Behavior Rating Inventory of Executive Function, Second Edition—Adult Version (BRIEF2A) Scale Elevations in Adults with Mild and Moderate/Severe Traumatic Brain Injury

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Background and Objective

- Adults with persisting symptoms 1 year after mild traumatic brain injury (mTBI) may show a different profile of everyday executive function (EF) problems than adults with moderate/severe TBI.
- We examined differences in self- and informant report of EF on the BRIEF2A (Roth et al., 2024) in individuals with persisting symptoms after mTBI and moderate/severe TBI compared to healthy adults (HA), evaluating both mean differences and rates of scale elevations.

Method

- ***Participants:*** Participants were 62 patients with persisting symptoms after mTBI (57 had self-report, 22 had informant report) and 31 with moderate/severe TBI (28 self, 17 informant) seen for neuropsychological evaluation at least 1 year postinjury. Clinical groups were demographically matched (age and gender) to HA from the BRIEF2A normative sample. See Tables 1 and 2 for demographic information; race/ethnicity was not available for clinical groups, so it is not presented.
- ***Measures:*** Self- and Informant Report Forms of the BRIEF2A, a 70-item rating scale of everyday EF problems.
- ***Procedures:*** Individuals in clinical groups completed the BRIEF-A as part of neuropsychological evaluation and responses were rescored as the BRIEF2A; individuals in the HA sample completed the BRIEF2A as part of the normative sample.
- ***Analysis:*** Four MANOVAs were conducted, and simple effects were examined, to evaluate for mean differences in ratings between the four subsamples of clinical groups and HA: self- and informant report for mTBI, and self- and informant report for moderate/severe TBI. The frequency of scale elevations ($T \geq 65$) was examined within each subsample.

Table 1. Demographic Characteristics of BRIEF2A Self-Report Subsamples

	mTBI	mTBI-matched HA	Moderate/severe TBI	Moderate/severe TBI-matched HA
N	57	57	28	28
Age in years (min–max)	18–62	18–62	18–72	18–72
Age in years (min–max)	43.98 (12.96)	43.98 (12.96)	38.64 (15.01)	38.64 (15.01)
Sex *n* (%)				
Female	26 (46%)	26 (46%)	8 (29%)	8 (29%)
Male	31 (54%)	31 (54%)	20 (71%)	20 (71%)

Table 2. Demographic Characteristics of BRIEF2A Informant Report Subsamples

	mTBI	mTBI-matched HA	Moderate/severe TBI	Moderate/severe TBI-matched HA
N	22	22	17	17
Age in years (min–max)	18–86	18–86	18–68	18–68
Age in years (min–max)	41.82 (19.21)	41.82 (19.21)	39.29 (16.96)	39.29 (16.96)
Sex *n* (%)				
Female	10 (45%)	10 (45%)	3 (18%)	3 (18%)
Male	12 (55%)	12 (55%)	14 (82%)	14 (82%)

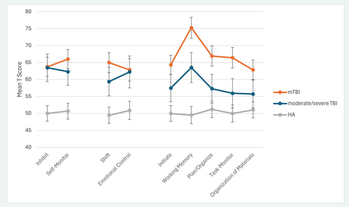
Note. All healthy adult samples are age- and gender-matched from the normative sample. mTBI = mild traumatic brain injury; HA = healthy adult.

Results

Self-Report Mean Differences (See Figure 1):

In individuals with mTBI, BRIEF2A self-report ratings were higher than those for HA on all scales, especially Inhibit, Self-Monitor, Shift, and Working Memory (Cohen's $d > 1.4$). In individuals with moderate/severe TBI, there was greater self-rated difficulty than HA on all scales except Organization of Materials, with the greatest differences on Inhibit, Self-Monitor, and Working Memory (Cohen's $d > 0.9$).

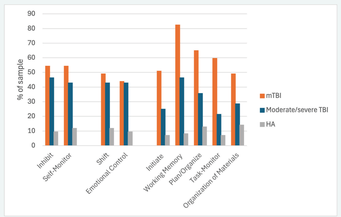
Figure 1. BRIEF2A Self-Report Profiles



Self-Report Scale Elevations (See Figure 2):

A majority of individuals with mTBI had elevated scores ($T \geq 65$) on six of the nine clinical scales, most notably Working Memory (82.5%) and Plan/Organize (64.9%). In those with moderate/severe TBI, the most common scale elevations were Working Memory and Inhibit (both 46.4%).

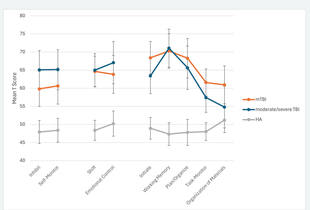
Figure 2. BRIEF2A Self-Report Scale Elevations ($T \geq 65$)



Informant Report Mean Differences (See Figure 3):

According to informants, individuals with mTBI had higher BRIEF2A *T* scores than HA on all scales, particularly Shift, Initiate, Working Memory, Plan/Organize, and Task-Monitor (Cohen's $d > 1.5$). Informant report scores for individuals with moderate/severe TBI were significantly higher than those of HA on all scales except Organization of Materials, with the greatest differences on Shift, Initiate, Working Memory, and Plan/Organize (Cohen's $d > 1.5$).

Figure 3. BRIEF2A Informant Report Profiles

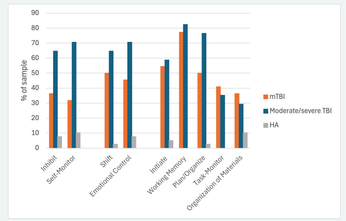


Results (continued)

Informant Report Scale Elevations (See Figure 4):

According to informants, a majority of individuals with mTBI had elevated *T* scores on two clinical scales: Initiate (54.5%) and Working Memory (77.3%). Informant report scores for a majority of individuals with moderate/severe TBI were elevated on seven of the nine scales, most notably Working Memory (82%), Plan/Organize (76.5%), and Emotional Control and Self-Monitor (both 70.6%).

Figure 4. BRIEF2A Informant Report Scale Elevations ($T \geq 65$)



Conclusions

Summary

Patients with persisting symptoms after mTBI and moderate/severe TBI, along with their informants, commonly endorse executive dysfunction in their everyday lives. On self-report, individuals with mTBI endorsed more problems with EF, most notably in scales assessing cognitive regulation, than individuals with moderate/severe TBI. On informant report, however, ratings of individuals with moderate/severe TBI indicated a broader range of more severe challenges than those for individuals with mTBI. These different response patterns may be related to the impact of non-injury-specific factors (e.g., mood, pain, other symptoms) on perceived cognitive functioning in those with persisting symptoms after mTBI, as well as poor self-awareness of problems in individuals with moderate/severe TBI.

Clinical Implications

Both self- and informant report on the BRIEF2A can help clinicians understand the range and severity of enduring EF problems after TBI. Differences in rater perspective can inform treatment planning around perceptions of impairment and self-awareness.

Future Directions

Additional research in self- and informant report of executive functioning can help further elucidate the types of problems reported from different perspectives. Larger samples are needed, particularly on informant report, to allow investigation of the relationship between EF problems and various injury and sociodemographic factors.

Roth, R. M., Isquith, P.K., & Gioia, G.A. (2024). *Behavior Rating Inventory of Executive Function, Second Edition–Adult Version (BRIEF2A): Professional manual.* PAR.

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