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APPENDIX A

ALTERNATIVE AND SUPPLEMENTAL FAMILY AND CHILD OUTCOME MEASURES

Along with the grantees and local evaluators, the Mathematica-Chapin Hall team identified a set of seven family and child outcome domains that encompass the measures being collected for the local evaluations. For each of these domains, the cross-site evaluation team reviewed all of the proposed measures as well as some additional measures. The team recommended one or more of these measures to represent the domain, balancing the following factors:

- Assessment of constructs potentially influenced by home visiting programs
- Demonstrated sensitivity to similar interventions
- Successful use in other large-scale research
- Appropriateness for families and children from different cultural, racial, ethnic, and linguistic backgrounds (for example, availability in Spanish), as well as across different age groups
- Cost of purchasing and using copyrighted materials and training staff to collect data; frequency of data collection and time required for it
- Reliability and validity of the measures in general and for Spanish speakers in particular

Some grantees will be collecting measures other than the recommended measures for their local evaluations. Eight measures (denoted with an asterisk in Table A.1 below) will be collected as alternatives to the cross-site measures. There are also 23 supplemental measures that will be collected in addition to the recommended cross-site measures. All 31 measures were reviewed by the cross-site evaluation team and meet the recommended psychometric properties described in Chapter V. The alternative and supplemental measures are listed in the table below.

Table A.1 Alternative and Supplemental Measures Collected for Local Evaluations

Construct	Measure	Grantee
	Substance Use	
Substance Use, Parental Depression	Global Appraisal of Individual Need (GAIN), GAIN-SS	CO
Substance Use	NFP CIS "Health Habits" form	CA-Solano, MN, SC
Substance Use	Diagnostic Inventory Schedule (DIS) Alcohol and Drug Modules*	OK
	Parental Depression	
Parental Depression	NFP CIS "Maternal Health Assessment: Pregnancy – Intake" form*	CA-Solano, MN, SC
Parental Depression	Beck Depression Inventory-II (BDI-II)*	NY, OK

Table A.1 *(continued)*

Construct	Measure	Grantee
Parental Depression	Edinburgh Postnatal Depression Scale (EPDS)*	TN-LeB
Parental Depression	Depression, Anxiety, and Stress Scales*	TX
Parenting		
Parenting: Harsh Discipline	Conflict Tactics Scale, Parent-Child version (CTS-PC) (includes spanking in last week)*	HI, IL, NJ, OK
Parenting: Harsh Discipline	Harsh Discipline Scale*	TN-C&F
Parenting: Discipline*	Parenting Scale (PS)	TX
Parenting: Parent Knowledge of Child Development, Discipline	Parent Opinion Questionnaire (POQ)	TX
Parenting: Parent Stress	Parental Anger Inventory (PAI)	TX
Parenting: Parent-Child Interaction	Parenting Stress Index (PSI), PSI-SF	HI, IL, NJ, TN-C&F, NY
Parenting: Parent-Child Interaction	Adult-Adolescent Parenting Inventory (AAPI)	HI, NJ, TN-C&F, CA-Solano
Parenting: Parent-Child Interaction	Nursing Child Assessment Satellite Training (NCAST) Parent-Child Interaction (PCI) Program	HI, NJ
Parenting: Parent-Child Interaction	Nursing Child Assessment Satellite Training (NCAST)	TN-C&F, CA-Solano
Parenting: Parent-Child Interaction	Keys to Interactive Parenting Scale (KIPS)	HI, NJ, OH
Parenting: Parent-Child Interaction	SPIN Video Home Training (SPIN-VHT)	HI, NJ
Parenting: Parent-Child Interaction	Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO)	UT
Parenting: Parent-Child Interaction	Ages & Stages Questionnaires: Indicator for "meet parental bonding benchmark"	CA-Solano
Parenting: Parent-Child Interaction	Family Development Matrix (FDM)	CA-Solano
Parenting: Parent-Child Interaction	Parent/Caregiver Involvement Scale (P/CIS)	RI, OH
Parenting: Parent-Child Interaction	Emotional Availability Scale (EAS)	RI
Parenting	Parenting Practices Inventory (PPI)	NY
Parenting: Physical Abuse	Child Abuse Potential Inventory (CAPI)	NY

