Appendix Tables for Results on Early Care and Education Sample (*N* = 1,258)

**Table A1**

*Coefficients of All Estimated Paths in SEM Model for Early Care and Education Sample (N=1258)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Early childhood** | **Middle childhood** | **Adolescence** | **Adulthood** |
|  | Center-based epochs | Hours ofnonrelative care | Observed quality | Externalizing behavior | Organized activities | Externalizing behavior | Impulsivity | Risk-taking | Externalizing behavior | Impulsivity | Risk- taking | Police contact |
|  | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* |
| **Early childhood (1–54 months)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Center-based epochs | - | - | - | - | - | - | .101(.036) | .006 | .093(.030) | .002 | .045(.031) | .142 | .014(.042) | .734 | .015(.040) | .699 | -.075(.042) | .072 | .033(.036) | .372 | .000(.038) | .997 | -.015(.039) | .695 |
| Hours of nonrelative care | - | - | - | - | - | - | .164(.038) | .000 | .102(.031) | .001 | .052(.031) | .091 | .013(.043) | .770 | .051(.040) | .203 | .004(.042) | .924 | .037(.037) | .319 | .029(.038) | .446 | .070(.040) | .083 |
| Observed quality | - | - | - | - | - | - | -.029(.037) | .436 | .034(.029) | .246 | -.011(.030) | .719 | .026(.042) | .537 | .058(.041) | .157 | .027(.042) | .516 | .008(.037) | .823 | -.011(.036) | .762 | .002(.040) | .953 |
| Externalizing behavior M54 | - | - | - | - | - | - | - | - | -.023(.032) | .465 | .383(.030) | .000 | - | - | - | - | - | - | - | - | - | - | - | - |
| **Middle childhood (K-5th grade)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Organized activities | - | - | - | - | - | - | - | - | - | - | - | - | .078(.042) | .061 | -.005(.039) | .891 | .076(.039) | .054 | -.085(.034) | .014 | -.055(.036) | .133 | -.101(.040) | .012 |
| Externalizing behavior  | - | - | - | - | - | - | - | - | - | - | - | - | .171(.039) | .000 | .158(.037) | .000 | .223(.038) | .000 | - | - | - | - | - | - |
| **Adolescence** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Impulsivity | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | .343(.038) | .000 | .056(.041) | .174 | -.036(.045) | .430 |
| Risk-taking | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | .109(.043) | .012 | .339(.044) | .000 | .261(.049) | .000 |
| Externalizing behavior | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | .129(.043) | .003 | -.009(.046) | .837 | .040(.050) | .425 |
| **Child/family characteristics**  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ethnic minority (White=0) | - | - | - | - | - | - | - | - | - | - | .060(.029) | .038 | - | - | - | - | - | - | - | - | - | - | - | - |
| Female (Male=0) | - | - | - | - | - | - | - | - | .111(.024) | .000 | - | - | -.083(.036) | .020 | -.288(.032) | .000 | -.124(.035) | .000 | -.109(.033) | .001 | -.108(.034) | .001 | -.083(.035) | .019 |
| Maternal education | .104(.032) | .001 | .123(.032) | .000 | - | - | -.134(.041) | .001 | .160(.032) | .000 | - | - | - | - | -.095(.033) | .004 | - | - | - | - | - | - | .100(.041) | .014 |
| Single parenthood epochs | .121(.030) | .000 | .254(.029) | .000 | -.112(.034) | .001 | - | - | .049(.029) | .094 | .095(.030) | .002 | - | - | - | - | - | - | - | - | .112(.036) | .002 | .105(.041) | .011 |
| Income to needs ratio | .220(.034) | .000 | .323(.032) | .000 | - | - | - | - | .203(.032) | .000 | - | - | -.042(.037) | .267 | - | - | - | - | - | - | - | - | - | - |
| Parenting quality | - | - | - | - | .179(.035) | .000 | -.192(.043) | .000 | .239(.034) | .000 | -.226(.034) | .000 | - | - | - | - | - | - | - | - | - | - | -.115(.049) | .018 |
| SITE1 | -.195(.036) | .000 | -.052(.036) | .149 | -.024(.039) | .542 | - | - | .043(.034) | .202 | -.046(.035) | .183 | - | - | - | - | .038(.042) | .365 | - | - | -.137(.046) | .003 | - | - |
| SITE2 | -.146(.036) | .000 | .010(.035) | .777 | .011(.039) | .775 | - | - | -.038(.033) | .249 | -.070(.034) | .041 | - | - | - | - | -.012(.042) | .771 | - | - | -.179(.046) | .000 | - | - |
| SITE3 | -.269(.035) | .000 | -.180(.035) | .000 | .009(.042) | .820 | - | - | .048(.034) | .162 | -.033(.035) | .349 | - | - | - | - | .027(.042) | .522 | - | - | -.069(.047) | .141 | - | - |
| SITE4 | -.213(.035) | .000 | -.123(.034) | .000 | .042(.040) | .297 | - | - | -.069(.033) | .034 | -.067(.034) | .050 | - | - | - | - | .025(.042) | .547 | - | - | -.081(.044) | .070 | - | - |
| SITE5 | -.152(.036) | .000 | -.118(.035) | .001 | .050(.041) | .218 | - | - | -.047(.033) | .153 | -.028(.034) | .408 | - | - | - | - | .017(.043) | .688 | - | - | -.075(.047) | .112 | - | - |
| SITE6 | -.214(.035) | .000 | -.060(.034) | .080 | .035(.039) | .376 | - | - | -.087(.032) | .007 | .016(.034) | .645 | - | - | - | - | .028(.042) | .500 | - | - | -.108(.046) | .019 | - | - |
| SITE7 | -.178(.036) | .000 | -.124(.035) | .000 | .085(.040) | .034 | - | - | -.062(.034) | .063 | -.071(.035) | .040 | - | - | - | - | .096(.041) | .021 | - | - | -.170(.045) | .000 | - | - |
| SITE8 | -.040(.036) | .268 | -.012(.036) | .740 | -.023(.041) | .572 | - | - | .021(.034) | .540 | -.013(.036) | .717 | - | - | - | - | -.013(.044) | .774 | - | - | -.109(.047) | .022 | - | - |
| SITE9 | -.175(.035) | .000 | -.015(.035) | .675 | -.073(.040) | .066 | - | - | -.045(.034) | .179 | -.036(.035) | .303 | - | - | - | - | .038(.042) | .361 | - | - | -.129(.046) | .005 | - | - |

