Supplementary Online Materials

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i. Table S1: Details about Participants and Interventions shown to aid Executive Function Development in Children 4-12 years old

Ref #	Author/ Year	Number of Subjects		Subject Characteristics			Intervention			Active Control Group?	Dosage, Frequency & Duration			
		Ttl	Per Group	Age (yrs)	Sex	Other	Kind	Incremental increases in difficulty?	What EF skills were targeted?		Session Duration (in minutes)	# of Sessions per Week	Total Time Period (in weeks)	Total # of Hours
Computerized Training: Cogmed Training System (*S1*)														
10	Holmes et al. (2009)	42	1) Working memory (WM) = 22 2) Active control (non-incrementing version of training games) = 20	8-11	M & F	All had poor initial working memory (low working memory span).	Working memory training: Cogmed computerized training system	Yes	- verbal WM - visuospatial WM	Yes	30-45	~2-5	5-8	15-17 (*S2*)
11	Klingberg et al. (2005)	53	1) Working memory (WM) = 27 2) Active control (non-incrementing version of training games) = 26	7-12	M & F	All were diagnosed with ADHD & non-medicated.	Working memory training: Cogmed computerized training system	Yes	- verbal WM - visuospatial WM	Yes	40	~4-5	5-6	17
12	Bergman-Nutley et al. (2011)	101	1) Working memory (WM) = 24 2) Non-verbal reasoning (NVR) = 25 3) Combined (CB) = 27 4) Placebo (PL) (non-incrementing version of training games) = 25	4	M & F	All families needed to have access to a PC computer & internet (parents supervised the training at home).	1) Working memory training: Cogmed computerized training system 2) Non-verbal reasoning training: 3 Leiter battery tests (RP,SO,CL [*S4*]) 3) Combined training: combination of NVR and WM training 4) Placebo training: combined, lowest level of difficulty	Yes	1) WM training - verbal WM - visuospatial WM 2) NVR training - identifying patterns - deducing rules - matching by ≥1 dimensions & ignoring others	Yes	15	5	5-7	~6
13	Thorell et al. (2009)	65	1) Working memory (WM) = 17 2) Inhibition training = 18 3) Active control (computer games [*S5*]) = 14 4) Passive control (no treatment) =16	4-5	M & F	None	1) Working memory training: Cogmed computerized training system 2) Inhibition training - Go/No-go task - Flanker task - Stop Signal task	Yes	1) WM training - tasks focused on visuospatial WM 2) Inhibition training - inhibition of a prepotent motor response - interference control - stopping of an ongoing response	Yes	15	~4-5	5	6
14	Holmes et al. (2010)	25	1) Working memory (WM) = 25 T1: Off medication T2: Pre-training, on medication T3: Post-training, on medication T4: 6 months later, on medication	8-11	M & F	All were diagnosed with ADHD & taking stimulant medication.	Working memory training: CogMed computerized training system	Yes	- verbal WM - visuospatial WM	No	30-45	~2-5	5-8	15-17 (*S6*)

Ref #	Author/ Year	Number of Subjects		Subject Characteristics			Intervention			Active Control Group?	Dosage, Frequency & Duration			
		Ttl	Per Group	Age (yrs)	Sex	Other	Kind	Incremental increases in difficulty?	What EF skills were targeted?		Session Duration (in minutes)	# of Sessions per Week	Total Time Period (in weeks)	Total # of Hours
Computerized Training: Other														
15	Rueda et al. (2005)	73	4-year-olds 1) Attention training = 24 2) Inactive control (watch videos) = 13 3) No treatment control = 12 6-year-olds 1) Attention training = 12 2) Inactive control (watch videos) = 12	4 & 6	M & F	All were middle-income.	Computerized attention training included: - conflict resolution sets - inhibitory control exercises (4-year-olds on a Stroop-like task, 6-year-olds on a Go/No-go task)	Yes	- attention - memory - inhibitory control	No (*S7*)	40	~2-3	2-3	~3
Hybrids of Computer and Non-computer Games														
16	Mackey et al. (2010)	28	1) Reasoning training = 17 2) Speed training = 11	7-9	M & F	All attended a school with a history of low statewide test scores and a high % of low-income students.	1) Reasoning training (fluid reasoning) 2) Speed training (processing speed) *combination of 10-12 commercially-available computerized & non-computerized games (*S8*)	Yes	1) Reasoning training - joint consideration of several task rules, relations, or steps 2) Speed training - rapid visual detection - rapid motor response	Yes	60	2	8	16
Aerobic Exercise and Sports														
19	Tuckman & Hinkle (1986)	154	1) Aerobic running = 77 2) Regular Phys. Ed. = 77	8-12	M & F	All attended a university-affiliated "research" school.	Aerobic running	Yes	None	Yes	30	3	12	18
20	Davis et al. (2011)	171	1) High-dose aerobic exercise = 60 2) Low-dose aerobic exercise = 55 3) No program control = 56	7-11	M & F	All were sedentary & overweight or obese (85th percentile body mass index).	Aerobic exercise: - included running games, jump rope, modified basketball and soccer - high-dose was 40 minutes / day - low-dose was 20 minutes / day	Yes	None	No	20 or 40	5	~13	~22 or 43
21	Kamijo et al. (2011)	43	1) Physical activity program = 22 2) No program control = 21	7-9	M & F	None	Physical activity: - aerobic exercises - muscle fitness	Yes	None	No	120	5	36	300

