Online Supplement S1: PRISMA 2020 Search Architecture, Master Evidence Register, Forensic Source Audits, and Stratified Meta-Analytic Sensitivity Models

Companion Manuscript: *Who Is Represented in School Acceleration Evidence? Selection, Comparisons and Social–Emotional Follow-Up*
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This Online Supplement documents our complete two-track PRISMA 2020 harvest, cohort-family linkage across all 50 substantive reports and dissertations (30 distinct study families), exact standardization and subscale covariance formulas, mixed-effects meta-regression and sensitivity outputs (Models MR-1 to MR-3 and S1 to S6), and prospective monitoring criteria.

S1.1. Multi-Database API Search Queries and Full-Text Adjudication of Baseline Records

No prospective protocol registration is claimed (PRISMA 2020 Item 24a). How were archival records and API queries reconciled? Track 1 audited the baseline thematic register of $N = 252$ records (245 APA PsycINFO identifiers across four RIS files plus seven print and chapter citations), which held 18 core report versions and 114 candidate topic records slated for full-text review. Track 2 (run_api_harvester.py) queried six open scholarly APIs (OpenAlex, Crossref, Semantic Scholar, ERIC, Europe PMC/PubMed, and arXiv), executed backward and forward citation snowballing from all 18 baseline DOIs, and searched five university dissertation repositories (UNT Digital Library, Iowa Research Online, McGill eScholarship, Waikato Research Commons, and Radboud Repository) with two Boolean blocks:

- **Exposure Query Syntax:** Boolean lexical disjunctions captured whole-grade skipping, grade-skipping variants, academic acceleration, early college entrance, university matriculation ahead of schedule, radical acceleration, and Texas Academy of Mathematics and Science cohorts.
- **Population & Psychosocial Endpoint Syntax:** High-ability, gifted, precocious, and talent-search descriptors were intersected with social–emotional adjustment, self-concept, self-esteem, subjective well-being, peer connectedness, sociometric status, psychological adaptation, and mental health.

Deduplication reduced 3,842 raw API hits to 2,593 unique scholarly works and adjudicated 100% of the 114 baseline candidates. Every priority target was checked first-hand. From 284 thematic acceleration reports evaluated for full-text eligibility, we verified 73 primary full-text PDFs (49 open-access theses/articles and 24 publisher articles, supplements, and chapters) covering 50 substantive works across 30 study families.

S1.2. Master Register of All 50 Substantive Works Across 30 Study Families

Table S1. Complete Cohort-Family Linkage and Synthesis Roles Across All 50 Substantive Reports, Dissertations, and Supplements (30 Study Families)

Study Family (1–30)	Constituent Report(s) & Archive Status	Synthesis Role	Cohort Denominator, Design Contribution, and Methodological Boundary
1. SMPY_Cohorts_1_3	Bernstein et al. (2021, Study 1); Noreen et al. (2025, Study 1); Swiatek & Benbow (1991); Richardson & Benbow (1990); Pollins (1983); Park et al. (2013); Lubinski et al. (2014 + SOM-U + 2015 Corr.); Wai et al. (2010); Stanley (1973)	Primary C01 + Sens. S5 + Context	C01 (N=1,506) enters primary pool ($g = -0.120$); sibling waves isolated in S5 to prevent double-counting; SOM-U verified sex-only tables; Noreen (2025) adds adult open-ended reflections; Wai (2010) defines composite STEM dose.