*Note.* Only covariates significant at *p* < .10 were included in the final model.

**Appendix Table A2**

*Covariances Estimated among Variables Measured at the Same Time Point for Early Care and Education Sample (N = 1,258)*

|  |  |  |  |
| --- | --- | --- | --- |
|   | ß | S.E. | *p* |
| **Within early childhood (1–54 months)** |  |  |  |
| Center-based epochs with hours of nonrelative care  | .461 | .023 | .000 |
| Center-based epochs with observed quality  | -.219 | .030 | .000 |
| Hours of nonrelative care with observed quality  | -.234 | .031 | .000 |
| **Within middle childhood (K-5th grade)** |  |  |  |
| Organized activities with externalizing behavior  | .009 | .032 | .783 |
| **Within adolescence (12th grade)** |  |  |  |
| Impulsivity with risk-taking | .399 | .031 | .000 |
| Impulsivity with externalizing behavior | .496 | .028 | .000 |
| Risk-taking with externalizing behavior  | .530 | .026 | .000 |
| **Within adulthood (Age 26)** |  |  |  |
| Impulsivity with risk-taking | .269 | .034 | .000 |
| Impulsivity with police contact | .178 | .036 | .000 |
| Risk-taking with police contact | .268 | .034 | .000 |

**Appendix Figure A1**

*Early Care and Education, Organized Activities, and Individuals’ Problem Behaviors from Early Childhood through Adulthood (N = 1,258)*

Early Childhood

Middle Childhood

Adulthood

Adolescence

.343(.038)\*\*\*

Center-based epochs

Impulsivity

Impulsivity

.109(.043)\*

-.085(.034)\*

.171(.039)\*\*\*

.093(.030)\*\*

.101(.036)\*\*

.129(.043)\*\*

Organized

activities

.102(.031)\*\*\*

Risk-taking

Risk-taking

Hours nonrelative care

.339(.044)\*\*\*

-.101(.040)\*

.164(.038)\*\*\*

.158(.037)\*\*\*

.261(.049)\*\*\*

Observed quality

Police contact

Externalizing

Externalizing

Externalizing

.383(.030)\*\*\*

.223(.038)\*\*\*

X2(96)= 93.594, *p =* .551;

CFI= 1.000, TLI=1.002;

SRMR=.022; RMSEA=.000 (90% CI=.000-.014)

*Note.* Covariates have been omitted for simplicity. Coefficients for all estimated paths are provided in Table A1. Covariances between variables are presented in Table A2. Covariates included in model are gender (Male = 0), ethnic minority status (White = 0), maternal education, early childhood income to needs ratio, epoch of single parent household, composite score of HOME and maternal sensitivity, and dummy variables for 10 data collection sites.

