

Analysis of the Virginia Family Survey Data Addressing

Part C SPP/APR Indicator #4:

Final Report

Report prepared for the

The Social Science Research Center at Old Dominion University

Report prepared by: Randall D. Penfield

Date of Delivery: July 29, 2013

TABLE OF CONTENTS

Section

- 1 Executive Summary
- 2 Background
 - 2.1 Federal Requirements
 - 2.2 Survey Instrument
 - 2.3 Standards
- 3 Characteristics of the Sample Data
 - 3.1 Distribution of Race/Ethnicity in the Sample
 - 3.2 Distribution of Child's Gender in the Sample
- 4 Results Pertaining to Indicator #4
 - 4.1 Distribution of IFS Measures
 - 4.2 Interpretation of the Mean IFS measure
 - 4.3 Percentage Meeting Each of the Standards for Indicator #4
 - 4.4 Percentage Meeting Each of the Standards by Race/Ethnicity
 - 4.5 Percentage Meeting Each of the Standards by Program Location
 - 4.6 Meeting the Established Performance Targets
- 5 Measurement Framework For the IFS
- 6 Results Pertaining to the Psychometric Properties of the Impact on Families Scale (IFS)
 - 6.1 Psychometric Properties of the IFS Measures
 - 6.2 Psychometric Properties of the IFS Items

- 7 Results of the Four Items Pertaining to the Family's Experience in Early Intervention
- 8 Calibration Methodology for the IFS

References

Appendix A: Item Response Frequencies for the Survey Items

Appendix B: Control File for the Winsteps Rasch Analysis of the IFS

Appendix C: Winsteps Output File of the IFS

SECTION 1

EXECUTIVE SUMMARY

In accordance with federal reporting requirements mandated by the U.S. Department of Education, Office of Special Education Programs (OSEP), Part C Lead Agencies under the Individuals with Disabilities Education Act must report annually on 14 performance indicators related to early intervention services for children ages birth to three. This report presents findings of a survey conducted by the State of Virginia to address Indicator #4, the “percent of families participating in Part C who report that early intervention services have helped the family a) know their rights, b) effectively communicate their children’s needs, and c) help their children develop and learn.”

The survey administered by the State of Virginia included one rating scale developed and validated by the National Center for Special Education Accountability Monitoring (NCSEAM), and four additional items pertaining to the family’s experience with early interventions. The 22-item Impact on Family Scale (IFS) measures the extent to which early intervention helped families achieve positive outcomes, including the three outcomes specified in Indicator #4.

Surveys were returned by 1,799 families receiving early intervention services. From these responses, a random sample of 1,068 families reflecting the distribution of race/ethnicity in the larger population was selected for data analysis.

Data from each of the scales were analyzed through the Rasch measurement framework. For each scale, the analysis produces a measure for each survey respondent. Individual measures can range from 0 to 1,000. For the IFS, each family’s measure reflects the extent to which the family perceives that early intervention has

helped them achieve positive family outcomes. The IFS measures of all respondents were averaged to yield a mean measure reflecting the overall performance of the state in regard to the impact of early intervention on family outcomes.

As noted above, OSEP requires that the state's performance be reported as the *percent* of families who report that early intervention services helped them achieve specific outcomes. Deriving a percent from a continuous distribution requires application of a standard, or cut-score. The State of Virginia elected to apply the Part C standards recommended by a nationally representative stakeholder group convened by NCSEAM. The recommended standards, established based on item content expressed in the scale, were as follows: for Indicator 4a, know their rights, a measure of 539; for Indicator 4b, effectively communicate their children's needs, a measure of 556; and for Indicator 4c, help their children develop and learn, a measure of 516.

The following points represent the major findings related to Indicator #4:

1. Statewide Mean Measure on the IFS

The mean measure on the IFS was 657.2. The standard deviation was 170.5, and the standard error of the sample mean was 5.2. The 95% confidence interval for the population mean was 646.9 – 667.4. This means that there is a 95% likelihood that the true value of the mean is between these two values.

2. Statewide Percent on Indicators 4a, 4b, and 4c

The percent of families who reported that early intervention services helped them *know their rights* (Indicator 4a) was 76.9%. The 95% confidence interval for the true population percentage is 74.3% – 79.3%. This means that there is a 95% likelihood that the true value of the state percentage for Indicator 4a is between these two values.

The percent of families who reported that early intervention services helped them *communicate their child's needs* (Indicator 4b) was 74.5%. The 95% confidence interval for the true population percentage is 71.8% - 77.0%.

The percent of families who reported that early intervention services helped them *help their child develop and learn* (Indicator 4c) was 84.8%. The 95% confidence interval for the true population percentage is 82.5% - 86.8%.

4. Comparison to Target Percentages

The observed percentage of families meeting the standards for Indicators 4a, 4b, and 4c exceeded those obtained for a sample of families measured in 2012 who were administered the same version of the IFS as was used for the 2013 reporting.

Specifically, the observed percentages of 76.9%, 74.5%, and 84.8% for Indicators 4a, 4b, and 4c exceeded the corresponding values of 75.4%, 72.2%, and 84.2% obtained for the 2012 sample.

4. Items Pertaining to the Family's Experience in Early Intervention

The percentage of families responding that they agreed, strongly agreed, or very strong agreed exceeded 70% for each of the four items pertaining to the family's experience in receiving early intervention services. The percentage of families responding that they strongly agreed or very strongly agreed exceeded 93% for each of the four items.

SECTION 2

BACKGROUND

2.1. Federal Requirements

State Lead Agencies under Part C of the Individuals with Disabilities Education Improvement Act (IDEA 2004) are currently required to report data annually addressing 14 key performance indicators. Each state was required to submit a State Performance Plan (SPP) to OSEP detailing its plan to collect data addressing the 14 indicators, as well as baseline data for indicators on which the states had previously been required to report data to the federal government. Indicator #4, the “percent of families participating in Part C who report that early intervention services have helped the family: (a) know their rights, (b) effectively communicate their children’s needs, and (c) help their children develop and learn,” is a new indicator in the federal accountability system. Thus, states did not have to report baseline data on this indicator until February 2007.

State-level performance on the indicator must be reported annually. Data on program-level performance on the indicator must be collected at least once in the 6-year period of the SPP.

2.2. Survey Instrument

The Impact on Family Scale (IFS) and the Family-Centered Services Scale (FCSS) were developed by the National Center for Special Education Accountability Monitoring (NCSEAM) to provide states with valid and reliable instruments to measure: (a) positive outcomes that families experience as a result of their participation in early intervention and (b) families’ perceptions of the quality of early intervention services.

Items were developed with substantial input from families and other key stakeholders across the country.

As part of its National Item Validation Study, NCSEAM collected data from a nationally representative sample of over 1,700 families participating in early intervention. Results of NCSEAM's data analyses supported the high reliability and validity of both scales. It was determined that scale reliabilities of .90 or above could be achieved with 22 items for the IFS. NCSEAM provided states with an appropriate sample item set for each scale, as well as instructions for customizing the scales by drawing on the larger bank of piloted items that NCSEAM made available on its website.