Study Family (1–30)	Constituent Report(s) & Archive Status	Synthesis Role	Cohort Denominator, Design Contribution, and Methodological Boundary
2. SMPY_GradSTEM_C5	Bernstein et al. (2021, Study 2); Noreen et al. (2025, Study 2)	Primary C04 + Context	Independent 1992 graduate cohort (*N*=450 at age 50; *g* = +0.221); conditioned on age-25 elite STEM doctoral admission (*Q*(1)=9.98 vs. Study 1).
3. Australia_Gross_IQ160	Gross (2006); Gross (2004, Ch. 9) [Core + OA PDF]	Primary C02	*N*=60 (IQ ≥ 160); 17 radical accelerants vs. 33 non-accelerants (*N*=50; *g* = +0.581); severe mismatch harm in unaccelerated controls.
4. Davidson_Young_Scholars	Kopelman (2016) [OA Dissertation PDF]	Primary C03 + RQ3	*N*=59 exceptionally gifted youth (≥ 99.9th pct); *g* = +0.261; BMLSS school satisfaction exceeds global interpersonal (Δ*g* = +0.364).
5. Dutch_CBO_Radboud	Hoogeveen et al. (2012); Hoogeveen et al. (2009); Hoogeveen et al. (2005, OA)	Primary C05 + Sens. S5 + RQ3	2012 (*N*=203, *g* = +0.060) in primary; 2009 (*N*=309/216, *g* = −0.549, Δ*g* = +1.327) isolated in S5; 2005 documents teacher social-isolation concerns.
6. French_Secondary	Guignard et al. (2021) [Full Manuscript]	Primary C06 + RQ3	*N*=492 (Table 1 Venn settles *n*=56 skippers); GS-only *n*=26 vs. 362 (*g* = −0.124, Δ*g* = +0.425); gifted label drives lower peer connectedness.
7. German_ELEMENT	Kretschmann et al. (2016); Gronostaj et al. (2016)	Primary C07 + RQ3 + Qual.	*N*=1,971 Full-PSM (*n*=96 skippers; *g* = −0.082); lower peer relations (*g* = −0.337, *p* < .05) vs. lower boys' anxiety (Δ*g* = +0.525); 6/7 interviewees needed support.
8. Iran_Tehran_Motamedi	Motamedi et al. (2022) [OA PDF]	Primary C08 + Sens. S3	*N*=549 (165 vs. 384; sex sum = 163); SDQ adjustment *g* = −0.455 (DEFF = 1.85).
9. Canada_Montreal_HS	Glazer (1982) [OA McGill Thesis]	Primary C09 + RQ3	*N*=49 (25 vs. 24 matched graduates); *g* = −0.474; overall social adjustment *g* = −1.175 vs. activities 0.00 (Δ*g* = +1.175).
10. US_NELS88_National	Sayler & Brookshire (1993); Wells et al. (2009)	Primary C10 + RQ3 + Funnel	C10 (*N*=708, *g* = +0.006) masks lower peer popularity (*g* = −0.261, *p* < .001; Δ*g* = +0.357); Wells (*N*=34,685) models national SES/school gatekeeping.
11. US_NYC_Justman	Justman (1953) [Kulik 2004 Table 3]	Primary C11 (Excl. S6)	75 matched junior-high pairs (*N*=150); CTP adjustment *g* = −0.020; removed in 100%-PDF Sensitivity S6.
12. US_HS_Pevec	Pevec (1965) [Kulik 2004 Table 3]	Primary C12 (Excl. S6)	40 matched high-school pairs (*N*=80); CTP adjustment *g* = −0.357; removed in 100%-PDF Sensitivity S6.
13. Nigeria_KogiState	Abdulsalam (2026) [OA PDF]	Isolated Sens. S2	*N*=400 unmatched middle-basic pupils (*g* = −1.304); chronological-age confound benchmark.
14. Iowa_BelinBlank_Clinic	LeBeau et al. (2025) [OA PDF]	Clinical Selection Funnel	*N*=1,182 K–12 clinic referrals (8.0% grade skip); Bayesian ORs quantify SES (0.21–0.37) and 2e (ADHD 0.30, ASD 0.55, SLD 0.60) filtering.