Data collection for early childhood is from 1 month to 54 months; middle childhood indicates kindergarten through 5th grade; data collection for adolescence is at 12th grade; and data collection for adulthood is at Age 26.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Supplemental Tables for Results on Age 26 Sample (N=797)

**Supplemental Table B1**

*Significant Indirect Paths from Early care and education (ECE) to Adulthood Problem behaviors for Age 26 Sample (N = 797)*

|  |  |  |  |
| --- | --- | --- | --- |
| Indirect path | Age 26Impulsivity ß(SE)Impulsivity ß(SE) | Age 26Risk-takingß(SE) | Age 26Police contact ß(SE) |
| Pathway 1 from ECE via organized activities |  |  |  |
| Center-based epochs -> Organized activities -> | - | - |  -.008(.005) |
| Hours of nonrelative care ->Organized activities -> |  -.006(.004) | - |  -.007(.005) |
| Pathway 2 from ECE via early problem behaviors |  |  |  |
| Center-based epochs ->Early childhood externalizing -> Middle childhood externalizing -> Adolescent impulsivity -> |  .001(.001) | - | - |
| Center-based epochs ->Early childhood externalizing -> Middle childhood externalizing -> Adolescent risk-taking -> | - | .001(.001) |  .001(.001) |
| Hours nonrelative care ->Early childhood externalizing -> Middle childhood externalizing -> Adolescent impulsivity -> |  .003(.001)\*\* | - | - |
| Hours nonrelative care ->Early childhood externalizing -> Middle childhood externalizing -> Adolescent externalizing -> |  .002(.001)\* | - | - |
| Hours nonrelative care ->Early childhood externalizing -> Middle childhood externalizing -> Adolescent risk-taking -> | - |  .003(.001)\* | .002(.001)\* |

*Note*. Model includes gender (Male = 0), ethnic minority status (White = 0), maternal education, early childhood income to needs ratio, epoch of single parent household, parenting quality, and dummy variables for 10 data collection sites.

\*\**p* < .01. \**p* < .05.

