of neuromyth (Type*Work).

Table 4 about here

Our third hypothesis was that those with more familiarity with the disorder would hold fewer incorrect beliefs, while those with an interest in the brain and those who access information about the brain more often would hold more incorrect beliefs. We examined how these predictors differed between those in education and in the general public and so, two separate regression models were run, using familiarity with developmental disorders, interest in neuroscience, and accessing information about the brain as predictors in relation to beliefs in different types of neuromyths.

Contrary to our hypothesis, for both those working in education (Table 5) and the general public (Table 6), the only significant predictor of neuromyth accuracy was how often respondents accessed information about the brain ($p < .05$).

Table 5 about here

Table 6 about here

Exploratory analyses

To examine whether the neurodevelopmental disorder itself mattered, we examined responses to the Neurodevelopmental myths grouped by topic (Non-specific Neurodevelopmental neuromyths, ADHD, ASD, Dyslexia, Down syndrome). For those working in education, mean responses differed according to non-parametric repeated measures ANOVA; Kruskal-Wallis χ^2 (4)= 146.27, p< .001. Bonferroni-Holm corrected multiple comparisons showed that the non-specific Neurodevelopmental myths were responded to less accurately than all others at p< .001, while ASD myths were responded to more accurately than all others at p< .001.

The same results were found in the general population (*n*= 366): differences existed in response accuracy across type (Kruskal-Wallis χ^2 (4)= 254.1, *p*< .001), with lowest accuracy for general Neurodevelopmental myths and highest for ASD myths. Results are presented in Figures 3 and 4.

Figure 3 about here

Figure 4 about here

These analyses indicate that beliefs varied with respect to different neurodevelopmental disorders. Respondents working in education were divided into those who had or had not worked with children with each of these diagnoses, and mean response accuracy to questions relating to each disorder were analysed (see Table 7). No significant difference emerged in accuracy of responses between those who had worked with children with any of the diagnoses and those who had not (*p*> .05). This supports the earlier regression analysis that familiarity with the disorder did not impact on the ability to recognise Neurodevelopmental neuromyths.

Table 7 about here

Discussion

The current study investigated the prevalence of general neuromyths and those about neurodevelopmental disorders, comparing responses between participants working in education versus general population. In contrast to our hypothesis, there was no significant difference in the number of beliefs held in those working in education compared to the general population, for either type of neuromyth. If we dichotomise their Likert scale responses, those working in education on average answered 81% of general neuromyths correctly compared to 80% for those not in education. Inasmuch as it is possible to compare across studies, the results indicated that participants in the current study were better able to identify general neuromyths than those surveyed a decade ago by Dekker et al. (2012), where teachers believed almost half of the neuromyths, or more recently special education pre-service teachers: 63% correct on average (Ruhaak & Cook, 2018). This change may reflect increasing awareness around neuromyths and neuroeducation initiatives designed to disseminate accurate scientific knowledge (such as resources provided by the Centre for Educational Neuroscience, e.g., “Neuro-hit or neuro-myth?”; Knowland & Thomas, 2016). These initiatives may have been at least partly successful in improving awareness about popular misconceptions about neuroscience.

Knowledge about general statements about the brain (and rejecting general neuromyths) was higher than performance related to neurodevelopmental disorders by both participant groups (75% correctly answered for those working in education versus 74% for the general public).

Similar to previous studies on neuromyths about the typical brain (Macdonald et al., 2017), regression models revealed that the frequency of access to brain information was a protective factor against neuromyth beliefs in both groups. This is a promising finding, inasmuch as it suggests the possibility of improving knowledge of neurodevelopmental disorders by further dissemination of accurate information. Familiarity with neurodevelopmental disorders was not associated with higher knowledge (Long et al., 2018) and we did not replicate the pattern that interest in the brain among those lacking a formal education in neuroscience increased endorsements in neuromyths (Dekker et al., 2012).