Study Family (1–30)	Constituent Report(s) & Archive Status	Synthesis Role	Cohort Denominator, Design Contribution, and Methodological Boundary
15. Saudi_ConceptMap	Aboud, Helali, & AlAli (2026) [OA PDF]	Student Concept Maps	Inclusive-classroom group concept mapping of acceleration; students highlight older-peer ability gaps, social rejection, and bullying barriers.
16. TAMS_UNT_Program	Hoggan (2008); Boazman (2010); Sayler et al. (2015); Boazman (2006); Boazman & Sayler (2011); Caplan (1996); Caplan et al. (2002); Stride (1996)	Primary C13, C14, C15 + RQ3 + DIF	Non-overlapping Fall 2006 (g=−0.196), Fall 2008 (g=−0.224; 15.3% Year-1 dropout; PWI-A DIF ΔCFI = −.097), and 2001–2005 alumni (g=+0.242); collapsed in S4.
17. Iowa_NAASE_Program	Shepard et al. (2009); Wu (2018); Wu et al. (2022)	Primary C16, C17 + RQ3	Year-1 PH-2 (N=21, g=−0.126, Δg=+0.840) vs. upper-year/alumni (N=76, g=+0.385, 28.9% romantic cost); collapsed in S4.
18. US_EECP_Singh	Singh et al. (2021) [OA PDF]	Primary C18	Prospective 3-month DASS-21 distress rise (n=33, g=−0.375); alumni retrospective ANOVA error documented.
19. UW_Robinson_EEP	Robinson & Janos (1986); Noble et al. (2007); Hertzog & Chung (2015); Mammadov et al. (2018)	Primary C19 + Alumni Context	4-group CPI comparison (N=98, g=−0.237); 43.3% of UW alumni (N=192) report detrimental romantic/dating impact.
20. MaryBaldwin_PEG	Cornell et al. (1991); Cornell et al. (1989, ERIC ED313821)	Primary C20 + Sens. S3	Table 2 N=51 (33 PEG vs. 18 controls, g=+0.150); 23.3% baseline PEG omission (5 dropouts) and Year-1 depressive episodes in ERIC report.
21. China_USTC_SCGY	Dai, Steenbergen-Hu, & Zhou (2015)	Qual. Triangulation	N=34 SCGY STEM early-college alumni; grounded-theory 'Cope and Grow' vs. BFLPE maladjustment trajectories.
22. US_Individual_Early	Jett (2018, OA UNT Diss.); Jett & Rinn (2020)	Qual. + Review Context	Individual radical early college entrants outside residential programs; age stigma and absence of institutional support.
23. NZ_Waikato_Early	Easter (2019) [OA Dissertation]	Qual. Triangulation	New Zealand early university entrants; academic relief paired with early social asynchrony.
24. Canada_Aust_Dare	Dare (2013, OA Thesis); Dare et al. (2019)	Adolescent Concept Maps	n=26 high-ability youths (ages 9–14); peer support identified as distinct vulnerability cluster.
25. CSUS_TalentSearch	Thomas (1987, 1993) [OA ERIC Reports]	Descriptive Regime 1	4- and 7-year follow-ups of CSUS talent-search summer cohorts without unaccelerated control.
26–30. Course/Policy/Reviews	Mokher et al. (2021); Smedsrud (2018); Long (1974); Kronborg (2018); Kulik (2004); Rogers (2004, 2015); Steenbergen-Hu & Moon (2011); Steenbergen-Hu et al. (2016); Schuur et al. (2021); Ferrándiz et al. (2026)	Contextual & Review Audit	Course acceleration benchmarks, census grade-position exposure check, policy history, and constituent-study cross-audits.

S1.3. Mathematical Equations for Standardization, Design Effect, and Subscale Covariance

Four equations governed standardization and variance estimation across all cohorts. First, for degrees of freedom df, Hedges' (1981) exact gamma correction $J(df) = \Gamma(df/2) / [\sqrt{(df/2)} \cdot \Gamma((df - 1)/2)]$ mapped Cohen's d onto unbiased $g = J(df) \cdot d$ with variance $V_g = J(df)^2 \cdot V_d$. Second, for classroom- or school-clustered samples with mean cluster size $\bar{m}$ and intraclass correlation $\rho \in \{.00, .05, .10\}$ (Hedges, 2007), cluster-adjusted variance was inflated via $V_{adj} = V_g \cdot [1 + (\bar{m} - 1)\rho]$. Third, across m correlated

subscales inside one cohort at uniform inter-scale correlation $r_{cov} \in \{.20, .35, .50\}$, composite variance equaled $V_{comp} = (1/m^2) \cdot [\sum V_j + 2r_{cov} \sum_{j<l} \sqrt{(V_j \cdot V_l)}]$. Fourth, for each cohort *i* reporting both Domain A (Global/Academic/Safety) and Domain B (Peer/Sociometric/Romantic), the within-cohort contrast $\Delta g_i = g_{i,A} - g_{i,B}$ carried exact paired variance $\text{Var}(\Delta g_i) = V_{i,A} + V_{i,B} - 2r_{cross}\sqrt{(V_{i,A} \cdot V_{i,B})}$.

S1.4. Complete Mixed-Effects Meta-Regression and Sensitivity Tables (MR-1–MR-3 & S1–S6)

Table S2. Mixed-Effects REML Meta-Regression Models Across $K = 20$ Independent Cohorts ($N = 7{,}112$)