Ref #	Author/ Year	Number of Subjects		Subject Characteristics			Intervention			Active Control Group?	Dosage, Frequency & Duration			
		Ttl	Per Group	Age (yrs)	Sex	Other	Kind	Incremental increases in difficulty?	What EF skills were targeted?		Session Duration (in minutes)	# of Sessions per Week	Total Time Period (in weeks)	Total # of Hours
Martial Arts and Mindfulness Practices														
28	Lakes & Hoyt (2004)	207	1) LEAD Program Tae-Kwon-Do Martial Arts training (*S12*) = 105 2) Regular Phys. Ed. classes = 102 *Randomly assigned by homeroom class	5-11	M & F	All attended a private school and most were high-middle or high-income.	Tae-Kwon-Do Martial Arts training: - used traditional Moo Gong Ryu techniques in environment of respect, discipline and self-control - ask self 3 questions: 1. Where am I? 2. What am I doing? 3. What should I be doing?	Yes	- self-control (inhibition) - discipline - sustained concentration - self-monitoring - planning	Yes	45	~2-3	16	~28
30	Flook et al. (2010)	64	1) Mindfulness Awareness Practices (MAPS) = 32 2) Control (silent reading) = 32	7-9	M & F	None	MAPS: - sitting meditation - games to promote sensory awareness, attention regulation, awareness of others and environment - body scans	Yes	- top-down control of attention - monitoring attention	Yes	30	2	8	8
31	Manjunath & Telles (2001)	20	1) Yoga = 10 2) Active control (physical training) = 10	10-13	F only	None	Yoga program: - physical training - relaxation - awareness training	Yes	- top-down control of attention	Yes	75	7	4	~35
Classroom Curricula														
35	Diamond et al. (2007)	147	1) Tools of the Mind = 85 2) School district curriculum = 62	4-5	M & F	All were low-income & most were Hispanic. Groups were closely matched on demographics.	Tools of the Mind curriculum: - see text & Table 1	Yes	- inhibitory control of behavior & attention - sustained attention - working memory - switching - planning	Yes	Entire school day	5	Entire school year	860
41	Lillard & Else-Quest (2006)	112	5-year-olds 1) Montessori = 30 2) Other school curricula = 25 12-year-olds 1) Montessori = 29 2) Other school curricula = 28 *subjects were not randomly assigned	5 & 12	M & F	All were low-income & had entered lottery for Montessori school. Selection from lottery was random.	Montessori curriculum: - see text & Table 1	Yes	- inhibitory control of behavior & attention - sustained attention - working memory - planning	Yes	Entire school day	5	See footnote section for details (*S15*)	

Ref #	Author/ Year	Number of Subjects		Subject Characteristics			Intervention			Active Control Group?	Dosage, Frequency & Duration			
		Ttl	Per Group	Age (yrs)	Sex	Other	Kind	Incremental increases in difficulty?	What EF skills were targeted?		Session Duration (in minutes)	# of Sessions per Week	Total Time Period (in weeks)	Total # of Hours
Add-ons to Classroom Curriculum														
43	Riggs et al. (2006)	318	1) PATHS (Promoting Alternative Thinking Strategies) added to school district curriculum = 153 2) School district curriculum = 165	7-9	M & F	All were low or middle-income.	PATHS curriculum: - see text & Table 1	Yes	- inhibitory control (self-control) including waiting before acting - emotion regulation - problem-solving - planning	Yes	20-30	3	24	~30
45 46	Raver et al. (2008, 2011)	467	1) Chicago School Readiness Project (CSRP) added to Head Start = 238 2) Head Start = 229	3-4	M & F	All were low-income, considered at-risk & came from high-poverty neighborhoods.	CSRP: - see text & Table 1	Yes	None	Yes	Entire school day	5	Entire school year	

ii. Table S2: Executive Function Outcomes: Including Assessment Measures Used and Effect Sizes