In 2013 the original form of the IFS (used for reporting purposes through 2012) was modified in two ways: (a) a response option of "Does Not Apply" was included for each item, and (b) four items had modified wording from that used in the original IFS version. Because of these differences, the IFS scores of 2013 (upon which this report is based) are not exactly equivalent to those reported in previous years. As a result, caution should be used when comparing the 2013 results for Indicators 4a, 4b, and 4c to those reported in previous years using the original form of the IFS.

2.3. Standards

The State of Virginia elected to apply the standards recommended by NCSEAM as a way of deriving the percents to be reported for Indicators 4a, 4b, and 4c. To establish a recommended standard, NCSEAM convened a group of nationally representative stakeholders, including parents of children with disabilities, state directors of special education, state early intervention coordinators, district and program personnel, advocates, attorneys, and community representatives. Participants were

invited to examine a set of items from the IFS, laid out in their calibration order (see Table 4.2). The items towards the bottom of the scale, having lower calibrations, are items that families tend to agree with most. The items towards the top of the scale, having higher calibrations, are items that families tend to agree with least. Because of the robust structure of the scale, a respondent who agrees with a given statement will have a very high likelihood of agreeing, or agreeing even more strongly, with all the items below it on the scale.

For indicator 4a, the stakeholder group agreed that families needed to endorse all items up to and including the item, “Over the past year, early intervention services have helped me and/or my family know about my child's and family's rights concerning Early Intervention services.” For indicator 4b, the stakeholder group agreed that families needed to endorse all items up to and including the item, “Over the past year, early intervention services have helped me and/or my family communicate more effectively with the people who work with my child and family. For indicator 4c, the stakeholder group agreed that families needed to endorse all items up to and including the item, “Over the past year, early intervention services have helped me and/or my family understand my child's special needs.” These standards were operationalized by designating as the numerical standard the measure that, in each case, corresponds to the threshold item's calibration. For indicators 4a, 4b, and 4c, the measures representing the standards are 539, 556, and 516, respectively. This ensures that in each case, families with a measure at or above the standard have a .95 likelihood of agreeing with the threshold item.

SECTION 3

CHARACTERISTICS OF THE SAMPLE DATA

Surveys were returned by 1,799 families. A random sample of 1,068 cases was drawn to yield a final sample with a distribution of race/ethnicity that was representative of that observed in the population of families served under Part C for the State of Virginia.

3.1. Distribution of Race/Ethnicity in the Sample

The tables below display the distribution of race/ethnicity in the total survey sample of 1,799 (Table 3.1), and the representative sample of 1,068 (Table 3.2). As can be seen in the Table 3.2, the distribution of race/ethnicity in the sample is highly reflective of the distribution of race/ethnicity in the population of families receiving early intervention services in Virginia.

Table 3.1. Distribution of Child's Race/Ethnicity in the Total Sample		
Gender	N	Percentage
White	1108	61.6%
Black or African-American	213	11.8%
Hispanic or Latino	176	9.8%
Asian	67	3.7%
American Indian or Alaskan Native	1	0.1%
Pacific Islander or Hawaiian Native	2	0.1%
Two or more races	207	11.5%
Missing	25	1.4%
Total	1,799	100%

Table 3.2. Distribution of Child's Race/Ethnicity in the Representative Sample

Gender	N	Percentage
White	615	57.6%
Black or African-American	213	19.9%
Hispanic or Latino	113	10.6%
Asian	41	3.8%
American Indian or Alaskan Native	1	0.1%
Pacific Islander or Hawaiian Native	1	0.1%
Two or more races	84	7.9%
Total	1,068	100%

Note. The distribution of race/ethnicity for the children receiving early intervention services in Virginia under Part C are: White = 57.6%, Black/African American = 19.9%, Hispanic = 10.6%, Asian = 3.8%, American Indian or Alaskan Native = 0.1%, Pacific Islander of Hawaiian Native = 0.1%, Other/Multiracial = 7.9%.

3.2. Distribution of Child's Gender in the Sample

Tables 3.3 and 3.4, below, display the distribution of child's gender in the total and representative samples, respectively.

Table 3.3. Distribution of Child's Gender in the Total Sample		
Gender	N	Percentage
Male	1,066	59.3%
Female	712	39.6%
Missing	21	1.2%
Total	1,799	100%

Table 3.4. Distribution of Child's Gender in the Representative Sample		
Gender	N	Percentage
Male	645	60.4%
Female	417	39.0%
Missing	6	0.6%
Total	1,068	100%

