

Table S1

Description, Sample Items, and Item Reliability for Cognitive and Psychomotor Measures in the Texas "Tiny" Twin Project

| Domain | Description | Sample Items - TXtT | Reliability -TXtT | Task Description - ECLS-B | Reliability- ECLS-B |
|------------------------------|---|---|-----------------------------|---|----------------------------|
| Communication /Oral Language | Expressive and receptive languages/Ability to construct grammatically correct story | <i>Does your baby make sounds like "da," "ga," "ka," and "ba"?</i> – For children aged 5-10 months <i>Does your child use endings of words, such as "-s," "-ed," and "-ing"?</i> For example, <i>does your child say things like, "I see two cats," "I am playing," or "I kicked the ball"?</i> – For children aged 39-56 months | .99 ^a (55 items) | Child was told a story by a trained coder using a series of pictures and subsequently asked to retell the story | N/A (1 score) |
| Gross Motor | Coordination of large muscle groups | <i>While your baby is on his back, does s/he wave his/her arms and legs, wiggle, and squirm?</i> – For children aged 1-2 months <i>Does your child skip using alternating feet?</i> – For children aged 57-71 months | .99 ^a (47 items) | Child caught a bean bag, balance on one foot (right and left; 10 seconds), hop on one foot (right and left; 5 hops), skip, and walk backwards | .75 (7 items) ^b |
| Fine Motor | Coordination of small muscle groups | <i>Does your baby grab or scratch his/her fingers on a surface in front of him/her, either while being held in a sitting position or when s/he is on his/her tummy?</i> – For children aged 3-4 months <i>Using child-safe scissors, does your child cut a paper in half on a more or less straight line, making the blades go up and down?</i> – For children aged 45-50 months | .98 ^a (50 items) | Child instructed to replicate a drawing of a square, triangle, and asterisk Child asked to build a gate using five wooden blocks | .72 (4 items) ^b |

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|--------------------------|--|---|-----------------------------|--|---|
| Problem -Solving/Math | Learning and using logic and rules to solve problems | <i>After watching you hide a small toy under a piece of paper or cloth, does your baby find it? (Be sure the toy is completely hidden.)</i> – For children aged 9-14 months <i>After a crumb or Cheerio is dropped into a small, clear bottle, does your child turn the bottle upside down to dump out the crumb or Cheerio? (Do not show him/her how.) (You can use a soda-pop bottle or a baby bottle.)</i> – For children aged 21-25 months | .98 ^a (53 items) | Items measured number sense, operations, probability, geometry, and pattern recognition | .89 (45 items; wave 3) .92 (58 items; waves 4 and 5) ^a |
| Personal -Social | Self- awareness, self-care, and everyday function | <i>When in front of a large mirror, does your baby reach out to pat the mirror?</i> – For children aged 5-8 months <i>Does your child dress or undress him- or herself without help (except for snaps, buttons, and zippers)?</i> – For children aged 45-50 months | .98 ^a (52 items) | N/A | N/A |
| Reading | Receptive language, vocabulary, literacy | N/A | N/A | Recognition of simple words, word matching, providing an initial assessment of the story the child read | .84 (85 items; wave 3) .92 (85 items; waves 4 and 5) ^a |

Note. ^a 1PL IRT item reliability estimate, with number of items analyzed followed in parentheses. ^b Reliability estimate obtained using

Cronbach's alpha.

Table S2

Description, Sample Items, and Item Reliability for Psychopathology in the Texas “Tiny” Twin Project

| Domain | Description | Sample Items - TXtT | Item Reliability - TXtT | Sample Items – ECLS-B | Item Reliability- ECLS-B |
|-------------------------------------|---|--|-----------------------------|--|----------------------------|
| Self-Regulation Problems | Problems with intrapersonal and interpersonal functioning, including affect regulation and social interaction | <i>When upset, can your child calm down within a half hour?</i> – For children aged 3-13 months <i>Can your child move from one activity to the next with little difficulty, such as from playtime to mealtime?</i> – For children aged 42-53 months | .84 ^a (77 items) | N/A | N/A |
| Attention-deficit/ Hyperactivity | Attentional and regulatory problems | N/A | N/A | <i>My child pays attention well.</i> <i>My child is overly active or unable to sit still.</i> | .66 ^b (3 items) |
| Internalizing ^c | Problem behaviors that are directed inward or at self | <i>Sudden changes in mood or feelings;</i> <i>Too fearful or anxious</i> <i>Shows little interest in things around him/her</i> | .78 ^b (36 items) | <i>My child seems unhappy.</i> <i>My child worries about things.</i> | .47 ^b (2 items) |

| | | | | | |
|----------------------------|---|---------------------------------------|-----------------------------|---|----------------------------|
| Externalizing ^c | Problem behaviors that are directed outward or potentially affect others in the child's environment | <i>Disobedient; Easily frustrated</i> | .88 ^b (24 items) | <i>My child gets angry. My child is physically aggressive, for example, hits, kicks, or pushes.</i> | .79 ^b (5 items) |
|----------------------------|---|---------------------------------------|-----------------------------|---|----------------------------|

Note. ^a 1PL Item Response Theory (IRT) item reliability estimate scaled to the minimum number of items administered using the Spearman Brown formula, with number of items analyzed followed in parentheses. ^b Reliability obtained using Cronbach's alpha. ^c All items on the Child Behavior Checklist are appropriate for children aged 1.5-5 years.