Ref #	Author/ Year	Executive Function Outcomes						
		Positive EF Transfers	**Size of Effect**	**Positive transfers were narrow**	**Those with worse EFs benefit most**	**Larger group differences for more EF-demanding conditions**	**Progressively increasing challenge during training is important for benefits**	**No Transfer on EF Measures**
Computerized Training: Cogmed Training System (*S1*)								
10	Holmes et al. (2009)	1) WM training group showed transfers to (*S2*): - subtests from the AWMA: • **verbal WM** (Counting Recall) . . . . . Large • **verbal STM** (Word Recall, Digit Recall) . . . . . Medium • **visuospatial WM** (Mr. X, Spatial Recall) . . . . . Large • **visuospatial STM** (Dot Matrix, Block Recall) . . . . . Large - **verbal WM task** (Following Instructions task) . . . . . Large 2) Active control group showed transfers to (*S2*): - subtests from the AWMA: • **verbal WM** (Counting Recall) . . . . . Medium • **verbal STM** (Word Recall, Digit Recall) . . . . . Medium *Based on pre- to post- training comparison		Yes	All started low.	n/a	Yes	1) None; WM training group only showed positive transfers. 2) Active control group showed no transfer to (*S2*): - subtests from the AWMA: • **visuospatial WM** (Mr. X, Spatial Recall) • **visuospatial STM** (Dot Matrix, Block Recall) - **verbal WM task** (Following Instructions task)
11	Klingberg et al. (2005)	1) WM training group showed transfers to (*S3*): - **verbal WM** (Digit Span – WISC-III) . . . . . Medium - **visuospatial WM** (Span Board – WAIS-RNI) . . . . . Large - **inhibition** (Stroop task) . . . . . Medium - **non-verbal reasoning** (Raven's Matrices) . . . . . Medium - parent-reported Conners Rating Scale: • **inattention decreased**. . . . . Large • **hyperactivity/impulsivity decreased** . . . . . Medium *Based on control group comparison		Yes	All had ADHD.	n/a	Yes	1) WM training group showed no transfer to: - teacher-reported Conners Rating Scale: • **inattention** • **hyperactivity/impulsivity**
12	Bergman-Nutley et al. (2011)	1) WM training group showed transfer to (*S4*): - **non-verbal memory / reasoning** (Odd One Out - AWMA) Large 2) NVR training group showed transfers to (*S4*): - **non-verbal analogical reasoning & problem solving** (Raven's Matrices B, Block Design - WPPSI) . . . . . Large - **non-verbal memory / reasoning** (Odd One Out - AWMA) Small (trend only) 3) CB training group showed transfers to (*S4*): - **non-verbal memory / reasoning** (Odd One Out - AWMA) Small *Odd One Out had a reasoning component and reasoning training tended to aid its performance *Based on control group (PL) comparison		Yes	n/a	n/a	Yes	1) WM training group showed no transfer to (*S4*): - **problem solving** (Leiter tests, Raven's Matrices, Block Design - WPPSI) - **verbal WM** (Word Span) 2) NVR training group showed no transfer to (*S4*): - **problem solving** (non-verbal Gestalt completion on Raven's Matrices A & AB) - **verbal WM** (Word Span) 3) CB training group showed no transfer to (*S4*): - **problem solving** (Raven's Matrices, Block Design - WPPSI) - **verbal WM** (Word Span)
13	Thorell et al. (2009)	1) WM training group showed transfers to (*S5*): - **visuospatial WM** (Span Board – WAIS-RNI) . . . . . Large - **verbal WM** (Word Span) . . . . . Large - **auditory attention** (Auditory Continuous Performance task - NEPSY) . . . . . Medium *Based on comparison with the 2 control groups combined		Yes	n/a	n/a	n/a	1) WM training group showed no transfer to (*S5*): - **response inhibition** (Go/No-go) - **inhibition & WM** (Day-Night Stroop task) - **problem solving** (Block Design – WPPSI-R) - **inhibitory control** (Go/No-go) - **sustained attention** (Go/No-go) 2) Inhibition training group showed no transfer.
14	Holmes et al. (2010)	1) From T1 to T2, WM training group showed transfers to (*S6*): - subtests from the AWMA: • **visuospatial WM** (Mr. X, Spatial Span) . . . . . Medium 2) From T2 to T3, WM training group showed transfers to (*S6*): - subtests from the AWMA: • **verbal WM** (Backward Digit Recall, Listening Recall) Medium • **verbal STM** (Digit Recall) . . . . . Medium • **visuospatial WM** (Mr. X, Odd One Out) . . . . . Small • **visuospatial STM** (Dot Matrix, Mazes Memory) . . . . . Large *Based on comparisons across time		Yes	All had ADHD.	n/a	n/a	1) From T1 to T2, WM training group showed no transfer to (*S6*): - subtests from the AWMA: • **verbal WM** (Backward Digit Recall, Counting Recall) • **verbal STM** (Digit Recall, Word Recall) • **visuospatial STM** (Dot Matrix)