**Table B2**

*Coefficients of All Estimated Paths in SEM Model for Age 26 Sample (N=797)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Early childhood** | **Middle childhood** | **Adolescence** | **Adulthood** |
|  | Center-based epochs | Hours ofnonrelative care | Observed quality | Externalizing behavior | Organized activities | Externalizing behavior | Impulsivity | Risk-taking | Externalizing behavior | Impulsivity | Risk-taking | Police contact |
|  | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* | ß(S.E.) | *p* |
| **Early childhood (1–54 months)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Center-based epochs | - | - | - | - | - | - | .064(.043) | .136 | .085(.036) | .019 | .057(.038) | .136 | -.003(.044) | .940 | .009(.042) | .827 | -.097(.044) | .029 | .034(.037) | .361 | .000(.039) | .992 | -.015(.04) | .712 |
| Hours of nonrelative care | - | - | - | - | - | - | .172(.044) | .000 | .076(.037) | .041 | .058(.038) | .123 | .012(.046) | .794 | .059(.043) | .165 | -.006(.044) | .886 | .037(.037) | .322 | .030(.039) | .446 | .072(.041) | .079 |
| Observed quality | - | - | - | - | - | - | -.043(.043) | .320 | .044(.035) | .217 | -.006(.036) | .873 | .041(.044) | .354 | .045(.042) | .286 | .031(.044) | .484 | .006(.036) | .864 | -.010(.036) | .786 | .006(.039) | .885 |
| Externalizing behavior M54 | - | - | - | - | - | - | - | - | -.014(.038) | .701 | .363(.035) | .000 | - | - | - | - | - | - | - | - | - | - | - | - |
| **Middle childhood (K-5th grade)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Organized activities | - | - | - | - | - | - | - | - | - | - | - | - | .058(.042) | .175 | -.014(.040) | .731 | .050(.040) | .215 | -.080(.033) | .015 | -.053(.035) | .128 | -.097(.038) | .011 |
| Externalizing behavior K-G5 | - | - | - | - | - | - | - | - | - | - | - | - | .157(.039) | .000 |  .139(.037) | .000 | .209(.038) | .000 |  |  | - |  | - |  |
| **Adolescence** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Impulsivity | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | .345(.038) | .000 | .057(.042) | .173 | -.033(.046) | .476 |
| Risk-taking | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | .101(.041) | .015 | .324(.043) | .000 | .243(.048) | .000 |
| Externalizing behavior | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | .126(.042) | .003 | -.007(.045) | .870 | .040(.049) | .422 |
| **Child/family characteristics**  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ethnic minority (White=0) | - | - | - | - | - | - | - | - | - | - | .053(.035) | .131 | - | - | - | - | - | - | - | - | - | - | - | - |
| Female (Male=0) | - | - | - | - | - | - | - | - | .105(.029) | .000 | - | - | -.077(.038) | .041 | -.279(.035) | .000 | -.104(.037) | .005 | -.111(.033) | .001 | -.111(.034) | .001 | -.086(.035) | .015 |
| Maternal education | .056(.040) | .164 | .068(.039) | .084 | - | - | -.097(.048) | .041 | .146(.039) | .000 | - | - | - | - | -.094(.034) | .006 | - | - | - | - | - | - | .097(.040) | .015 |
| Single parenthood epochs | .102(.036) | .005 | .224(.035) | .000 | -.072(.043) | .092 | - | - | .032(.034) | .358 | .062(.036) | .088 | - | - | - | - | - | - | - | - | .101(.032) | .002 | .094(.037) | .011 |
| Income to needs ratio | .195(.041) | .000 | .318(.040) | .000 | - | - | - | - | .201(.039) | .000 | - | - | -.032(.038) | .403 | - | - | - | - | - | - | - | - | - | - |
| Parenting quality | - | - | - | - | .169(.041) | .000 | -.214(.049) | .000 | .225(.040) | .000 | -.195(.039) | .000 | - | - | - | - | - | - | - | - | - | - | -.102(.043) | .018 |
| SITE1 | -.237(.055) | .000 | -.075(.055) | .169 | -.054(.060) | .366 | - | - | .045(.049) | .357 | -.040(.052) | .439 | - | - | - | - | .031(.048) | .522 | - | - | -.149(.050) | .003 | - | - |
| SITE2 | -.167(.052) | .001 | .019(.051) | .715 | -.026(.057) | .642 | - | - | -.018(.046) | .696 | -.042(.049) | .387 | - | - | - | - | -.030(.046) | .511 | - | - | -.180(.047) | .000 | - | - |
| SITE3 | -.307(.053) | .000 | -.170(.053) | .001 | .007(.060) | .908 | - | - | .060(.048) | .209 | -.043(.051) | .397 | - | - | - | - | .035(.047) | .463 | - | - | -.072(.049) | .142 | - | - |
| SITE4 | -.276(.055) | .000 | -.174(.054) | .001 | .022(.062) | .717 | - | - | -.096(.049) | .052 | -.081(.052) | .125 | - | - | - | - | .040(.049) | .414 | - | - | -.089(.05) | .072 | - | - |
| SITE5 | -.179(.052) | .001 | -.128(.051) | .012 | .065(.058) | .259 | - | - | -.006(.046) | .895 | -.038(.048) | .436 | - | - | - | - | .016(.045) | .723 | - | - | -.073(.046) | .113 | - | - |
| SITE6 | -.237(.051) | .000 | -.070(.051) | .164 | -.001(.057) | .990 | - | - | -.070(.046) | .125 | .016(.049) | .743 | - | - | - | - | .007(.045) | .877 | - | - | -.109(.046) | .019 | - | - |
| SITE7 | -.202(.054) | .000 | -.157(.053) | .003 | .073(.060) | .221 | - | - | -.041(.048) | .399 | -.062(.051) | .225 | - | - | - | - | .098(.047) | .038 | - | - | -.181(.049) | .000 | - | - |
| SITE8 | -.052(.053) | .321 | -.028(.052) | .588 | -.054(.058) | .355 | - | - | .031(.046) | .506 | .029(.049) | .553 | - | - | - | - | .003(.046) | .946 | - | - | -.105(.047) | .025 | - | - |
| SITE9 | -.249(.054) | .000 | -.058(.053) | .273 | -.130(.061) | .032 | - | - | -.074(.049) | .130 | -.012(.052) | .822 | - | - | - | - | .039(.047) | .413 | - | - | -.140(.049) | .005 | - | - |

*Note.* Only covariates significant at *p* < .10 were included in the final model.