Although familiarity with neurodevelopmental disorders did not emerge as a significant predictor, teachers were more likely to accurately identify neuromyths on ASD rather than ADHD, DS and dyslexia. Much campaigning has taken place over recent years to improve awareness surrounding ASD, including the Autism Awareness Campaign UK, in 2000 which aimed to improve services in health and education. Advocacy groups have also designed continuous professional development (CPD) programs to support teachers in adopting good practices in the classroom (National Autistic Society, 2021a). While it is not possible to draw causal links between these campaigns and higher ASD knowledge, our results are consistent with the view that the roll-out of these nationwide efforts may lead to a general increase in the knowledge of ASD. Similarly, the higher incidence of misconceptions about other neurodevelopmental disorders demonstrates that there is further work to be done.

The lack of marked differences between those working in education compared to the general public suggests either that dissemination needs to be population-wide to succeed or that current attempts to provide training around neurodevelopmental disorders for those working in education have had limited effectiveness. However, a recent study by McMahon et al (2019) showed that a short co-produced workshop had a positive impact on the number of general neuromyths endorsed by initial primary school trainee teachers.

Limitations and future directions

As the number of SENCo teachers in the sample was relatively small (*n* = 12), we do not report analysis for this group here (there was an indication in the SENCo group that myths about developmental disorders were lower, but this would need to be verified with a larger group). Future research might benefit from a deeper investigation of whether SENCo and mainstream teachers differ in neuromyth accuracy, which could feed into more specific recommendations about the need to tailor training to improve knowledge. Secondly, at least in the UK, teacher training programmes are very varied: a more fine-grained investigation of the impact of different training routes could be the focus of future research. This would provide further insight into how much previous training impacts on the endorsements of certain neuromyths. In addition, it is not yet clear what information about the brain respondents were accessing and how the endorsement of the myths impacts on practice and educational outcomes (see Lethaby & Harries, 2016 versus Horvath et al., 2018), which will have to be explored in future studies.

Conclusion

The current study showed that those working in education as well as the general public endorsed more neuromyths concerning neurodevelopmental disorders than general neuromyths. This points to a need to improve the provision of educational resources to the general public and within modules for teachers to be integrated in CPD courses. The failure to observe different rates of adherence to misconceptions about neurodevelopmental disorders amongst those working in education and the general public suggests that current training approaches for those entering work in education are insufficient.

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Table 1

Demographic characteristics of the sample.

	Working in education (*n* = 203)	General population (*n* = 366)
Age group		
18-25	14 (7%)	38 (10%)
26-35	40 (20%)	84 (23%)
36-45	65 (32%)	91 (25%)
46-55	52 (26%)	104 (28%)
56-65	26 (13%)	31 (8%)
66+	6 (2%)	17 (5%)
unknown	0	1 (1%)
School type work place		
Preschools	9 (4%)	N/A
Primary	50 (25%)	N/A
Secondary	78 (39%)	N/A
Higher education settings/colleges	54 (27%)	N/A
Formal disability diagnosis	14 (7%)	14 (4%)
Has a child with learning disability	48 (26%)	95 (27%)
Highest Education level		
Secondary level or equivalent	17 (9%)	75 (21%)

Undergraduate degree or equivalent	94 (46%)	154 (42%)
Postgraduate degree or above	92 (45%)	137 (37%)
My training course covered the development of children with developmental disabilities		
Yes	47 (27%)	N/A
A little	71 (41%)	N/A
No	53 (30%	N/A
Cannot remember	4 (2%)	N/A

Table 2

List of Neurodevelopmental statements, whether they were true or false, category and source