Ref #	Author/ Year	Executive Function Outcomes						
		Positive EF Transfers	**Size of Effect**	**Positive transfers were narrow**	**Those with worse EFs benefit most**	**Larger group differences for more EF-demanding conditions**	**Progressively increasing challenge during training is important for benefits**	**No Transfer on EF Measures**
Computerized Training: Other								
15	Rueda et al. (2005)	4-year-olds: Attention training showed transfers to (*S7*): **- abstract reasoning** (Matrices – K-BIT) . . . . . . 6-year-olds: Attention training showed no transfers but showed more efficient adult-like ERPs during attention task. *Based on control group comparison	?	Yes	All were middle income.	n/a	n/a	4-year-olds showed no transfer to (*S7*): - **selective attention** (Flanker task) - **parent-reported temperament** (CBQ) 6 year-olds showed no transfer to (*S7*): - **selective attention** (Flanker task) - **parent-reported effortful control** (CBQ)
Hybrids of Computer and Non-computer Games								
16	Mackey et al. (2010)	1) Reasoning training showed transfers to (*S8*): - **fluid reasoning** (Matrix task – TONI-3) . . . . . . - **processing speed** (Cross-Out – WJ-R) . . . . . . - **working memory** (Spatial Span - WMS) . . . . . . 2) Speed training showed transfers to (*S8*): - **processing speed** (Coding B – WISC-IV, Cross-Out - WJ-R) . . . . . . *Based on baseline score comparison	Large Medium Medium Large	Yes	All were low-income.	n/a	n/a	1) Reasoning training showed no transfer to (*S8*): - **processing speed** (Coding B – WISC-IV) - **working memory** (Digit Span - WMS) 2) Speed training showed no transfer to (*S8*): - **fluid reasoning** (Matrix task – TONI-3) - **working memory** (Digit Span - WMS, Spatial Span - WMS)
Aerobic Exercise and Sports								
19	Tuckman & Hinkle (1986)	Aerobic running benefitted: - **creativity & cognitive flexibility** (Alternate Uses test) . . . - girls reported to show more creative involvement in class *Based on control group comparison	Large	n/a	n/a	n/a	n/a	None; only benefits reported.
20	Davis et al. (2011)	High-dosage Aerobics benefitted (*S10*): - **strategy generation & application, self-regulation, intentionality, utilization of knowledge** (CAS Planning scale) . . . . . . *Dose-response effect demonstrated *Based on control group comparison	Small	n/a	All were sedentary & over-weight.	n/a	n/a	Aerobics did not benefit (*S10*): - **focused attention, resistance to distraction** (CAS Attention scale) - **spatial/logical reasoning** (CAS Simultaneous scale) - **analysis/recall of stimuli arranged in sequence** (CAS Successive scale)
21	Kamijo et al. (2011) (*S11*)	Aerobics benefitted (*S11*): - **working memory** (modified Sternberg task) . . . . . . *Based on control group comparison	Small	n/a	n/a	n/a	n/a	None; only benefits reported.

Ref #	Author/ Year	Executive Function Outcomes						
		Positive EF Transfers	**Size of Effect**	**Positive transfers were narrow**	**Those with worse EFs benefit most**	**Larger group differences for more EF-demanding conditions**	**Progressively increasing challenge during training is important for benefits**	**No Transfer on EF Measures**
Martial Arts and Mindfulness Practices								
28	Lakes & Hoyt (2004)	Tae-Kwon-Do Martial Arts benefitted (*S12*): - subtests from the Response to Challenge Scale: • **cognitive self-regulation (focused attention)** . . . . . • **affective self-regulation (not quitting)** . . . . . . *Effect greater for boys than girls *Effect greater for older kids (grades 4 and 5) and smaller for younger kids (grade 1) *Based on control group comparison	 Medium Medium	n/a	All were middle-high or high income. Yes; Boys benefitted more than girls.	n/a	n/a	None; only benefits reported.
30	Flook et al. (2010)	Mindfulness benefitted (*S13*): - parent ratings on the BRIEF: • **shifting (cognitive flexibility)** . . . . . . • **emotion regulation** . . . . . . • **WM** . . . . . . • **monitoring**. . . . . . -teacher ratings on the BRIEF: • **shifting (cognitive flexibility)** . . . . . . • **planning / organizing** . . . . . . • **monitoring** . . . . . . *Teachers were not blind to group assignment *Based on change x group comparison (change over time in intervention group was greater than change over time in control group)	 Large Large Medium Large Medium Medium Medium	n/a	Yes	n/a	n/a	Mindfulness did not benefit (*S13*): - parent ratings on the BRIEF: • **inhibition** • **planning / organizing** • **organization of materials** - teacher ratings on the BRIEF: • **inhibition** • **emotion regulation** • **WM** • **organization of materials**
31	Manjunath & Telles (2001)	Yoga benefitted (*S14*): - **planning** (Tower of London) . . . . . . • faster & in fewer moves *Based on pre- to post-training comparison	 ?	n/a	n/a	Yes	n/a	None; only benefits reported.
Classroom Curricula								
35	Diamond et al. (2007)	Tools of the Mind benefitted: - **inhibition** (Hearts and Flowers-Incongruent) . . . . . . - **switching** / **WM** / **inhibition** (Hearts and Flowers-Mixed) - **selective attention** (Flanker) . . . . . . - **selective attention/switching** (Reverse Flanker) . . . . . . *Based on control group comparison	 Small Large Small Large	No	All were low-income & at-risk.	Yes	n/a	None; only benefits reported.
41	Lillard & Else-Quest (2006)	Montessori benefits: 1) 5-year-olds - **switching / WM / inhibition** (Card Sort task) . . . . . . 2) 12-year-olds - **creativity** (Story Completion task) . . . . . . *Based on control group comparison	 Medium Large	n/a	All were low-income.	n/a	n/a	Montessori did not benefit: - **delay of gratification assessed at age 5**