Table S3

Model Fit Indices and Comparisons

| Model | AIC | BIC | RMSEA | CFI | Model Fit Comparisons |
|---|-----------------|-----------------|-------------|-------------|--|
| Model 1: sample-specific <i>ACE</i> correlations and <i>ACE</i> loadings | 72124.73 | 72663.70 | .029 | .978 | Model 1 vs. 2: $\Delta\chi^2(3) = 1.86, p = .602$ |
| Model 2: sample-specific <i>ACE</i> loadings; averaged <i>ACE</i> correlations | 72122.31 | 72644.44 | .029 | .979 | Model 2 vs. 3a: $\Delta\chi^2(3) = 10.75, p = .013$ Model 2 vs. 3b: $\Delta\chi^2(3) = 14.78, p = .002$ |
| Model 3a: sample-specific <i>g</i> <i>ACE</i> loadings; averaged <i>ACE</i> correlations and <i>p</i> <i>ACE</i> loadings | 72149.22 | 72654.50 | .030 | .977 | Model 1 vs. 3a: $\Delta\chi^2(6) = 14.67, p = .022$ |
| Model 3b: sample-specific <i>p</i> <i>ACE</i> loadings; averaged <i>ACE</i> correlations and <i>g</i> <i>ACE</i> loadings | 72162.06 | 72667.35 | .031 | .976 | Model 1 vs. 3b: $\Delta\chi^2(6) = 19.69, p = .003$ |

Note. Models differed only with respect to *p*- and *g*-factor *ACE* estimates and correlations. Indicator level *ACE* estimates and indicator intercepts were always freely estimated within each sample (ECLS-B and TXtT).

Models were compared using Satorra-Bentler scaled chi-square difference tests. Model 2 is highlighted in **bold** as it was the preferred model across AIC, BIC, and chi-square difference tests.

Table S4

Unstandardized Parameter Estimates from Age Moderation Models

| Parameter | Centered at 3 years | Centered at 6 years |
|--|------------------------|------------------------|
| <i>p</i>-Factor | | |
| ECLS-B | | |
| Genetic Main Effect (a_p) | .79 (.08)*** | .77 (.09)*** |
| Gene \times Age Interaction (a_p') | .01 (.04) | .08 (.11) |
| Shared Environment (c_p) | .01 (.14) | .29 (.19) |
| Shared Environment \times Age Interaction (c_p') | .05 (.08) | -.09 (.15) |
| Non-shared Environment (e_p) | .53 (.11)*** | .40 (.09)*** |
| Non-shared Environment \times Age Interaction (e_p') | -.04 (.05) | -.07 (.06) |
| TXtT | | |
| Genetic Main Effect (a_p) | .55 (.09)*** | .69 (.25)** |
| Gene \times Age Interaction (a_p') | .03 (.06) | .02 (.10) |
| Shared Environment (c_p) | .54 (.09)*** | .76 (.45) |
| Shared Environment \times Age Interaction (c_p') | .08 (.07) | .10 (.19) |
| Non-shared Environment (e_p) | .19 (.06)** | .25 (.14) |
| Non-shared Environment \times Age Interaction (e_p') | .03 (.04) | .03 (.04) |
| <i>g</i>-Factor | | |
| ECLS-B | | |
| Genetic Effect (a_g) | .29 (.09)** | .69 (.06)*** |
| Gene \times Age Interaction (a_g') | .13 (.04)** | .13 (.05)** |
| Shared Environment (c_g) | .80 (.08)*** | .65 (.08)*** |
| Shared Environment \times Age Interaction (c_g') | -.05 (.04) | -.05 (.05) |
| Non-shared Environment (e_g) | .22 (.05)*** | .19 (.04)*** |
| Non-shared Environment \times Age Interaction (e_g') | -.01 (.03) | -.01 (.03) |
| TXtT | | |
| Genetic Effect (a_g) | .39 (.08)*** | 1.12 (.25)*** |
| Gene \times Age Interaction (a_g') | .23 (.08)** | .24 (.07)** |
| Shared Environment (c_g) | .47 (.12)*** | -.05 (.47) |
| Shared Environment \times Age Interaction (c_g') | -.10 (.08) | .13 (.11) |
| Non-shared Environment (e_g) | .16 (.03)*** | .05 (.07) |
| Non-shared Environment \times Age Interaction (e_g') | -.04 (.02) | -.04 (.02) |
| ACE Correlations | | |
| Genetic (r_A) | -.41 (.19)* | -.31 (.14)* |
| Age moderation of r_A (r_A') | .09 (.09) | .07 (.07) |
| Shared Environment (r_C) | -.49 (.22)* | -.23 (.45) |
| Age moderation of r_C (r_C') | -.27 (.18) | -.12 (.27) |
| Non-shared Environment (r_E) | -.21 (.18) | -.10 (.21) |
| Age moderation of r_E (r_E') | .22 (.11)* | .06 (.51) |

Note. Parameters reported are unstandardized path estimates. Standard errors are given in parentheses. ACE correlations were constrained to be equal across studies, while ACE factor loadings and their interaction terms with age were freely estimated within ECLS-B and TXtT. *** significantly different than zero at $p < .001$; ** $p < .01$; * $p < .05$.