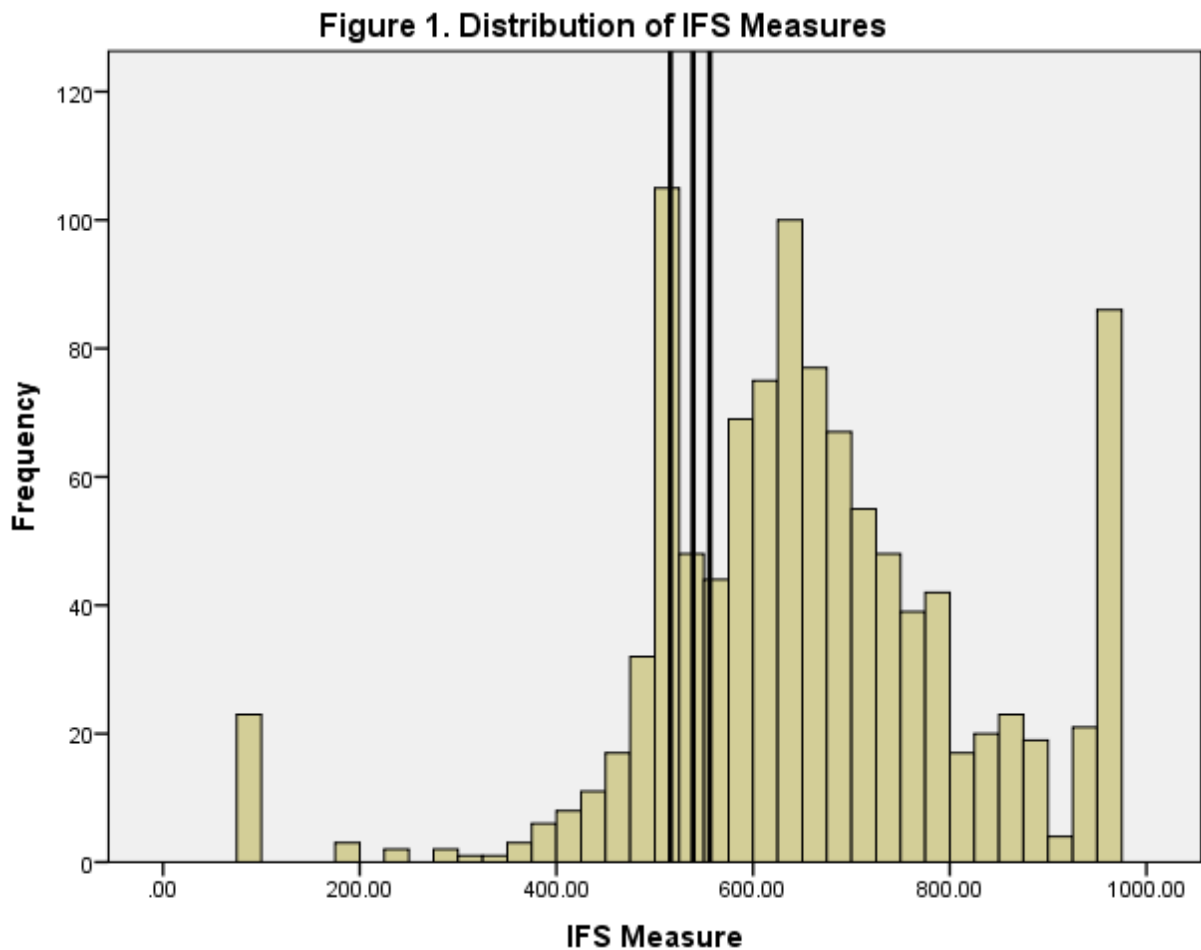
SECTION 4

RESULTS PERTAINING TO INDICATOR #4

4.1 Distribution of IFS Measures

All 1,068 respondents included in the representative sample had valid responses to the IFS. The distribution of IFS measures for the 1,068 respondents is shown in the figure below.

Each bar indicates the number of respondents with measures at the value indicated on the x-axis. The vertical black lines correspond to the three standards applied to Indicator 4a (539), 4b (556), and 4c (516).



As can be seen in Figure 1, the values representing the three standards lie in the lower half of the measure distribution. That is, the majority of respondents reported a level of impact (i.e., had an IFS measure) that exceeded the three standards.

The distribution of measures approximates a normal distribution, with two exceptions. The first exception is the unexpectedly high number of respondents with measures at the extreme positive end of the scale, represented by the high bar at the extreme right of the graph. These individuals responded in the “very strongly agree” category to each and every item. The second exception is the unexpectedly high number of respondents with measures at a value close to the standard values, represented by the high bar at the lowest standard value. Many of these individuals responded in the “agree” category to each and every item.

The statistical properties of the IFS measures are displayed in Table 4.1 below.

Table 4.1. Properties of IFS Measures for the Representative Sample			
Sample Mean	Standard Deviation	Standard Error of the Sample Mean	95% Confidence Interval for the Population Mean
657.2	170.5	5.2	646.9 – 667.4

4.2. Interpretation of the Mean IFS Measure

The state’s performance on the IFS conveys information that goes beyond the three outcomes that are addressed in OSEP’s Indicator #4. A mean measure of 657.2 on the IFS indicates that the Virginia early intervention system is helping families to achieve many positive outcomes. These positive outcomes are evident from the response percentages displayed in Table 4.2, below. (The table also displays each item’s calibration value, to be discussed in Section 6.)

Table 4.2. Percent of Families Expressing Agreement with IFS Items			
Item Calibration	Item <u>Stem</u>: Over the past year, Early Intervention services have helped me and/or my family:	% Strongly/ Very strongly agree	% Agree in any category
678	...participate in typical activities for children and families in my community.	43%	83%
656	...know about services in my community.	48%	88%
640	...know where to go for support to meet my FAMILY's needs.	50%	87%
625	...keep up friendships for my child and family.	47%	83%
609	...know where to go for support to meet my CHILD's needs.	60%	91%
577	...find information I need.	53%	92%
570	...improve my family's quality of life.	58%	92%
565	...feel that I can get the services and supports that my child and family need.	63%	92%
559	...feel more confident in my skills as a parent.	62%	92%
559	...feel that my child will be accepted and welcomed in the community.	65%	93%
557	...know how to make changes in family routines that will benefit my child.	62%	92%
556	...communicate more effectively with the people who work with my child and family.	64%	93%
554	...feel more confident in finding ways to meet my child's needs.	67%	93%

553	...understand how the Early intervention system works.	62%	95%
546	...feel that I can handle the challenges of parenting my child with his/her needs.	65%	94%
546	...understand the roles of the people who work with my child and family.	62%	94%
540	...figure out solutions to problems as they come up.	59%	92%
539	...know about my child's and family's rights concerning Early Intervention services.	64%	94%
534	...be able to evaluate how much progress my child is making.	68%	93%
526	...understand my child's needs.	70%	95%
498	...feel that my efforts are helping my child.	71%	96%
498	...do things with and for my child that are good for my child's development.	74%	95%

As seen in the table, over 95% of families agreed, with over 70% expressing strong or very strong agreement, that early intervention helped them do things with and for their child that are good for their child's development, feel that their efforts are helping their child, and understand their child's special needs.

Over 93% of families agreed, with somewhat over 59% expressing strong or very strong agreement, that early intervention helped them be able to evaluate how much progress their child is making, figure out solutions to problems as they come up, understand the roles of the people who work with their child and family, understand how the early intervention system works, and communicate more effectively with the people who work with their child and family.

Between 92% and 93% of families agreed, with over 58% expressing strong or very strong agreement, that early intervention helped them feel that their family will be accepted and welcomed in the community, feel that they can

get the services and supports that their child and family need, and improve their family's quality of life.

Approximately 87% of families agreed, with about 50% expressing strong or very strong agreement, that early intervention helped them keep up friendships for their child and family, know where to go for support to meet the family's needs, and know about services in the community. 83% of families agreed, with 43% expressing strong or very strong agreement, that early intervention helped them participate in typical activities for children and families in their community.

For reference, the frequency distribution of responses to all the items in the IFS is provided in Appendix A.

4.3. Percentage Meeting Each of the Standards for Indicator #4

Table 4.3 presents the percentage of respondents in the representative sample of $n = 1,068$ having an IFS measure that meets or exceeds each of the three standards for Indicator #4, as well as a 95% confidence interval for the true population percentage. Note that the confidence interval is asymmetric about the sample percentage, in that there is a greater distance in the confidence interval below the sample percentage than above the sample percentage. The asymmetric confidence interval represents a more accurate confidence interval for percentages than normal-distribution based symmetric confidence intervals (due to the fact that percentages are bounded between 0 and 100). The asymmetric confidence interval reported here is the Score interval proposed by

Wilson (1927), and described in greater detail in Agresti (1996) and Penfield (2003).

Table 4.3. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4 (Using Representative Sample of n = 1,068)			
	Indicator 4A Percent of families who report that early intervention services helped them know their rights	Indicator 4B Percent of families who report that early intervention services helped them effectively communicate their children's needs	Indicator 4C Percent of families who report that early intervention services helped them help their child develop and learn
Percentage	76.9% 821 of 1,068 met standard	74.5% 796 of 1,068 met standard	84.8% 906 of 1,068 met standard
95% Confidence Interval	74.3% - 79.3%	71.8% – 77.0%	82.5% – 86.8%

4.4 Percentage Meeting Each of the Standards by Race/Ethnicity

Table 4.4. presents the percentage of respondents with IFS measures that met or exceeded each of the three standards, by racial/ethnic category.