Ref #	Author/ Year	Executive Function Outcomes						
		Positive EF Transfers	**Size of Effect**	**Positive transfers were narrow**	**Those with worse EFs benefit most**	**Larger group differences for more EF-demanding conditions**	**Progressively increasing challenge during training is important for benefits**	**No Transfer on EF Measures**
Add-ons to Classroom Curriculum								
43	Riggs et al. (2006)	PATHS benefitted: - **inhibiton & WM** (Stroop task) . . . . . . - **cognitive flexibility** (Verbal Fluency) . . . . . . *Based on control group comparison	Small Small	No	All were low or middle-income.	n/a	n/a	None; only benefits reported.
45 46	Raver et al. (2008, 2011)	CSRP benefitted (*S17*): - **concentration** (Balance Beam - PSRA) . . . . . . - **inhibition & WM** (Pencil Tap - PSRA) . . . . . . - **attention** & **impulsivity** (Global Assessor report - PSRA)	Medium Medium Medium	n/a	All were low-income, at-risk & came from high-poverty areas.	n/a	n/a	CSRP did not benefit (*S17*): - **delay of gratification** (PSRA)

iii. Table S3: Other Cognitive & Non-Cognitive Outcomes and Long-term Assessments

Ref #	Author/ Year	Other: Both Cognitive & Non-Cognitive			Results of Assessments ≥ 6 Months Later
		Other Cognitive & Non-Cognitive Skills Improved	**Size of Effect**	**Other Cognitive & Non-Cognitive Skills Not Affected**	
Computerized Training: Cogmed Training System (*S1*)					
10	Holmes et al. (2009)	1) WM training group showed no transfer to other cognitive or non-cognitive skills.	n/a	1) WM training group showed no transfer to (*S2*): - **verbal IQ** (WASI) - **performance IQ** (WASI) - **basic word reading** (WORD) - **mathematical reasoning** (WOND)	Assessed 6 months later: 1) WM training group showed lasting improvements on (*S2*): - subtests from the AWMA: • **verbal WM** (Counting Recall) • **visuospatial WM** (Mr. X, Spatial Recall) • **visuospatial STM** (Dot Matrix, Block Recall) - **verbal WM task** (Following Instructions task) - **mathematical reasoning** (WOND)
11	Klingberg et al. (2005)	None tested	n/a	None tested	Not tested
12	Bergman-Nutley et al. (2011)	None tested	n/a	None tested	Not tested
13	Thorell et al. (2009)	None tested	n/a	None tested	Not tested
14	Holmes et al. (2010)	1) WM training group showed no transfer to other cognitive or non-cognitive skills.	n/a	1) From T1 to T2, WM training group showed no transfer to (*S6*): - **verbal IQ** (WASI) - **performance IQ** (WASI) 2) From T2 to T3, WM training group showed no transfer to (*S6*): - **verbal IQ** (WASI) - **performance IQ** (WASI)	Assessed 6 months later: From T2 to T4, WM training group showed lasting improvements on (*S6*): - subtests from the AWMA: • **verbal WM** (Backward Digit Recall) • **visuospatial WM** (Mr. X) • **visuospatial STM** (Dot Matrix)

