

Supplemental Table 1. Multiple regression analyses of neurocognitive and quality of life outcomes that differed between survivors with versus without growth hormone deficiency (among survivors without hypothyroidism or hypogonadism)

		Vocabulary		Perceptual Reasoning		Mathematics		Sustained Attention		Flexibility		Fluency	
		Est.	P-value	Est.	P-value	Est.	P-value	Est.	P-value	Est.	P-value	Est.	P-value
GHD	Yes v. No	-0.16	0.20	-0.16	0.17	-0.06	0.61	-0.52	0.12	-0.35	0.09	-0.23	0.052
Sex	Female	-0.13	0.29	-0.11	0.33	-0.22	0.06	-0.68	0.04	0.46	0.02	0.19	0.10
Age at diagnosis	Per year	0.04	0.005	0.03	0.06	0.07	<.001	0.05	0.24	0.07	0.008	0.03	0.07
Time since diagnosis	Per 10 years	0.09	0.51	0.06	0.61	0.14	0.26	-0.001	0.99	0.17	0.45	0.08	0.53
CRT dose	Per 10 Gy	-0.50	0.001	-0.51	<.001	-0.69	<.001	-0.35	0.40	-1.19	<.001	-0.40	0.005
IT Methotrexate	Per 100 ml	-0.03	0.55	0.002	0.97	-0.09	0.10	-0.06	0.69	-0.02	0.80	0.02	0.71
HDIV Methotrexate	Yes v. No	0.19	0.30	-0.06	0.71	0.12	0.51	0.65	0.19	-0.07	0.81	0.32	0.06
		Emotional Regulation		Social Function		Mental Health							
		Est.	P-value	Est.	P-value	Est.	P-value						
GHD	Yes v. No	0.25	0.04	-0.23	0.04	-0.28	0.02						
Sex	Female	0.48	<.001	-0.03	0.78	-0.14	0.24						
Age at diagnosis	Per year	0.01	0.97	-0.03	0.054	-0.03	0.06						
Time since diagnosis	Per 10 years	-0.01	0.92	0.03	0.81	-0.04	0.74						
CRT dose	Per 10 Gy	0.14	0.42	-0.14	0.30	-0.01	0.97						
IT Methotrexate	Per 100 ml	-0.02	0.76	-0.03	0.55	-0.05	0.34						
HDIV Methotrexate	Yes v. No	-0.14	0.45	0.16	0.32	0.06	0.72						

Note: Only outcomes that demonstrated significant differences between survivors with GHD versus without GHD on univariate tests were included in multivariable models.

Abbreviations: GHD = growth hormone deficiency, CRT = cranial radiation therapy, IT = intrathecal (either single methotrexate or methotrexate combined with cytarabine and hydrocortisone), HDIV = high-dose intravenous.

Supplemental Table 2. Comparison of neurocognitive outcomes between survivors with growth hormone deficiency diagnosed during childhood versus adulthood.