Table A.1 *(continued)*

Construct	Measure	Grantee
Parenting: Child Maltreatment	Brief Child Abuse Potential Inventory (BCAP)	OK
Parenting: Child Maltreatment	Child Well-Being Scales-Revised	OK
Parenting: Maternal Functioning	Maternal Self-Efficacy Questionnaire (MEQ)	NY
Parenting: Home Environment and Quality	Home Observation for Measurement of the Environment (HOME)	HI, NJ, TN-C&F, RI, NY
Child Social-Emotional Development		
Child Social Emotional Development	Ages & Stages Questionnaires: Social-Emotional (ASQ:SE)	CA-Solano, MN, SC
Child Social Emotional Development	Eyberg Child Behavior Inventory (ECBI)	TX

NOTE: * Denotes an alternative measure.

APPENDIX B

SAMPLE SOCIAL NETWORK MATRICES AND SOCIOGRAMS

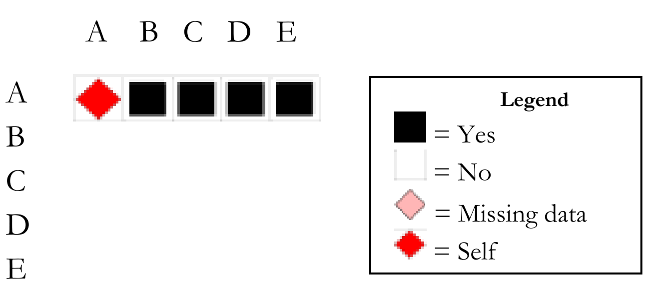
This appendix contains sample sociomatrices and sociograms, with appropriate explanations, to help the reader understand what these graphic displays of the network data will look like and how they can be helpful for interpreting the network findings. These examples were developed for another project and were adapted to illustrate potential visualizations of network data for the EBHV project.

Social network matrices and sociograms are novel visual approaches to displaying relationship data. This appendix systematically explains these figures so that the reader can better interpret the data that are contained in the figures.

For the purposes of this appendix, we will focus on a single hypothetical relationship between partner organizations defined in the partner/network survey (though, additional relationships are measured by this instrument). The survey has a question where respondent organizations are prompted to indicate whether or not they work with other organizations, presented as a roster of potential working partners. The data collected from each responding organization can be organized into a matrix for visualization and analysis.

Illustrations B.1, B.2, and B.3 show *sociomatrices*, which are convenient ways of displaying network data. In this small example, we have defined the boundaries of the "work" network as the working relationships between 5 partners (A, B, C, D, and E). The sociomatrices in these illustrations have five rows, and five columns, to allow for all possible relationships between partner organizations. On the survey instrument, there are opportunities for respondents to indicate additional partner organizations who should be included to more accurately define (and expand) the network.

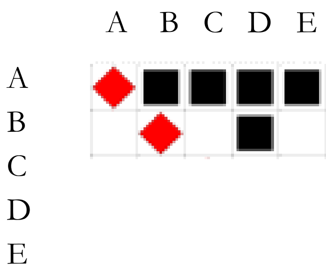
Illustration B.1



The first row in Illustration B.1 shows organization A's responses about their working relationships with others in the network. The red diamond in the first column (A) is a *self-response*: In network analysis, it is typical to ignore the *self-response* diagonal in a sociomatrix.

The squares in the rest of the row show that A reported working with all other organizations in the network (B, C, D, and E).

Illustration B.2



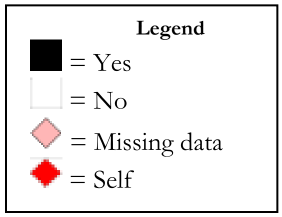
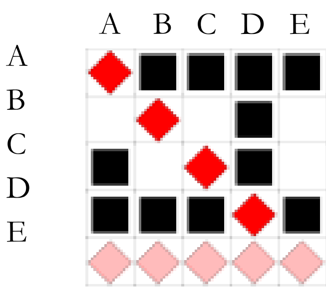


Illustration B.2 shows B's responses in the row below A's responses. B reported working with only one other organization, D. The other columns for row B are empty (except for the self-response).