Ref #	Author/ Year	Other: Both Cognitive & Non-Cognitive			Results of Assessments ≥ 6 Months Later
		Other Cognitive & Non-Cognitive Skills Improved	Size of Effect	Other Cognitive & Non-Cognitive Skills Not Affected	
Computerized Training: Other					
15	Rueda et al. (2005)	4-year-olds: Attention training showed transfers to (*S7*): - **IQ composite score** (K-BIT) . . . . . . 6-year-olds: Attention training showed transfers to (*S7*): - **verbal IQ** (K-BIT vocabulary)	? ?	None; only benefits reported.	Not tested
Hybrids of Computer and Non-computer Games					
16	Mackey et al. (2010)	None tested	n/a	None tested	Not tested
Aerobic Exercise and Sports					
19	Tuckman & Hinkle (1986)	Aerobic running showed no benefits to other cognitive or non-cognitive skills.	n/a	Aerobic running did not benefit (*S9*): - **classroom behavior** (Devereaux behavior scale) - **self-concept** (Piers-Harris scale) - **perceptual-motor ability** (Bender-Gestalt test) - **planning ability & visual-motor coordination** (Maze Tracing Speed test)	Not tested
20	Davis et al. (2011)	Aerobics benefitted (*S10*): - **mathematics achievement** (WJ-III)	Small	Aerobics did not benefit (*S10*): - **reading achievement** (WJ-III)	Not tested
21	Kamijo et al. (2011)	None tested	n/a	None tested	Not tested

Ref #	Author/ Year	Other: Both Cognitive & Non-Cognitive			Results of Assessments ≥ 6 Months Later
		Other Cognitive & Non-Cognitive Skills Improved	Size of Effect	Other Cognitive & Non-Cognitive Skills Not Affected	
Martial Arts and Mindfulness Practices					
28	Lakes & Hoyt (2004)	Tae-Kwon-Do Martial Arts benefitted (*S12*): - **prosocial behavior** (SDQT) . . . . . . - **mathematics** (WISC-III) . . . . . . - **conduct** (SDQT) . . . . . . *Improvement in conduct significant for boys only	Small Small Medium	Tae-Kwon-Do Martial Arts did not benefit (*S12*): - **emotional symptoms** (SDQT) - **hyperactivity** (SDQT) - **peer problems** (SDQT) - **digit span** (WISC-III) - **self-esteem** (Self-Esteem Inventory)	Not tested
30	Flook et al. (2010)	Mindfulness benefitted (*S13*): - parent ratings on the BRIEF: • **initiate** . . . . . . -teacher ratings on the BRIEF: • **initiate**	Large Medium	None tested	Not tested
31	Manjunath & Telles (2001)	None tested	n/a	None tested	Not tested
Classroom Curricula					
35	Diamond et al. (2007)	None tested	n/a	None tested	Not tested
41	Lillard & Else-Quest (2006)	Montessori benefits (*S15*): 1) 5-year-olds - **letter-word ID** (WJ-III) . . . . . . - **phonological decoding ability** (WJ-III) . . . . . . - **math skills** (WJ-III) . . . . . . - **higher level of reasoning referring to justice/ fairness** (Social problem-solving) . . . . . . **- more positive shared play** (playground observation) **- less ambiguous rough play** (playground observation) 2) 12-year-olds - **sophisticated sentence structure** (Narrative Composition) . . . . . . **- positive social strategies** (Social problem-solving) . . . - **sense of school as community** (questionnaire)	 Medium Medium Medium Large Medium Large Medium Large Medium	Montessori did not benefit (*S15*): 1) 5-year-olds - **vocabulary** (WJ-III) **- spatial reasoning** (WJ-III) - **concept formation** (WJ-III) 2) 12-year-olds - **any cognitive** / **academic measures** (WJ-III)	Not tested

Ref #	Author/ Year	Other: Both Cognitive & Non-Cognitive			Results of Assessments ≥ 6 Months Later
		Other Cognitive & Non-Cognitive Skills Improved	Size of Effect	Other Cognitive & Non-Cognitive Skills Not Affected	
Add-ons to Classroom Curriculum					
43	Riggs et al. (2006)	None tested	n/a	None tested	- **EFs predicted fewer internalizing or externalizing behavior problems 1 year later** (CBCL) (*S16*)
45 46	Raver et al. (2008, 2011)	CSRP benefitted (*S17*): - **vocabulary** (PPVT) . . . . . . - **letter-naming** (Letter-Naming task) . . . . . . - **mathematics skills** (Early Math Skills)	 Small Small Small	None; only benefits reported.	- **EFs predicted academic achievement up to 3 years later on math and reading**

iv. Supplementary Online References and Notes

S1. Cogmed Training has two different working memory training programs for children
a) CogMed JM for preschoolers used by Thorell et al. (2009) & Bergman Nutley et al. (2011)
b) CogMed RM for school-age children used by Klingberg et al. (2005) & Holmes et al. (2009, 2010)

