

# Executive functioning in adults with autism: Analyses of BRIEF-A self reports

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## Background

Adults with ASD are known to have **executive function (EF) problems**, especially with cognitive shifting. EF research in ASD is mainly based on results from neuropsychological tests. However, this way of testing has its limits concerning the ecological validity and takes a considerable amount of time (Kenworthy et al., 2008).

The Behavior Rating Inventory of Executive Function for Adults (BRIEF-A; Roth et al., 2006) does not have these disadvantages. The **BRIEF-A** screens for potential EF problems, measured by nine non-overlapping theoretically and empirically derived clinical scales: Inhibit, Shift, Emotional control, Self-monitor, Initiate, Working memory, Plan/Organize, Task monitor, and Organization of materials.

Various studies have shown that the BRIEF is able to identify EF problems in children with ASD, with the most profound problems on the scale Shift. This could be considered a '**characteristic ASD profile**'. Little research has been done on the existence of such a profile in adults with ASD. Research using the BRIEF-A informant version shows that adults with ASD have problems on the scales Shift and Plan/Organize. It is unclear whether the same is true for the self-report version.

## Objectives

The goal is to investigate whether there is a characteristic BRIEF-A score profile for adults with ASD, using the self-report version.

## Methods

In total, the sample consisted of **254 adults with ASD** ( $M_{age} = 34.28$ ,  $SD_{age} = 12.05$  years;  $n = 181$  men,  $n = 73$  women).

ASD assessment was based on an extensive psychiatric examination, a standardized ASD interview, and a developmental interview with (one of the) parents in the presence of the patient. Trained clinicians diagnosed the participants with ASD, using the DSM-IV-TR criteria ( $n = 14$  AD,  $n = 114$  AS,  $n = 126$  PDD-NOS).

All patients filled in a **BRIEF-A self-report** at the beginning of the diagnostic process. An independent researcher scored these questionnaires. T-scores were calculated for all nine scales. The normative sample of the Dutch BRIEF-A manual was used as a reference group.

Table 1

Scores of BRIEF-A scales

	$M (SD)$ *	Cohen's $d$ test value T = 50	Cohen's $d$ test value T = 65
Inhibit	60.89 (13.61)	0.80	
Shift **	70.09 (12.58)	1.60	0.40
Emotional control	60.46 (12.21)	0.86	
Self-monitor	62.42 (13.91)	0.89	
Initiate **	70.93 (13.96)	1.50	0.42
Working memory **	68.24 (12.96)	1.41	0.25
Plan/Organize **	68.15 (14.24)	1.27	0.22
Task monitor	60.47 (13.50)	0.78	
Organization of materials	60.32 (13.85)	0.75	

\* Significant difference for all BRIEF-A scales with  $T = 50$ ,  $p < .001$ . \*\* Significant difference with  $T = 65$ ,  $p < .001$ . Correction for multiple testing (Bonferroni) is applied to both analysis.

Table 2

Mean T-scores of men and women on the BRIEF-A

	Men	Women	$p$	Cohen's $d$
	$M (SD)$	$M (SD)$		
Inhibit	61.35 (13.15)	59.75 (14.80)		
Shift	68.41 (12.55)	74.27 (11.70)	.001	0.48
Emotional control	58.97 (12.16)	64.15 (11.62)	.002	0.44
Self-monitor	62.13 (12.95)	63.14 (16.11)		
Initiate	71.19 (13.91)	70.26 (14.17)		
Working memory	67.34 (12.62)	70.48 (13.58)		
Plan/Organize	68.50 (13.94)	67.27 (15.01)		
Task monitor	60.31 (13.56)	60.85 (13.42)		
Organization of materials	59.37 (14.06)	62.68 (13.13)		

Note: Correction for multiple testing (Bonferroni) was applied.

## Results

The **ASD group has significant higher BRIEF-A scores** – indicative of more EF problems – than the normative group, on all nine scales ( $M > 50$ ,  $p < .001$ ,  $d = 0.75 - 1.60$ ) (see **Table 1**). The scales Shift, Initiate, Working Memory and Plan/Organize even show a clinical elevation ( $M > 65$ ,  $p < .001$ ,  $d = 0.25 - 0.40$ ).

Concerning differences based on sex, **women with ASD** have significant higher scores than men on the clinical **scales Shift** ( $M_{women} = 74.27$ ,  $SD_{women} = 11.70$ ,  $M_{men} = 68.41$ ,  $SD_{men} = 12.56$ ,  $t(252) = -3.435$ ,  $p = .001$ ,  $d = 0.48$ ) and **Emotional control** ( $M_{women} = 64.15$ ,  $SD_{women} = 11.62$ ,  $M_{men} = 58.97$ ,  $SD_{men} = 12.16$  respectively,  $t(252) = -3.110$ ,  $p < .002$ ,  $d = 0.44$ ) (see **Table 2**).

## Conclusions

**Adults with ASD** report the most profound EF problems with **shifting, initiating, working memory, and planning/organizing**. This is in line with and provides additional outcomes to research findings with the BRIEF-A informant report.

**Women with ASD** report more problems than men concerning **shifting and emotional control**. With regard to the last finding, a possible explanation is the vulnerability of women with ASD for more emotional problems than men with ASD (Bargiela et al. 2016).

Note that the effect sizes are small. More research is warranted before conclusions can be made concerning a possible characteristic BRIEF-A profile for adults with ASD.

## References

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