Item	*True /False*	*Category*	*Taken or adapted from*
Stimulant drugs are the most common type of drug used to treat children with Attention Deficit Hyperactivity Disorder (ADHD)	T	ADHD	Sciutto et al., 2000
Most ADHD children "outgrow" their symptoms and subsequently function normally in adulthood	F	ADHD	Sciutto et al., 2000
Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD	F	ADHD	Sciutto et al., 2000
Children with ADHD have difficulties with focus and concentration	T	ADHD	American Psychiatric Association, 2013
It is possible for an adult to be diagnosed with ADHD	T	ADHD	Sciutto et al., 2000
Current research suggests that ADHD is largely the result of ineffective parenting skills	F	ADHD	Sciutto et al., 2000
Symptoms of depression are found more frequently in children with ADHD than in children without ADHD	T	ADHD	Sciutto et al., 2000
If a child responds to stimulant medications (e.g. Ritalin), then they probably have ADHD	F	ADHD	Sciutto et al., 2000
Research has shown that prolonged use of stimulant medications for ADHD leads to increased addiction (i.e. drug, alcohol) in adulthood	F	ADHD	Sciutto et al., 2000
Children with autism are unable to notice social rejection	F	Autism	John et al., 2017
Children with autism do not have empathy	F	Autism	Baron-Cohen, 2009
Some children with autism have a special talent or savant skill	T	Autism	John et al., 2017
Autism only occurs in boys	F	Autism	
Children with autism do not like to be touched	F	Autism	John et al., 2017
Children with Down syndrome have smaller brains	T	Down syndrome	Pinter et al., 2001
Children with Down syndrome cannot understand what they are reading	F	Down syndrome	Cologon, 2013
People with Down syndrome are always happy and affectionate	F	Down syndrome	Down Syndrome Scotland website
Children with Down syndrome can’t learn anything complex	F	Down syndrome	Cologon, 2013

All children with dyslexia see letters backwards	F	Dyslexia	Washburn et al., 2014
Children who are dyslexic tend to have lower IQ scores than children who are not dyslexic	F	Dyslexia	Washburn et al., 2014
In some children dyslexia is caused by visual problems	F	Dyslexia	Washburn et al., 2014
Children with dyslexia can often excel in other areas	T	Dyslexia	NHS, 2018
Dyslexia can be helped by using coloured lenses and/or coloured overlays	F	Dyslexia	Washburn et al., 2014
Learning difficulties associated with developmental differences in brain function in children with disorders cannot be improved by education	F	Non-specific neurodevelopmental neuromyth	MacDonald et al., 2017
All children with hearing impairments benefit from visual information	F	Non-specific neurodevelopmental neuromyth	Marschark et al., 2013
The multi-sensory approach (e.g., supporting oral information with visual information) to learning is always better for children with disorders	T	Non-specific neurodevelopmental neuromyth	Galiatsos et al., 2019
What a child with learning difficulties can understand can be measured by what that child can say	F	Non-specific neurodevelopmental neuromyth	Cologon, 2013 – referring to Down syndrome
Children with autism and ADHD and alike can be cured	F	Non-specific neurodevelopmental neuromyth	Galiatsos et al., 2019
Disorders can be caused by adverse immune reactions to vaccinations	F	Non-specific neurodevelopmental neuromyth	Based on Wakefield et al., 1998 - RETRACTED
Autism and ADHD are more common in the 1st degree biological relatives (i.e. mother, father, siblings) of children with autism or ADHD respectively than in the general population	T	Non-specific neurodevelopmental neuromyth	Sciutto et al., 2000

Table 3

Summary of responses to general neuromyths and neuromyths relating to the neurodevelopmental disorder for those who do and do not work in education. Responses were scored on a scale of 1-4, with lower scores indicating belief in neuromyths.

	Work in education?	*n*	*Mean*	*SD*	*Min*	*Max*
General neuromyths	Yes	203	3.23	.31	2.07	3.93
	No	366	3.21	.29	2.40	3.93
	Total	569	3.22	.29	2.07	3.93
Neurodevelopmental myths	Yes	203	3.14	.25	1.97	3.67
	No	366	3.11	.22	2.43	3.67
	Total	569	3.12	.23	1.97	3.67

Table 4

Results from linear regression model assessing the beliefs of neuromyths. $F(3, 25{,}601) = 21.89$, $p < .001$

Term	*B*	*95% CI*	*t*	*p*
Intercept	3.229	[3.195, 3.263]	186.393	<.001
Neuromyth type	-.086	[-.127, -.044]	-4.047	**<.001**
Work	-.019	[-.062, .023]	-.898	.369
Neuromyth type* Work	-.018	[-.070, .034]	-.671	.502

Table 5

Regression results for people working in education examining factors that impact the endorsement of general as well as neurodevelopmental neuromyths. $F(6, 8678) = 5.589$, $p < .001$.