Table 4.4. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4%, by Race/Ethnicity			
Race/Ethnicity	Indicator 4A Percent of families who report that early intervention services helped them know their rights	Indicator 4B Percent of families who report that early intervention services helped them effectively communicate their children’s needs	Indicator 4C Percent of families who report that early intervention services helped them help their child develop and learn
White/Caucasian (N = 1,107)	79.3% 95% CI: 76.8% - 81.6%	75.6% 95% CI: 73.0% - 78.0%	85.7% 95% CI: 83.5% - 87.6%
Black or African American (N = 213)	72.3% 95% CI: 65.9% - 77.9%	70.9% 95% CI: 64.5% - 76.6%	81.7% 95% CI: 76.0% - 86.3%
Hispanic or Latino (N = 176)	73.9% 95% CI: 67.0% - 79.8%	69.9% 95% CI: 62.8% - 76.2%	88.6% 95% CI: 83.1% - 92.5%
Asian (N = 67)	76.1% 95% CI: 64.7% - 84.7%	74.6% 95% CI: 63.0% - 83.5%	83.6% 95% CI: 73.0% - 90.6%
American Indian Or Alaskan Native (N = 1)	100.0% 95% CI: ---	100.0% 95% CI: ---	100.0% 95% CI: ---

Pacific Islander or Hawaiian Native (N = 2)	100.0% 95% CI: ---	100.0% 95% CI: ---	100.0% 95% CI: ---
Two or More Races (N = 207)	73.0% 95% CI: 66.5% - 78.6%	70.0% 95% CI: 63.4% - 75.8%	82.6% 95% CI: 76.9% - 87.2%

4.5. Percentage Meeting Each of the Standards by Program Location

Table 4.5 presents the percentage of respondents with IFS measures that met or exceeded each of the three standards, by program.

Table 4.5. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4%, by Program Location				
Program Location	N	Indicator 4A	Indicator 4B	Indicator 4C
Alexandria	55	78.2%	74.5%	90.9%
Alleghany Highland	9	66.7%	44.4%	88.9%
Arlington	66	84.8%	75.8%	87.9%
Augusta-Highland	24	66.7%	66.7%	87.5%
Blue Ridge	40	70.0%	70.0%	77.5%
Central Virginia	68	75.0%	70.6%	83.8%
Chesapeake	42	85.7%	83.3%	95.2%
Chesterfield	85	76.5%	68.2%	85.9%
Crater	26	61.5%	53.8%	76.9%
Cumberland Mountain	21	85.7%	85.7%	90.5%
Danville-Pittsylvania	22	77.3%	77.3%	90.9%
Dilenowisco	16	87.5%	87.5%	87.5%
Eastern Shore	16	81.3%	75.0%	100.0%
Fairfax-Falls Church	269	75.1%	73.2%	85.9%
Goochland-Powhatan	16	81.3%	75.0%	81.3%
Hampton Newport News	29	75.9%	69.0%	89.7%
Hanover	24	91.7%	87.5%	91.7%
Harrisonburg Rockingham	26	73.1%	73.1%	73.1%

Heartland	21	85.7%	76.2%	95.2%
Henrico	65	73.8%	70.8%	81.5%
Highlands	17	88.2%	88.2%	94.1%
Loudoun	58	82.8%	77.6%	89.7%
Middle Peninsula Northern Neck	31	87.1%	87.1%	93.5%
Mount Rogers	26	69.2%	57.7%	84.6%
New River Valley	47	63.8%	63.8%	76.6%
Norfolk	42	76.2%	73.8%	90.5%
Piedmont	24	66.7%	66.7%	75.0%
Portsmouth	17	64.7%	64.7%	70.6%
Prince William	95	73.7%	71.6%	77.9%
Rappahannock Area	76	84.2%	81.6%	86.8%
Rappahannock Rapidan	28	89.3%	89.3%	89.3%
Richmond	45	80.0%	75.6%	84.4%
Roanoke	78	79.5%	78.2%	87.2%
Rockbridge	15	80.0%	80.0%	80.0%
Shenandoah Valley	57	77.2%	77.2%	82.5%
Southside	26	76.9%	76.9%	80.8%
Staunton-Waynesboro	21	76.2%	61.9%	76.2%
Virginia Beach	85	71.8%	71.8%	82.4%
Western Tidewater	38	73.7%	68.4%	78.9%
Williamsburg	32	87.5%	78.1%	90.6%

4.6. Meeting the Established Performance Targets

Table 4.6 presents the observed percentage of families meeting indicators 4a, 4b, and 4c, along with the values obtained for the representative sample in the 2012 equating study involving the new form of the IFS. The obtained percentage of families meeting indicators 4a, 4b, and 4c (76.9%, 74.5%, and 84.8%, respectively) exceeded the values obtained in the 2012 equating study (75.4%, 72.2%, and 84.2%, respectively).

Table 4.6. Comparing the Obtained Outcomes in 2013 to the Values Obtained in the 2012 Equating Study

	Target % for Indicator 4A Percent of families who report that early intervention services helped them know their rights	Target % for Indicator 4B Percent of families who report that early intervention services helped them effectively communicate their children's needs	Target % for Indicator 4C Percent of families who report that early intervention services helped them help their child develop and learn
Obtained Outcomes in 2012 Equating Study for Representative Sample	75.4%	72.2%	84.2%
Obtained Outcomes in 2013 for Representative Sample	76.9%	74.5%	84.8%

SECTION 5

MEASUREMENT FRAMEWORK FOR THE IFS

The measurement approach used by NCSEAM, known as the Rasch framework, applies a series of parametric models to estimate the properties of each survey item and each respondent in a way that places individuals and items on a common metric (Bond & Fox, 2001; Fischer & Molenaar, 1995; Rasch, 1960; Wright & Masters, 1982). The Rasch approach offers many advantages over typical approaches to survey development. First, it is possible to test whether the items administered belong together, that is, whether they are all related to the construct that the scale is supposed to measure. Ongoing confirmation of the fit of the items helps to maintain the quality of the measurement system. It is also possible to test whether the response categories are operating in the expected fashion. Often, the way in which respondents actually use the response categories does not correspond to the equidistant way in which they are laid out on paper. Extreme categories (e.g., “very strongly disagree”) are sometimes used so infrequently that it makes sense to combine them with an adjacent, less extreme, category (“very strongly disagree/strongly disagree”).

Second, it is possible to determine where each item is located on the measurement ruler. The item’s location is referred to as the item’s “calibration.” Typically, items in a test or survey are not all equal with respect to the amount of the attribute or quality that the items are measuring. It has been empirically demonstrated, in fact, that items in the IFS are not all of equal agreeability. Items

range from those that are most likely to draw agree responses to those that are least likely to draw agree responses. Highly agreeable items have low calibrations; less agreeable items have higher calibrations. Table 5.1, below, displays the IFS items in calibration order.