A reported working with B, but B did not report working with A. The working relationship between A and B, then, is not *reciprocal*—one individual sees a working relationship here, but not both.

Illustration B.3



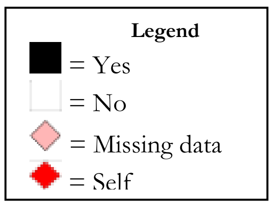


Illustration B.3 is a matrix showing all the working relationship data for the network. When we compare A's responses (the first row) with all responses about A (the first column), A's working relationships with C and D are reciprocal since C and D reported working with A.

The last row (E) contains pink diamonds; E's data are "missing" because we do not have data from E. This can occur if E fails to respond to the partner/network survey, or if E fails to respond to the network component of the survey instrument. We do, however, have data about E from each of the other organizations in the network. As seen in the last column of the matrix (E), two individuals (A and D) reported working with E.

Illustrations B.4, B.5, and B.6 show the same working relationship data as a series of *sociograms*, which is another way of graphically showing network relationships.

Illustration B.4

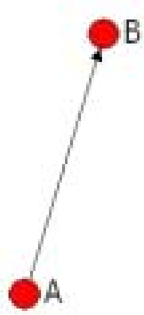


Illustration B.4 shows a sociogram of the relationship between A (a red circle) and B (a red circle). The line linking A and B shows the working relationship between the two. The arrow pointing from A to B means that A reported working with B. There is no arrow from B to A, since B did not report working with A.

Illustration B.5

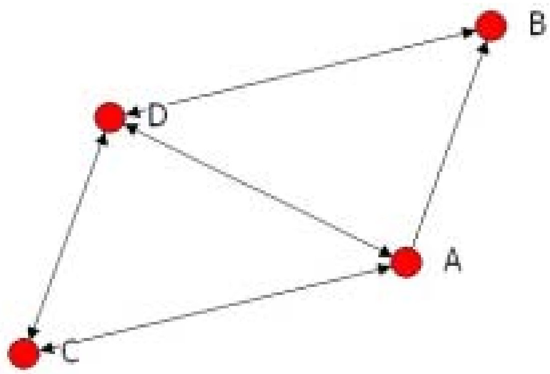


Illustration B.5 shows the working relationships among A, B, C, and D. We include data only for those individuals for whom we have complete data; E is not shown because response data are missing from E.

In this picture, A and D reported working with all other organizations (that is, they have arrows pointing to every person in the network). This corresponds to the data in Illustration B.3; the rows for A and D showed that each organization reported working with all others in the network.

What is also clear in this picture is that all people in the network reported working with organization D. There are three arrows pointing to D, while others have only two. This also corresponds to the data in Illustration B.3; column D is completely filled (except for row E, which is missing), unlike other columns.

There is no line between B and C; neither individual reported working with the other.

Illustration B.6

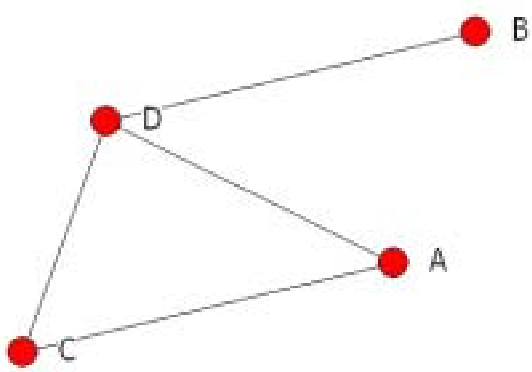


Illustration B.6 only shows friendships that were reciprocal, where both organizations reported working with each other. The line between A and B is removed because their working relationship is not reciprocal (B did not report being friends with A).

A, C, and D all reported working with each other, and so they are connected to each other with lines. B, on the other hand, is connected with the group only through his relationship with D.

In this sociogram, there are no arrows since they would be redundant; lines connect pairs of organizations only if both reported being in a working relationship.