Term	*B*	*95% CI*	*t*	*p*
Intercept	3.338	[3.149, 3.528]	34.505	<.001
Are you interested in knowledge about the brain?	-.046	[-.112, .019]	-1.384	.166
How often do you access information about the brain?	-.042	[-.080, -.004]	-2.143	**.032**
Familiarity with developmental disorders	.003	[-.028, .035]	.196	.845
Type of neuromyth	-.162	[-.357, .032]	-1.635	.102
Familiarity*Type	.015	[-.023, .053]	.780	.436
Interested * How often	.011	[-.012, .034]	.934	.351

Table 6

Regression results for the general public examining factors that impact the endorsement of general as well as neurodevelopmental neuromyths. $F(6, 16{,}238) = 23.67$, $p < .001$.

Predictor	*B*	*95% CI*	*t*	*p*
Intercept	3.295	[3.177, 3.413]	54.823	<0001
Are you interested in knowledge about the brain	-.028	[-.067, .010]	-1.449	.147
How often do you access information about the brain	-.036	[-.059, -.014]	-3.137	**.002**
Familiarity with developmental disorders	.015	[-.004, .033]	1.537	.124
Type of neuromyth	-.066	[-.169, .038]	-1.246	.213
Familiarity * Type	-.008	[-.030, .014]	-0.704	.481
Interested * How often	-.002	[-.013, .010]	-0.309	.757

Table 7

T-tests on accurate identification of neurodevelopmental neuromyths for those in education who had or had not worked with children with developmental disorders (total n= 203)

Disorder	*Worked with (n)*	*Mean difference worked with - not*	*t*	*df*	*p*
Autistic Spectrum Disorder	157	.102	-1.334	75.81	.186
Attention Deficit Hyperactivity Disorder	139	.090	-1.852	128.58	.066
Dyslexia	137	-.011	.217	127.53	.828
Down Syndrome	65	.059	-1.152	136.54	.251

Figure 1

Roles within school for the 203 respondents who were employed in education. TA = Teaching Assistant, SENCO = Special Educational Needs Coordinator, EdPsych = Educational Psychologist.

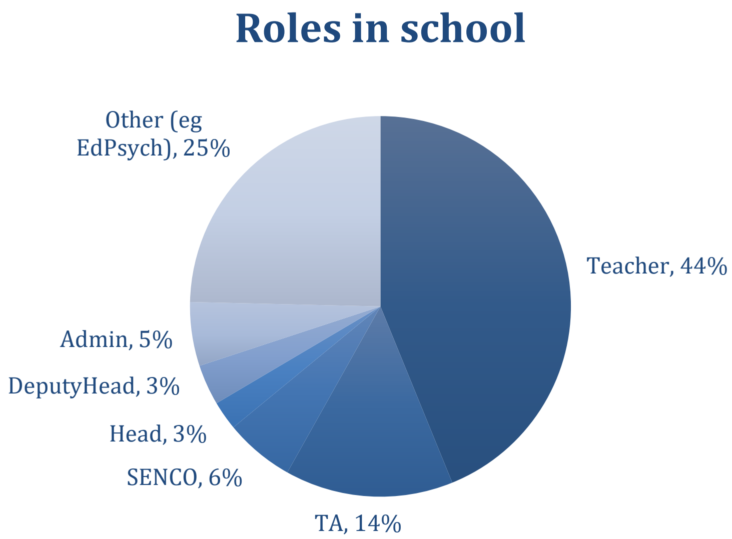


Figure 2.