S2. Holmes et al. (2009)
Dosage & Duration: Difficult to be specific about dosage and duration because an adaptive paradigm was used which necessarily differs for each child depending on ability level.
AWMA - Automated Working Memory Assessment [T.P. Alloway, *Automated working memory assessment* (Harcourt, Oxford, 2007).]
Following Instructions task - a practical assessment of working memory use in the classroom [S.E. Gathercole *et al. Applied Cog. Psychol.* **22,** 1019 (2008).]
WASI - Wechsler Abbreviated Scales of Intelligence [D. Wechsler, *Wechsler abbreviated scale of intelligence* (Harcourt, London, 1999).]
WORD - Wechsler Objective Reading Dimensions [D. Wechsler, *Wechsler objective reading dimensions (WORD)* (Psychological Corporation, New York, 1993).]
WOND - Wechsler Objective Number Dimensions [D. Wechsler, *Wechsler objective number dimensions (WOND)* (Psychological Corporation, New York, 1996).]

S3. Klingberg et al. (2005)
WISC-III - Wechsler Intelligence Scales for Children – III [D. Wechsler, *WISC-III: Wechsler intelligence scale for children* (Psychological Corporation, San Antonio, 1991).]
WAIS-RNI - Wechsler Adult Intelligence Scale – Revised [D. Wechsler, *WAIS-R manual* (Psychological Corporation, New York, 1981).]

S4. Bergman-Nutley et al. (2011)
Intervention: Non-verbal reasoning training involved 3 Leiter battery tests: 1) RP - Repeated Patterns, 2) SO - Sequential Orders, 3) CL - Classifications
Leiter Battery: [G.H. Roid, L.J. Miller, *Leiter international performance scale-revised: Examiner's manual* (Stoelting Co., Wood Dale, 1997).]
AWMA - Automated Working Memory Assessment [T.P. Alloway, *Automated working memory assessment* (Harcourt, Oxford, 2007).]
Raven's Colored Progressive Matrices: Sets A, B, & AB [J.C. Raven, *Manual for Raven's progressive matrices* (Oxford Psychologists Press, Oxford, 1998).]
WPPSI - Wechsler Preschool and Primary Scale of Intelligence
[D. Wechsler, *Wechsler preschool and primary scale of intelligence – third edition (WPPSI-III)* (Psychological Corporation, New York, 2004).]

S5. Thorell et al. (2009)
Subject Groups: Active control group played computerized games with little demand on WM & inhibition.
WAIS-RNI - Wechsler Adult Intelligence Scale – Revised [D. Wechsler, *WAIS-R manual* (Psychological Corporation, New York, 1981).]
NEPSY - Developmental Neuropsychological Assessment
[M. Korkman, S.L. Kemp, U. Kirk, *NEPSY – A developmental neuropsychological assessment (*Psychological Corporation, San Antonio, 1998).]
WPPSI-R - Wechsler Preschool and Primary Scale of Intelligence – Revised
[D. Wechsler, *WPPSI-R. Wechsler preschool and primary scale of intelligence – revised* (Psychological Corporation, New York, 1995).]

S6. Holmes et al. (2010)
Dosage & Duration: Difficult to be specific about dosage and duration because an adaptive paradigm was used which necessarily differs for each child depending on ability level.
AWMA - Automated Working Memory Assessment [T.P. Alloway, *Automated working memory assessment* (Harcourt, Oxford, 2007).]
WASI - Wechsler Abbreviated Scale of Intelligence [D. Wechsler, *Wechsler abbreviated scale of intelligence* (Harcourt, London, 1999).]

S7. Rueda et al. (2005)
Control Group: Authors consider this an active control condition and note that subjects had to periodically answer questions about the videos they were watching.
K-BIT – Kaufman Brief Intelligence Test [A.S. Kaufman, N.L. Kaufman, *Kaufman brief intelligence test – manual* (American Guidance Service, Circle Pines, 1990).]
CBQ – Children's Behavior Questionnaire [M.K. Rothbart, S.A. Ahadi, K. Hershey, *Merrill Palmer Quart.* **40**, 21 (1994).]