Table 5.1. IFS Items in Calibration Order	
Item Calibration	Item <u>Stem</u>: Over the past year, Early Intervention services have helped me and/or my family:
678	...participate in typical activities for children and families in my community.
656	...know about services in my community.
640	...know where to go for support to meet my FAMILY's needs.
625	...keep up friendships for my child and family.
609	...know where to go for support to meet my CHILD's needs.
577	...find information I need.
570	...improve my family's quality of life.
565	...feel that I can get the services and supports that my child and family need.
559	...feel more confident in my skills as a parent.
559	...feel that my child will be accepted and welcomed in the community.
557	...know how to make changes in family routines that will benefit my child.
556	...communicate more effectively with the people who work with my child and family.
554	...feel more confident in finding ways to meet my child's needs.
553	...understand how the Early intervention system works.
546	...feel that I can handle the challenges of parenting my child with his/her needs.
546	...understand the roles of the people who work with my child and family.
540	...figure out solutions to problems as they come up.
539	...know about my child's and family's rights concerning Early Intervention services.
534	...be able to evaluate how much progress my child is making.
526	...understand my child's needs.
498	...feel that my efforts are helping my child.
498	...do things with and for my child that are good for my child's development.

The fact that items have highly stable calibrations (agreeability levels) regardless of the population that is asked to respond to the items is a very important attribute of well-constructed measurement scales. This stability means that items with similar calibrations are, for all intents and purposes, interchangeable. As an example, this is why the SAT is the “same” test each time it is administered, even though it contains different items each time. The score achieved on any particular version of the SAT is comparable to the score achieved on any other version. Thus, a state can change some of the items on the survey from year to year, and still have validly comparable IFS measures across successive years.

Third, a Rasch analysis condenses information from a person’s responses to all the items in a scale into a single number. That number is the person’s measure on the scale. Since the Rasch framework puts measures on the same metric as item calibrations, a person’s measure on a scale can be meaningfully interpreted in terms of the items on the scale. A person with a higher measure is expressing more agreement with items, overall, than a person with a lower measure. When IFS measures from a representative sample of parents are aggregated, the average value represents a reliable and highly interpretable measure of the extent to which schools are facilitating parent involvement.

Fourth, a Rasch analysis yields an estimate of the reliability of both the calibration values (related to the items) and the measures (related to people’s responses). Scientific approaches to measurement require that the amount of

“error,” or imprecision, in the system be estimated, so that interpretations based on the measures can take this into consideration.

For a more detailed explanation of these concepts, please refer to Bond and Fox (2001) and Wright and Masters (1982).

SECTION 6

RESULTS PERTAINING TO THE PSYCHOMETRIC PROPERTIES OF THE IMPACT ON FAMILIES SCALE (IFS)

6.1 Psychometric Properties of the IFS Measures

In assessing the quality of the person-level measures derived from the IFS, it is germane to consider the issues of reliability and validity. The reliability of the obtained IFS measures pertains to the extent to which a particular individual is expected to attain the same IFS measure if the IFS were to be administered to the individual multiple times. That is, reliability concerns the stability of the IFS measure¹ (Crocker & Algina, 1986; Lord, 1980; Traub, 1994); low reliability coincides with a low level of stability, and high reliability coincides with a high level of stability. Reliability can range from 0 (lack of any stability) to 1 (perfect stability). In contrast to reliability, the validity of the IFS measures concerns the extent to which they are actually representative of the intended trait (i.e., level of impact on family).² The validity of the IFS measures can be assessed using numerous approaches, several of which are described below.

Statistics used to express measurement reliability range from 0 (indicating lack of any stability) to 1 (indicating perfect stability). The reliability of the IFS

¹ A definition of reliability that is more theoretically accurate describes reliability as the extent to which a given respondent's measure is determined by random error versus his or her true level of the trait being measured; low reliability coincides with a high level of measurement error, and high reliability coincides with a high low level of measurement error (Crocker & Algina, 1986; Lord, 1980; Traub, 1994).

² This definition of validity is a simplification of the definition now endorsed by the technical measurement community. The contemporary definition of validity describes it as the extent to which evidence and theory support the interpretations of the scale measures entailed by the proposed use of the scale (AERA/APA/NCME, 1999; Osterlind, 2006). That is, the validity of the IFS measures is based on how much evidence we have that the measures support the intended purposes of the use of the measures (i.e., are the measures behaving as they are supposed to behave, and leading to the correct decisions about individuals).

measures for the Virginia sample was measured in the Rasch framework to be .92. An alternative approach to estimating the reliability of the IFS measures is to employ Cronbach's alpha, which makes no assumptions about the fit of the responses to any particular model (Cronbach's alpha is based on the simpler true score model, and is commonly used in the behavioral sciences as a model-free index of reliability). The value of Cronbach's alpha was 0.97, which is consistent with the value of .92 obtained from the Rasch analysis. These results suggest that the measures obtained from the IFS serve as stable measures of the underlying trait.

Support for the validity of the measures obtained by the IFS comes from several lines of evidence. First, items for the IFS were developed in consultation with multiple groups of individuals, including parents, school personnel, district-level administrators, and advocates, with direct and extensive experience related to schools' efforts to encourage parent involvement and to ensure that parents are active participants in decision-making related to their child's education. Subsequent review of the items by expert panels, researchers, and NCSEAM's Parent/Family Involvement Workgroup confirmed that the item content maps onto the intended content domain of the IFS. Second, dimensionality analysis (i.e., principal components analysis and factor analysis) indicates that the items of the IFS are all measuring one primary construct, which is likely the intended one, i.e., positive family outcomes achieved as a result of early intervention services. A third line of evidence is related to a characteristic of items known as discrimination, discussed in section 6.1 below. The high discrimination indices of

the IFS items (see Table 6.1) indicate that the items are providing useful information concerning the construct that is intended to be measured. All of these types of evidence support the claim that the measures obtained using the IFS are valid.

6.2 Psychometric Properties of the IFS Items

Table 6.1, below, gives the calibration of each item (previously presented in Table 5.1 above), along with indices of the item’s fit to the Rasch model. The column labeled “Item Calibration” provides the value of the location parameter of the item. The higher the value of the item calibration, the greater the overall positive impact of early intervention services on family outcomes. The “Infit” and “Outfit” columns provide two measures of how well the Rasch model fits the responses provided to each item. In general, values of 1.0 indicate very good fit. Values approaching 2 suggest poorer fit (Bond & Fox, 2001).

Table 6.1. Calibration, Fit, and Discrimination of the IFS Items				
Item	Item Calibration	Infit	Outfit	Discrimination
Q1	677.5	1.94	2.84	0.73
Q2	656.0	1.71	1.83	0.76
Q3	569.8	1.24	1.45	0.79
Q4	608.8	1.07	1.08	0.82
Q5	639.8	1.04	1.08	0.84
Q6	545.9	0.88	0.91	0.82
Q7	559.3	0.82	0.87	0.84
Q8	624.8	1.16	1.17	0.82
Q9	576.8	0.86	0.88	0.85
Q10	556.8	0.89	0.92	0.84
Q11	540.4	0.92	0.95	0.85
Q12	564.5	0.71	0.70	0.85
Q13	552.9	0.93	0.98	0.82
Q14	534.4	0.82	0.85	0.83

Q15	559.1	0.85	0.90	0.83
Q16	553.9	0.62	0.59	0.86
Q17	555.9	0.71	0.72	0.85
Q18	545.5	0.73	0.71	0.85
Q19	538.9	0.87	0.87	0.83
Q20	497.8	0.76	0.71	0.82
Q21	526.1	0.68	0.63	0.83
Q22	498.1	0.82	0.84	0.82

The rightmost column of the table presents an index of discrimination for each item, calculated as the item-measure correlation coefficient. The values in this column are all relatively high (> 0.7), indicating that each item is discriminating well between respondents who had more positive versus more negative perceptions of schools' facilitation of parent involvement.