APPENDIX C

GROWTH CURVE MODEL OF ASSOCIATION BETWEEN SYSTEMS, PROGRAM COSTS, AND FIDELITY

This appendix presents an example of the statistical equations for the hierarchical linear model (HLM) analysis of the relationships across domains described in Chapter VIII. This example focuses on the relationship between systems change and fidelity indicators, measured over time at the home visitor level. Home visitors are nested within locations, which are nested within systems. As explained below, these equations can be adapted to analyze different levels of the outcome fidelity indicators (that is, service-location-level, home-visitor-level, or participant-level indicators). They can also be adapted to analyze different levels of the independent variables (that is, systems-level or location-level variables).

The basic level 1 model (within-individual model) can be depicted as:

$$Y_{tij} = \pi_{0ij} + \pi_{1ij}(\mathit{Time}_{t}) + e_{tij} \qquad (1)$$

In equation 1, Y_{tij} represents the fidelity measure (in this example, measured at the home visitor level)[28], for home visitor i at Time t within a location j; π_{0ij} is fidelity for home visitor ij at Time 0 (baseline); π_{1ij} is the rate of change (the slope) in fidelity for home visitor ij over time; and e_{ti} is the residual variance in repeated measurements for individual ij. We will test two measures of time: (1) time since implementation of the grant initiative and (2) time since program implementation at location j. This model can be modified to examine service delivery location-level indicators (by aggregating home-visitor-level indicators) or examine participant-level fidelity measures, adjusting for clustering within home visitor, by using robust standard errors. HLM models can incorporate individual-level data for individuals who are missing data at time points throughout the observed period, thus home visitors (and participants) who join the program after implementation or drop out before the grant period ends will be included in the model.

The level 2 model is the between-individual model and predicts the intercepts and slopes from the average intercepts and slopes of the home visitors within a location. The first equation of the level 2 model predicts the intercept from equation 1:

$$\pi_{0ij} = \beta_{00j} + Z_{ij}^{T}\alpha_{0} + r_{0ij} \qquad (2)$$

[28] In addition to individual indicators of fidelity, we propose developing a summary measure of fidelity that will capture fidelity to the program model more generally.

In equation 2, π_{0ij} represents the initial fidelity for home visitor ij at baseline. Z_{ij}^{T} is a vector of home-visitor-level characteristics, and vector α_0 measures the association between home visitor characteristics and baseline fidelity. π_{0ij} is predicted by β_{00j}, the average fidelity across all home visitors within a location at baseline, plus the difference in baseline fidelity explained by home visitor characteristics. Finally, r_{0ij} is the error term.

The second equation of the level 2 model predicts the slope (change over time) of fidelity:

$$\pi_{1ij} = \beta_{10j} + \beta_{10j} + Z_{ij}^{T}\alpha_1 + r_{1ij} \qquad (3)$$

In equation 3, π_{1ij} is the slope of fidelity for home visitor ij; β_{10j} represents the mean slope of home visitors within location j. Z_{ij}^{T} is a vector of home visitor characteristics, and α_1 is the estimate of the relationship between the home visitor characteristics and fidelity slope. r_{1ij} is the error term.

Equations 4 and 5 (level 3 models) represent the key associations we will test, between location and system-level characteristics and fidelity:

$$\beta_{00j} = \gamma_{000} + \gamma_{001}(Cost) + \gamma_{002}(System) + W_j^T\gamma_{003} + u_{00j} \qquad (4)$$

$$\beta_{10j} = \gamma_{100} + \gamma_{101}(Cost) + \gamma_{102}(System) + W_j^T\gamma_{103} + u_{10j} \qquad (5)$$

In these equations, γ_{000} and γ_{100} represent the mean fidelity at baseline and mean slope of fidelity, respectively, across locations; γ_{001} and γ_{101} are the associations between program cost and mean baseline fidelity and mean slope of fidelity, respectively. γ_{002} and γ_{102} are the associations between systems measures and mean baseline fidelity and mean slope in fidelity, respectively. W_j^T is a vector of location and system characteristics, and γ_{003} and γ_{103} represent the measured relationship between baseline fidelity and change in fidelity and location/system characteristics. u_{00j} and u_{10j} are the error terms.

Level 3 can be either location- or system-level. If system is identified as the top level (level 3), location-level measures (for example, program costs or home visiting program characteristics) can be aggregated to the system level and modeled as system-level covariates.