Distribution of average scores per type of myth

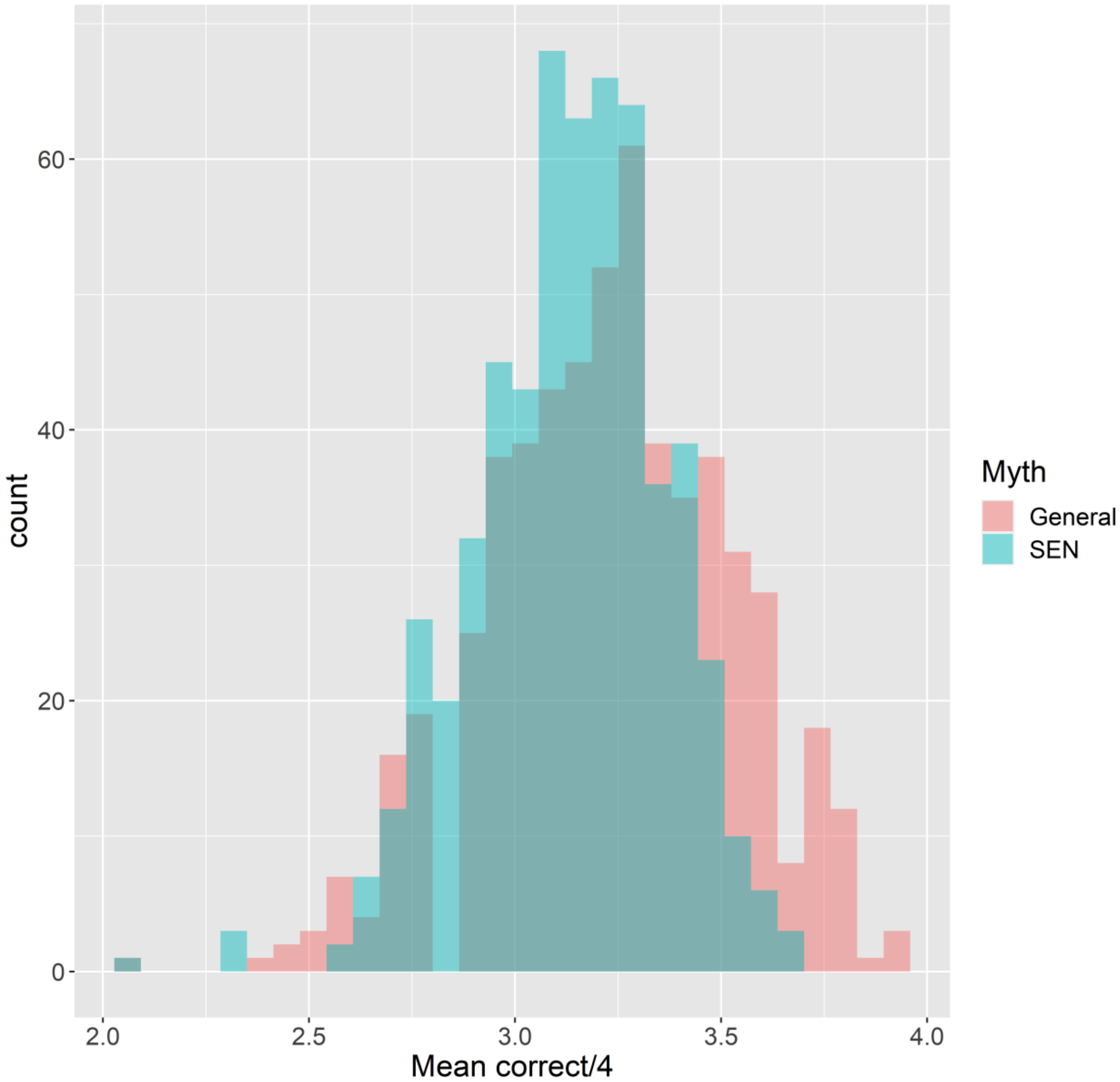


Figure 3.