While Item Q1 ("Over the past year, early intervention services helped me and/or my family participate in typical activities for children and families in my community") displays a less than ideal level of fit, it nevertheless has a strong discrimination index, which provides evidence that it is a useful item. Therefore, this item appears to be measuring the intended construct relatively well, but is not a very good fit for the Rasch framework, which employs specific assumptions concerning the properties of the items.

SECTION 7

RESULTS OF THE FOUR ITEMS PERTAINING TO THE FAMILY'S EXPERIENCE IN EARLY INTERVENTION

The survey contained four items that were not part of the IFS, but that addressed family's experiences with the early intervention services they received. These items were:

1. What I say about my child and family is understood and respected.
2. The people who work with my child and family answer our questions.
3. I can easily get in touch with my service coordinator.
4. The services provided to my child and family help reach the outcomes/goals that are important to my family.

Table 7.1 displays the percentage of families reporting: (a) strongly or very strongly agreeing with each of the four items, and (b) any category of agree for each of the four items. Across the four items, the percentage of families strongly or very strongly agreeing exceeded 70%, and the percentage of families agreeing in any category was above 93%. The percentage of respondents in each of the possible response categories for each item is displayed in Appendix A.

Table 7.1. Percent of Families Expressing Agreement with Items Pertaining to Experiences with Early Interventions

Item	% Strongly/ Very strongly agree	% Agree in any category
What I say about my child and family is understood and respected.	71%	96%
The people who work with my child and family answer our questions.	75%	96%
I can easily get in touch with my service coordinator.	71%	93%
The services provided to my child and family help reach the outcomes/goals that are important to my family.	72%	95%

SECTION 8

CALIBRATION METHODOLOGY FOR THE IFS

The Rasch calibrations of the IFS were conducted using the Winsteps software program. All items were fit using the Rating Scale Model (Wright & Masters, 1982). The metric of the current calibration was set by fixing the parameters of all items to those obtained in the previous year's analysis. Note that previous calibrations fixed the parameters for 18 of the 22 items to calibrated values obtained by Dr. William Fisher, Consultant to NCSEAM, for a large dataset of five states. Four new items were added to the IFS scale (Items 6, 10, 16, and 21), and the parameters of these four items were estimated during an initial calibration of the updated IFS scale in the 2012 equating study. The parameters of the IFS items for this year's analysis were fixed to those established in the 2012 equating study. The mean and logit scale of the current calibration were also set equal to those generated in the larger analysis on five states conducted by Dr. Fisher. These equating procedures were conducted so that the scale measures obtained in the current calibration have equivalent meanings across multiple years and to those of other states' data calibrated by Dr. Fisher.

Based on the analysis of the current data and on the results of Dr. Fisher's combined multi-state analysis, it was decided to combine the response categories "very strongly disagree" and "strongly disagree" into a single category. The rationale for combining the two categories was based on two factors: (a) low response rates (i.e., < 5%) in these two categories making their corresponding threshold parameter estimates relatively unstable, and (b) the two category

threshold estimates were not far enough apart to indicate that the two categories served to meaningfully distinguish between individuals having substantially different levels of the trait being measured. As a result, the final analysis was based on five-category response structure for each item. The control file used in the current analysis is given in Appendix B. The pertinent output related to the Rasch analysis of the IFS is given in Appendix C.

REFERENCES

- Agresti, A. (1996). *An introduction to categorical data analysis*. New York: Wiley.
- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1999). *Standards for educational and psychological testing*. Washington, DC: APA.
- Bond, T. G., Fox, C. M. (2001). *Applying the Rasch model: Fundamental measurement in the human sciences*. Mahwah, NJ: Erlbaum.
- Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. Fort Worth: Harcourt Brace Jovanovich.
- Fischer, G. H., & Molenaar, I. W. (Eds.). (1995). *Rasch models: Foundations, recent developments, and applications*. New York: Springer-Verlag.
- Lord, F. M. (1980). *Applications of item response theory to practical testing problems*. Hillsdale, NJ: Lawrence Erlbaum.
- Osterlind, S. J. (2006). *Modern Measurement: Theory, principles, and applications of mental appraisal*. Upper Saddle River, NJ: Pearson.
- Penfield, R. D. (2003). A method of constructing asymmetric confidence intervals for the mean of a rating scale item. *Psychological Methods*, 8, 149-163.
- Rasch, G. (1960). *Probabilistic models for some intelligence and attainment tests*. Copenhagen, Denmark: Danmarks Paedagogiske Institut.
- Traub, R. (1994). *Reliability for the social sciences*. Thousand Oaks: Sage.
- Wilson, E. B. (1927). Probable inference, the law of succession, and statistical inference. *Journal of the American Statistical Association*, 22, 209-212.

Wright, B. D., & Masters, G. N. (1982). Rating scale analysis. Chicago: MESA Press.

Appendix A: Item Response Frequencies for the Items of the Survey

...participate in typical activities for children and families in my community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	44	2.4	2.5	2.5
	Strongly disagree	27	1.5	1.5	4.0
	Disagree	168	9.3	9.5	13.5
	Agree	526	29.2	29.7	43.2
	Strongly agree	243	13.5	13.7	57.0
	Very strongly agree	296	16.5	16.7	73.7
	Does not apply	465	25.8	26.3	100.0
	Total	1769	98.3	100.0	
Missing	System	30	1.7		
Total		1799	100.0		

...know about services in my community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	50	2.8	2.8	2.8
	Strongly disagree	25	1.4	1.4	4.2
	Disagree	127	7.1	7.2	11.4
	Agree	639	35.5	36.0	47.4
	Strongly agree	346	19.2	19.5	66.9
	Very strongly agree	416	23.1	23.4	90.3
	Does not apply	172	9.6	9.7	100.0
	Total	1775	98.7	100.0	
Missing	System	24	1.3		
Total		1799	100.0		

...improve my family's quality of life.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	35	1.9	2.0	2.0
	Strongly disagree	18	1.0	1.0	3.0
	Disagree	67	3.7	3.8	6.8
	Agree	597	33.2	33.7	40.4
	Strongly agree	413	23.0	23.3	63.7
	Very strongly agree	510	28.3	28.7	92.4
	Does not apply	134	7.4	7.6	100.0
	Total	1774	98.6	100.0	
Missing	System	25	1.4		
Total		1799	100.0		