**Table B3**

*Covariances Estimated among Variables Measured at the Same Time Point for Age 26 Sample (N=797)*

|  |  |  |  |
| --- | --- | --- | --- |
|   | ß | S.E. | *p* |
| **Within early childhood (1–54 months)** |  |  |  |
| Center-based epochs with hours of nonrelative care  |  .484 | .027 | .000 |
| Center-based epochs with observed quality  | -.248 | .036 | .000 |
| Hours of nonrelative care with observed quality  | -.251 | .037 | .000 |
| **Within middle childhood (K-5th grade)** |  |  |  |
| Organized activities with externalizing behavior  | .013 | .037 | .716 |
| **Within adolescence (12th grade)** |  |  |  |
| Impulsivity with risk-taking | .404 | .032 | .000 |
| Impulsivity with externalizing behavior | .494 | .029 | .000 |
| Risk-taking with externalizing behavior  | .509 | .029 | .000 |
| **Within adulthood (Age 26)** |  |  |  |
| Impulsivity with risk-taking | .270 | .034 | .000 |
| Impulsivity with police contact | .179 | .036 | .000 |
| Risk-taking with police contact | .270 | .034 | .000 |

**Figure B1**

*The Significant Paths Including Early Care and Education, Organized Activities, and Individuals’ Problem Behaviors from Early Childhood through Adulthood (N = 797)*

Adulthood

Early Childhood

Middle Childhood

Adolescence

.345(.038)\*\*\*

Center-based epochs

Impulsivity

Impulsivity

-.080(.033)\*

.101(.041)\*

.157(.039)\*\*\*

.064(.043)

.085(.036)\*

.126(.042)\*\*

Organized

activities

.076(.037)\*

Risk-taking

Risk-taking

Hours nonrelative care

.324(.043)\*\*\*

.172(.044)\*\*\*

.139(.037)\*\*\*

.243(.048)\*\*\*

Observed quality

-.097(.044)\*

-.097(.038)\*

Police contact

.363(.035)\*\*\*

.209(.038)\*\*\*

Externalizing

Externalizing

Externalizing

X2(96)= 101.159, *p =* .340;

CFI= .998, TLI=.994;

SRMR=.022; RMSEA=.008 (90% CI=.000-.021)

*Note.* Covariates have been omitted for simplicity. Coefficients for all estimated paths are provided in Table B2. Covariances between variables are presented in Table B3. Covariates included in model are gender (Male = 0), ethnic minority status (White = 0), maternal education, early childhood income to needs ratio, epoch of single parent household, composite score of HOME and maternal sensitivity, and dummy variables for 10 data collection sites.

Data collection for early childhood is from 1 month to 54 months; middle childhood indicates kindergarten through 5th grade; data collection for adolescence is at 12th grade; and data collection for adulthood is at Age 26.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

**Figure B2**

*Early Care and Education, Organized Activities, and Individuals’ Problem Behaviors from Early Childhood through Adulthood (N = 797)*

Adulthood

Early Childhood

Middle Childhood

Adolescence

.345(.038)\*\*\*

Center-based epochs

Impulsivity

Impulsivity

-.080(.033)\*

.101(.041)\*

.157(.039)\*\*\*

.085(.036)\*

.126(.042)\*\*

Organized

activities

.076(.037)\*

Risk-taking

Risk-taking

Hours nonrelative care

.324(.043)\*\*\*

-.097(.038)\*

.243(.048)\*\*\*

.139(.037)\*\*\*

.172(.044)\*\*\*

Observed quality

-.097(.044)\*

Police contact

Externalizing

Externalizing

Externalizing

.363(.035)\*\*\*

.209(.038)\*\*\*

X2(96)= 101.159, *p =* .340;

CFI= .998, TLI=.994;

SRMR=.022; RMSEA=.008 (90% CI=.000-.021)

*Note.* Covariates have been omitted for simplicity. Coefficients for all estimated paths are provided in Table B2. Covariances between variables are presented in Table B3. Covariates included in model are gender (Male = 0), ethnic minority status (White = 0), maternal education, early childhood income to needs ratio, epoch of single parent household, composite score of HOME and maternal sensitivity, and dummy variables for 10 data collection sites.

Data collection for early childhood is from 1 month to 54 months; middle childhood indicates kindergarten through 5th grade; data collection for adolescence is at 12th grade; and data collection for adulthood is at Age 26.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.