	Diagnosed during Adulthood (N=241)	Diagnosed during Childhood (N=57)	P-value
	Mean (95% CL)	Mean (95%CL)	
Neurocognitive – Direct Testing			
Vocabulary	-0.86 (-1.01, -0.71)	-0.74 (-1.06, -0.41)	0.49
Perceptual Reasoning	-0.28 (-0.43, -0.14)	-0.07 (-0.33, 0.19)	0.19
Reading	-0.56 (-0.67, -0.46)	-0.58 (-0.83, -0.34)	0.86
Mathematics	-0.91 (-1.07, -0.75)	-1.01 (-1.31, -0.70)	0.60
Focus	-0.51 (-0.73, -0.30)	-0.74 (-1.24, -0.25)	0.37
Sustain	-1.21 (-1.69, -0.74)	-0.80 (-1.57, -0.04)	0.37
Variability	-0.63 (-0.81, -0.44)	-0.42 (-0.76, -0.07)	0.32
Span	-0.58 (-0.71, -0.45)	-0.38 (-0.64, -0.12)	0.19
New Learning	-0.30 (-0.46, -0.14)	-0.21 (-0.58, 0.15)	0.66
Short-term Recall	-0.30 (-0.46, -0.14)	-0.04 (-0.40, 0.32)	0.16
Long-term Recall	-0.37 (-0.54, -0.21)	-0.29 (-0.67, 0.09)	0.66
Motor	-1.04 (-1.24, -0.84)	-0.98 (-1.34, -0.62)	0.78
Visual	-0.49 (-0.63, -0.36)	-0.45 (-0.73, -0.17)	0.77
Visual-Motor	-0.67 (-0.80, -0.54)	-0.66 (-0.87, -0.45)	0.95
Flexibility	-1.39 (-1.66, -1.12)	-1.27 (-1.79, -0.76)	0.71
Fluency	-0.77 (-0.91, -0.62)	-0.65 (-0.93, -0.37)	0.47
Working Memory	-0.50 (-0.62, -0.38)	-0.55 (-0.77, -0.32)	0.75
Neurocognitive – Self-report			
Task Efficiency	-1.26 (-1.06, -1.46)	-0.87 (-0.50, -1.24)	0.09
Memory	-1.37 (-1.20, -1.54)	-0.75 (-0.41, -1.10)	0.002
Organization	-0.45 (-0.29, -0.61)	0.15 (0.42, -0.14)	0.001
Emotional Regulation	-0.54 (-0.38, -0.69)	-0.13 (0.19, -0.44)	0.03

Supplemental Table 3. Comparison of neurocognitive outcomes between survivors with growth hormone deficiency (GHD) who did and did not receive prior treatment for GHD.

	No Prior Treatment (N=247)	Prior Treatment (N=51)	P-value
	Mean (95% CL)	Mean (95%CL)	
Neurocognitive – Direct Testing			
Vocabulary	-0.86 (-1.00, -0.71)	-0.74 (-1.10, -0.38)	0.54
Perceptual Reasoning	-0.27 (-0.41, -0.13)	-0.10 (-0.39, 0.19)	0.32
Reading	-0.57 (-0.68, -0.46)	-0.54 (-0.73, -0.35)	0.77
Mathematics	-0.91 (-1.07, -0.75)	-1.01 (-1.30, -0.72)	0.61
Focus	-0.51 (-0.72, -0.31)	-0.77 (-1.33, -0.20)	0.34
Sustain	-1.20 (-1.68, -0.72)	-0.82 (-1.46, -0.17)	0.34
Variability	-0.64 (-0.82, -0.45)	-0.35 (-0.69, -0.004)	0.19
Span	-0.57 (-0.70, -0.44)	-0.41 (-0.70, -0.13)	0.33
New Learning	-0.28 (-0.44, -0.12)	-0.29 (-0.69, 0.10)	0.93
Short-term Recall	-0.27 (-0.42, -0.11)	-0.17 (-0.55, 0.22)	0.60
Long-term Recall	-0.36 (-0.52, -0.20)	-0.34 (-0.77, 0.08)	0.93
Motor	-1.02 (-1.21, -0.82)	-1.09 (-1.49, -0.69)	0.74
Visual	-0.49 (-0.63, -0.36)	-0.45 (-0.77, -0.14)	0.82
Visual-Motor	-0.66 (-0.79, -0.54)	-0.69 (-0.92, -0.46)	0.83
Flexibility	-1.38 (-1.64, -1.12)	-1.32 (-1.90, -0.74)	0.85
Fluency	-0.76 (-0.90, -0.63)	-0.64 (-0.95, -0.33)	0.46
Working Memory	-0.52 (-0.64, -0.40)	-0.48 (-0.70, -0.26)	0.79
Neurocognitive – Self-report			
Task Efficiency	-1.25 (-1.05, -1.45)	-0.90 (-0.50, -1.30)	0.14
Memory	-1.36 (-1.20, -1.52)	-0.76 (-0.38, -1.15)	0.003
Organization	-0.46 (-0.30, -0.62)	0.25 (0.53, -0.03)	<0.001
Emotional Regulation	-0.50 (-0.34, -0.66)	-0.25 (0.09, -0.60)	0.20