...know where to go for support to meet my CHILD's needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	37	2.1	2.1	2.1
	Strongly disagree	17	.9	1.0	3.0
	Disagree	102	5.7	5.7	8.7
	Agree	559	31.1	31.3	40.1
	Strongly agree	418	23.2	23.4	63.5
	Very strongly agree	559	31.1	31.3	94.8
	Does not apply	92	5.1	5.2	100.0
	Total	1784	99.2	100.0	
Missing	System	15	.8		
Total		1799	100.0		

...know where to go for support to meet my FAMILY's needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	40	2.2	2.3	2.3
	Strongly disagree	17	.9	1.0	3.2
	Disagree	146	8.1	8.2	11.4
	Agree	583	32.4	32.8	44.3
	Strongly agree	333	18.5	18.8	63.0
	Very strongly agree	407	22.6	22.9	86.0
	Does not apply	249	13.8	14.0	100.0
	Total	1775	98.7	100.0	
Missing	System	24	1.3		
Total		1799	100.0		

...feel that I can handle the challenges of parenting my child with his/her needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	37	2.1	2.1	2.1
	Strongly disagree	17	.9	.9	3.0
	Disagree	40	2.2	2.2	5.2
	Agree	515	28.6	28.7	34.0
	Strongly agree	455	25.3	25.4	59.4
	Very strongly agree	642	35.7	35.8	95.2
	Does not apply	86	4.8	4.8	100.0
	Total	1792	99.6	100.0	
Missing	System	7	.4		
Total		1799	100.0		

...feel more confident in my skills as a parent.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	32	1.8	1.8	1.8
	Strongly disagree	23	1.3	1.3	3.1
	Disagree	56	3.1	3.1	6.2
	Agree	527	29.3	29.4	35.6
	Strongly agree	464	25.8	25.9	61.5
	Very strongly agree	589	32.7	32.9	94.4
	Does not apply	101	5.6	5.6	100.0
	Total	1792	99.6	100.0	
Missing	System	7	.4		
Total		1799	100.0		

...keep up friendships for my child and family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	36	2.0	2.0	2.0
	Strongly disagree	22	1.2	1.2	3.3
	Disagree	160	8.9	9.0	12.3
	Agree	464	25.8	26.1	38.4
	Strongly agree	262	14.6	14.8	53.2
	Very strongly agree	318	17.7	17.9	71.1
	Does not apply	513	28.5	28.9	100.0
	Total	1775	98.7	100.0	
Missing	System	24	1.3		
Total		1799	100.0		

...find information I need.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	41	2.3	2.3	2.3
	Strongly disagree	15	.8	.8	3.1
	Disagree	89	4.9	5.0	8.1
	Agree	658	36.6	36.8	44.9
	Strongly agree	400	22.2	22.3	67.2
	Very strongly agree	503	28.0	28.1	95.3
	Does not apply	84	4.7	4.7	100.0
	Total	1790	99.5	100.0	
Missing	System	9	.5		
Total		1799	100.0		

...know how to make changes in family routines that will benefit my child.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	41	2.3	2.3	2.3
	Strongly disagree	17	.9	1.0	3.2
	Disagree	64	3.6	3.6	6.8
	Agree	519	28.8	29.0	35.8
	Strongly agree	454	25.2	25.4	61.2
	Very strongly agree	566	31.5	31.6	92.8
	Does not apply	128	7.1	7.2	100.0
	Total	1789	99.4	100.0	
Missing	System	10	.6		
Total		1799	100.0		

...figure out solutions to problems as they come up.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	38	2.1	2.1	2.1
	Strongly disagree	18	1.0	1.0	3.1
	Disagree	66	3.7	3.7	6.8
	Agree	553	30.7	31.0	37.9
	Strongly agree	425	23.6	23.8	61.7
	Very strongly agree	551	30.6	30.9	92.6
	Does not apply	131	7.3	7.4	100.0
	Total	1782	99.1	100.0	
Missing	System	17	.9		
Total		1799	100.0		

...feel that I can get the services and supports that my child and family need.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	45	2.5	2.5	2.5
	Strongly disagree	20	1.1	1.1	3.6
	Disagree	60	3.3	3.4	7.0
	Agree	543	30.2	30.4	37.4
	Strongly agree	475	26.4	26.6	64.0
	Very strongly agree	603	33.5	33.8	97.8
	Does not apply	39	2.2	2.2	100.0
	Total	1785	99.2	100.0	
Missing	System	14	.8		
Total		1799	100.0		

...understand how the Early intervention system works.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	37	2.1	2.1	2.1
	Strongly disagree	18	1.0	1.0	3.1
	Disagree	42	2.3	2.3	5.4
	Agree	580	32.2	32.3	37.7
	Strongly agree	446	24.8	24.9	62.6
	Very strongly agree	658	36.6	36.7	99.3
	Does not apply	13	.7	.7	100.0
	Total	1794	99.7	100.0	
Missing	System	5	.3		
Total		1799	100.0		

...be able to evaluate how much progress my child is making.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	44	2.4	2.4	2.4
	Strongly disagree	9	.5	.5	3.0
	Disagree	49	2.7	2.7	5.7
	Agree	494	27.5	27.5	33.2
	Strongly agree	475	26.4	26.4	59.6
	Very strongly agree	709	39.4	39.5	99.1
	Does not apply	16	.9	.9	100.0
	Total	1796	99.8	100.0	
Missing	System	3	.2		
Total		1799	100.0		

...feel that my child will be accepted and welcomed in the community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	37	2.1	2.1	2.1
	Strongly disagree	12	.7	.7	2.7
	Disagree	46	2.6	2.6	5.3
	Agree	465	25.8	26.0	31.3
	Strongly agree	353	19.6	19.7	51.0
	Very strongly agree	604	33.6	33.7	84.7
	Does not apply	274	15.2	15.3	100.0
	Total	1791	99.6	100.0	
Missing	System	8	.4		
Total		1799	100.0		

...feel more confident in finding ways to meet my child's needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	40	2.2	2.2	2.2
	Strongly disagree	17	.9	.9	3.2
	Disagree	54	3.0	3.0	6.2
	Agree	477	26.5	26.6	32.8
	Strongly agree	504	28.0	28.1	60.8
	Very strongly agree	630	35.0	35.1	95.9
	Does not apply	73	4.1	4.1	100.0
	Total	1795	99.8	100.0	
Missing	System	4	.2		
Total		1799	100.0		

...communicate more effectively with the people who work with my child and family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	37	2.1	2.1	2.1
	Strongly disagree	14	.8	.8	2.8
	Disagree	54	3.0	3.0	5.9
	Agree	512	28.5	28.5	34.4
	Strongly agree	433	24.1	24.1	58.5
	Very strongly agree	554	30.8	30.9	89.4
	Does not apply	190	10.6	10.6	100.0
	Total	1794	99.7	100.0	
Missing	System	5	.3		
Total		1799	100.0		