S8. Mackey et al. (2010)
Training Games: List of computerized and non-computerized games
1) Reasoning games: Computerized (Azada, Azada II), Nintendo DS (Big Brain Academy, Picross, Professor Brainium's Games, Neves, Pipe Mania), Non-computerized (Set, Qwirkle, Rush Hour, Tangoes, Chocolate Fix)
2) Processing speed games: Computerized (Feeding Frenzy, Super Cow, Bricks of Atlantis), Nintendo DS (Nervous Brickdown, Super Monkey Ball, Mario Kart, Ratatouille), Non-computerized (Spoons, Pictureka, Speed, Blink, Perfection)
TONI-3 - Test of Non-verbal Intelligence [L. Brown, R.J. Sherbenou, S.K. Johnsen, *Test of nonverbal intelligence examiner's manual* (Pro. Ed., Austin, ed. 3, 1997).]
WJ-R - Woodcock-Johnson Revised [R.W. Woodcock, M.B. Johnson, *Woodcock-Johnson psycho-educational battery- revised* (Riverside, Chicago, 1989).]
WMS - Wechsler Memory Scale [D. Wechsler, *Wechsler memory scale- revised manual* (Psychological Corporation, San Antonio, 1987).]
WISC-IV - Wechsler Intelligence Scale for Children – IV [D. Wechsler, *Wechsler intelligence scale for children – fourth edition* (Psychological Corporation, San Antonio, 2003).]

S9. Tuckman & Hinkle (1986)
Devereaux Elementary School Behavior Rating Scale [M. Swift, *Devereaux elementary school behavior rating scale II manual* (Devereaux Foundation, Devon, 1982).]
Piers-Harris Children's Self-Concept Scale [E.V. Piers, D.B. Harris, *J. Educ. Psychol.* **55**, 91 (1964).]

S10. Davis et al. (2011)
CAS - Cognitive Assessment System [J.A. Naglieri, *The essentials of CAS assessment* (Wiley, New York, 1999).]
1) Planning scale - strategy generation & application, self-regulation, intentionality, utilization of knowledge
Matching numbers: find and underline the 2 matching numbers in each of the 8 rows of numbers; strategy use leads to better results
Planned codes: associate letters to test items, complete a page using codes (e.g. XX or OX) corresponding to letters (e.g. A, B, C) where the organization of codes varies so one must update; strategy use leads to better results
Planned connections: draw lines to connect numbers and letters in alternating sequence
2) Attention scale - focused, selective cognitive activity, resistance to distraction
Modified Stroop test
Number detection: identify single digit numbers only when they appear in a specific font)
Receptive attention: perform letter discrimination on the basis of physical identity (r,r) or conceptual (r, R)
WJ-III - Woodcock-Johnson Tests of Achievement III [R.W. Woodcock, K.S. McGrew, N. Mather, *Woodcock-Johnson III* (Riverside Publishing, Rolling Meadows, 2001).]

S11. Kamijo et al. (2011)
Modified Sternberg task - EEG (electroencephalogram) recording taken while performing task [S. Sternberg, *Science* **153**, 652 (1966).]

S12. Lakes & Hoyt (2004)
Intervention: LEAD - Leadership Education through Athletic Development
Response to Challenge Scale [K.D. Lakes, W.T. Hoyt, *The response to challenge scale (RCS)* (Orange County, 2003).]
Physical self-regulation - physical control and skillfulness from awkward to skillful
Cognitive self-regulation - ability to focus attention and efforts on task at hand from distractible to focused
Affective self-regulation - assess self-confidence, emotional control, persistence and will from quitting to persevering
SDQT - Strengths and Difficulties Questionnaire [R. Goodman, *J. Child Psychol. Psyc.* **38**, 581 (1997).]
WISC-III - Wechsler Intelligence Scale for Children - III [D. Wechsler, *WISC-III: Wechsler intelligence scale for children* (Psychological Corporation, San Antonio, 1991).]

S13. Flook et al. (2010)
Teacher & Parent BRIEF - Behavior Rating Inventory of Executive Function
[G.A. Gioia, P.K. Isquith, S.C. Guy, L. Kenworthy, *Behavior rating inventory of executive function* (Psychological Assessment Resources, Lutz, 2000).]

S14. Manjunath & Telles (2001)
Tower of London – Yoga group showed decreased planning time, decreased execution time & decreased number of moves.

S15. Lillard & Else-Quest (2006)
Dosage & Duration: Duration information difficult to specify as subjects in the study were 5- and 12-year-old students already enrolled in the Montessori curriculum.
WJ-III - Woodcock-Johnson - III [R.W. Woodcock, K.S. McGrew, N. Mather, *Woodcock-Johnson III* (Riverside Publishing, Rolling Meadows, 2001).]

S16. Riggs et al. (2006)
CBCL - Child Behavioral Checklist [T.M. Achenbach, *Manual for the child behavior checklist and 1991 profile* (Department of Psychiatry, Univ. of Vermont, Burlington, 1991).]

S17. Raver et al. (2008, 2011)
PSRA - Preschool Self-Regulation Assessment [R. Smith-Donald, C.C. Raver, T. Hayes, B. Richardson, *Early Childhood Quar.* **22,** 20 (2007).]
PPVT - Peabody Picture Vocabulary Test [L.M. Dunn, L.M. Dunn, *Peabody picture vocabulary test- third edition* (American Guidance Service, Circles Pines, 1997).]