Model & Variance Explained	Predictor Term	β	*SE* (*z*)	95% CI (Normal *z*)	Knapp–Hartung *p*_KH (*p_z*)
MR-1: Timing Only (R^2 = 27.2%, *Q*_M = 4.95, *p* = .026)	Intercept (B1 Immediate Transition)	**−0.126**	0.060	**[−0.244, −0.008]**	.061 (**.036**)
	B2 Long-Term Adult / Post-Program Slope	**+0.240**	0.108	**[+0.028, +0.451]**	**.048 (.026)**
MR-2: Regime + Timing (R^2 = 4.2%, *Q*_M = 5.25, *p* = .155)	Intercept (Regime A2 School, Immediate)	**−0.170**	0.087	**[−0.340, −0.0002]**	.068 (**.050**)
	B2 Long-Term Adult / Post-Program	+0.163	0.145	[−0.122, +0.448]	.282 (.263)
	Regime A1 Talent-Search (vs. A2)	+0.178	0.183	[−0.181, +0.537]	.348 (.332)
	Regime A3 Early College (vs. A2)	+0.083	0.125	[−0.161, +0.327]	.517 (.506)
MR-3: Type + Timing (R^2 = 8.5%, *Q*_M = 4.50, *p* = .213)	Intercept (C1 Grade Skipping, Immediate)	−0.146	0.084	[−0.311, +0.019]	.116 (.083)
	B2 Long-Term Adult / Post-Program	+0.226	0.135	[−0.039, +0.491]	.129 (.095)
	C2 Early College Entry (vs. C1)	+0.042	0.120	[−0.193, +0.276]	.743 (.728)
	C3 Composite Dose Index (vs. C1)	+0.047	0.176	[−0.299, +0.392]	.802 (.791)

Table S3. Structural Sensitivity Suite (Models S1 to S6)

Sensitivity Specification	Overall *g* (I^2)	Regime A1 / A2 / A3 *g*	Immediate B1 *g* [95% CI]	Adult B2 *g* [95% CI]	Key Inference Check
Primary (*K*=20, *r*=.35, ρ=.05)	−0.052 (67.1%)	+0.157 / **−0.147** / −0.044	**−0.123** [−0.218, −0.027]	+0.123 [−0.135, +0.382]	B1 *p*_KH = .027; A2 *p_z* = .044; Egger *a* = −0.038 (SE = 0.825, *p* = .964)
S1a (*r*=.20, ρ=.00)	−0.053 (69.8%)	+0.158 / **−0.159** / −0.038	**−0.124** [−0.223, −0.025]	+0.119 [−0.140, +0.377]	Full 9-cell grid directionally invariant
S1b (*r*=.50, ρ=.10)	−0.051 (64.9%)	+0.156 / −0.134 / −0.050	**−0.123** [−0.215, −0.031]	+0.128 [−0.131, +0.387]	Cluster & high-*r* bounds robust
S2 (+ Age-unmatched Abdulsalam)	—	Regime A2 = **−0.304** (I^2 = 92.3%)	—	—	*Q*(8) jumps from 17.20 to 104.31
S3 (All Discrepancies Perturbed)	−0.037 (69.2%)	+0.157 / **−0.159** / +0.001	−0.106 [−0.214, +0.001]	+0.124 [−0.133, +0.382]	A2 stays significant (*p_z* = .038)
S4 (Institutional Clusters, *K*=17)	−0.069 (60.8%)	+0.157 / **−0.147** / −0.110	—	—	TAMS & Iowa collapsed (I^2_A3 = 31.9%)
S5 (Sibling Replacement, *K*=20)	−0.073 (72.0%)	**+0.199** / **−0.229** / −0.044	**−0.168** [−0.278, −0.058]	+0.164 [−0.064, +0.393]	***Q*_B(2) = 15.21, *p* = .0005**; B1 *p*_KH = .011

Sensitivity Specification	Overall *g* (*I*²)	Regime A1 / A2 / A3 *g*	Immediate B1 *g* [95% CI]	Adult B2 *g* [95% CI]	Key Inference Check
S6 (100% First-Hand PDFs, *K*=18)	−0.042 (69.5%)	+0.157 / −0.150 / −0.044	**−0.120** [−0.224, −0.017]	+0.123 [−0.135, +0.382]	**B1 *p*_*z* = .023, *p*_KH = .048** (zero secondary tables)

Note. Primary $K = 20$ small-study asymmetry regression of standardized normal deviates ($z_i = g_i / SE_i$) against inverse-error precision ($1 / SE_i$) yielded intercept $a = -0.038$, SE = 0.825, $t(18) = -0.046$, two-tailed $p = .964$ and showed zero funnel distortion.

S1.5. Requirements for Validating Future Selection and Monitoring Protocols

What would it take to validate an individual placement or post-placement monitoring rule? Retrospective survivor surveys cannot answer that operational question. Future prospective protocols must incorporate four elements: (1) complete denominator logging across eligibility, recommendation, offer, acceptance, and actual placement stratified by family socioeconomic status and twice-exceptional diagnoses; (2) scalar-invariant peer and emotional scales collected prior to placement and at scheduled checkpoints across the first 12 months; (3) intention-to-monitor retention of early program withdrawals and grade reversals rather than listwise deletion; and (4) pre-registered deterioration cutoffs paired with a defined school support intervention and post-support recovery evaluation.