Response accuracy for those who work in education per type of SEND group

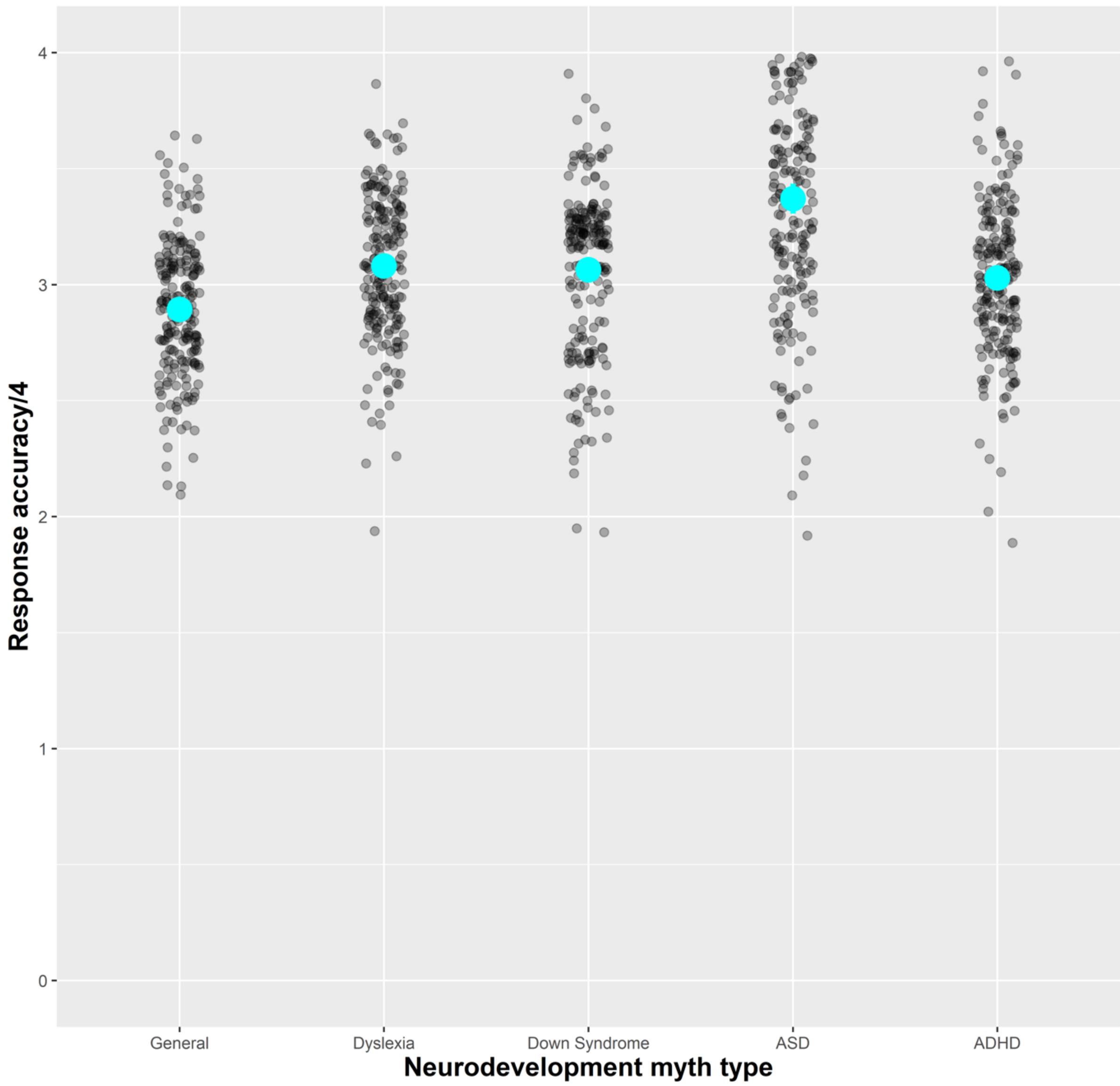
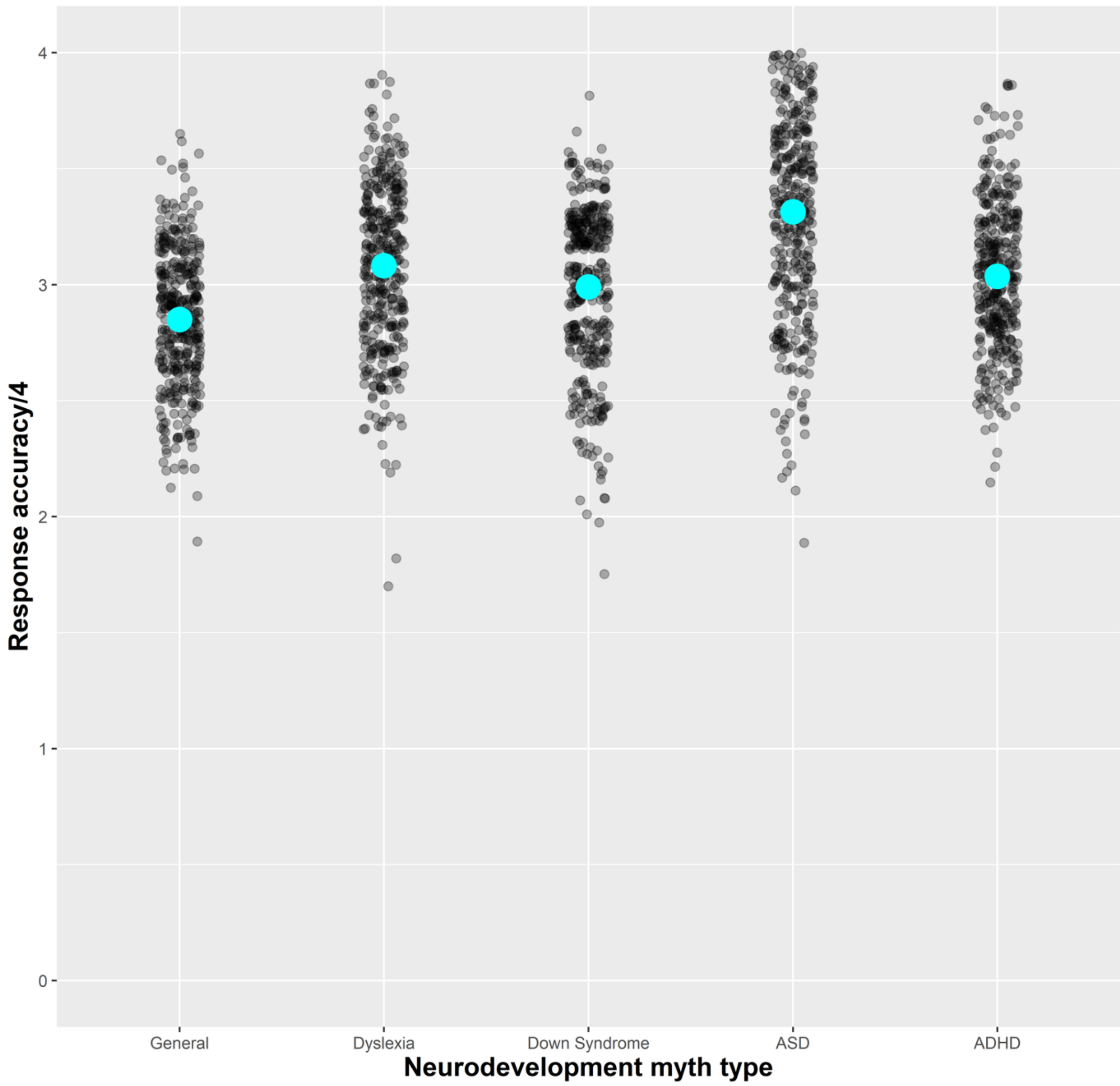


Figure 4.

Response accuracy for those in general population per type of SEND


Response accuracy/4
0
1
2
3
4
General
Dyslexia
Down Syndrome
ASD
ADHD
Neurodevelopment myth type