...understand the roles of the people who work with my child and family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	39	2.2	2.2	2.2
	Strongly disagree	10	.6	.6	2.7
	Disagree	43	2.4	2.4	5.1
	Agree	544	30.2	30.4	35.5
	Strongly agree	434	24.1	24.2	59.7
	Very strongly agree	579	32.2	32.3	92.0
	Does not apply	143	7.9	8.0	100.0
	Total	1792	99.6	100.0	
Missing	System	7	.4		
Total		1799	100.0		

...know about my child's and family's rights concerning Early Intervention services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	45	2.5	2.5	2.5
	Strongly disagree	10	.6	.6	3.1
	Disagree	42	2.3	2.3	5.4
	Agree	555	30.9	31.0	36.4
	Strongly agree	421	23.4	23.5	59.9
	Very strongly agree	692	38.5	38.6	98.5
	Does not apply	27	1.5	1.5	100.0
	Total	1792	99.6	100.0	
Missing	System	7	.4		
Total		1799	100.0		

...do things with and for my child that are good for my child's development.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	40	2.2	2.2	2.2
	Strongly disagree	11	.6	.6	2.8
	Disagree	22	1.2	1.2	4.1
	Agree	406	22.6	22.6	26.7
	Strongly agree	434	24.1	24.2	50.9
	Very strongly agree	854	47.5	47.6	98.4
	Does not apply	28	1.6	1.6	100.0
	Total	1795	99.8	100.0	
Missing	System	4	.2		
Total		1799	100.0		

...understand my child's needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	39	2.2	2.2	2.2
	Strongly disagree	11	.6	.6	2.8
	Disagree	32	1.8	1.8	4.6
	Agree	449	25.0	25.1	29.7
	Strongly agree	462	25.7	25.8	55.5
	Very strongly agree	773	43.0	43.2	98.7
	Does not apply	24	1.3	1.3	100.0
	Total	1790	99.5	100.0	
Missing	System	9	.5		
Total		1799	100.0		

...feel that my efforts are helping my child.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	41	2.3	2.3	2.3
	Strongly disagree	10	.6	.6	2.9
	Disagree	23	1.3	1.3	4.1
	Agree	433	24.1	24.2	28.4
	Strongly agree	424	23.6	23.7	52.1
	Very strongly agree	838	46.6	46.9	99.0
	Does not apply	18	1.0	1.0	100.0
	Total	1787	99.3	100.0	
Missing	System	12	.7		
Total		1799	100.0		

What I say about my child and family is understood and respected.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	43	2.4	2.4	2.4
	Strongly disagree	13	.7	.7	3.1
	Disagree	21	1.2	1.2	4.3
	Agree	442	24.6	24.9	29.2
	Strongly agree	379	21.1	21.3	50.5
	Very strongly agree	869	48.3	48.9	99.4
	Does not apply	11	.6	.6	100.0
	Total	1778	98.8	100.0	
Missing	System	21	1.2		
Total		1799	100.0		

The people who work with my child and family answer our questions.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	43	2.4	2.4	2.4
	Strongly disagree	8	.4	.4	2.9
	Disagree	23	1.3	1.3	4.2
	Agree	360	20.0	20.2	24.4
	Strongly agree	379	21.1	21.3	45.7
	Very strongly agree	956	53.1	53.8	99.5
	Does not apply	9	.5	.5	100.0
	Total	1778	98.8	100.0	
Missing	System	21	1.2		
Total		1799	100.0		

I can easily get in touch with my service coordinator.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	45	2.5	2.5	2.5
	Strongly disagree	17	.9	1.0	3.5
	Disagree	56	3.1	3.2	6.7
	Agree	386	21.5	21.8	28.4
	Strongly agree	364	20.2	20.5	48.9
	Very strongly agree	888	49.4	50.1	99.0
	Does not apply	18	1.0	1.0	100.0
	Total	1774	98.6	100.0	
Missing	System	25	1.4		
Total		1799	100.0		

The services provided to my child and family help reach the outcomes/goals that are important to my family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very strongly disagree	47	2.6	2.6	2.6
	Strongly disagree	8	.4	.5	3.1
	Disagree	37	2.1	2.1	5.2
	Agree	392	21.8	22.1	27.3
	Strongly agree	388	21.6	21.8	49.1
	Very strongly agree	887	49.3	49.9	99.0
	Does not apply	17	.9	1.0	100.0
	Total	1776	98.7	100.0	
Missing	System	23	1.3		
Total		1799	100.0		

Appendix B: Control File for the Winsteps Rasch Analysis of the IFS

```
&INST ; THIS FILE MUST BE SAVED AS ASCII DOS TEXT BEFORE USE WITH WINSTEPS
Title="Virginia Impact all individuals, 2014 Data New Form Equated to Values of 2013
equating study"
ITEM1=2
DELIMITER=TAB ; specifies a tab as a delimiter
;FITI=7
;FITP=7
ITLEN=15 ;max length of item label
LCONV=0.0001
RCONV=0.001
RESCOR=2
NEWSCR="112345"
DATA=C:\Users\rdpenfie\Documents\Consulting\Virginia\2014\Family_Survey_CO_merged_ALL_Jul
y_23_2013_Cut_Data.txt ; Name of data file
NI=22
XWIDE = 1
CODES = "123456"
IAFILE=*
1 677.5
2 656.0
3 569.8
4 608.8
5 639.8
6 545.9
7 559.3
8 624.8
9 576.8
10 556.8
11 540.4
12 564.5
13 552.9
14 534.4
15 559.1
16 553.9
17 555.9
18 545.5
19 538.9
20 497.8
21 526.1
22 498.1
*
SAFILE=*
2 = -220.93
3 = -147.88
4 = 55.95
5 = 128.99
*
NAME1 = 1; Column containing person name
NAMLEN = 15; Length of person name
PRCOMP=S
UDECIM=2
UMEAN=568.3
USCALE=58.91
CSV=S
HLINES=N
IFILE=ItemStats.sav ;Name of file containing item-level statistics
PFILE=PersonStats.sav ;Name of file containing person-level statistics
REALSE=Y
TABLES=1110000001001100000000100011
&END
q1
q2
q3
q4
q5
q6
q7
q8
```

q9
q10
q11
q12
q13
q14
q15
q16
q17
q18
q19
q20
q21
q22
END NAMES

Appendix C: Selected Winsteps Output for the IFS

TABLE 1.2 Virginia Impact all individuals, 2014 ZOU904WS.TXT Jul 23 9:42 2013 of 2013
 eq
 INPUT: 1799 PERSON 22 ITEM REPORTED: 1798 PERSON 22 ITEM 5 CATS WINSTEPS 3.74.0

```

MEASURE      PERSON - MAP - ITEM
              <more>|<rare>
900 .##### +
      . |
      . |
      . T|
      .# |
      . |
      . |
      .# |
800 .# +
      .## |
      .# |
      .# |
      .### S|
      .# |
      .## |
700 .## +
      .## |
      .### | q1
      .## |
      .#### |T q2
      .#### | q5
      .#### M| q8
      .#### |S
600 .### + q4
      .#### |
      .## | q9
      .## |M q12 q15 q3 q7
      .### | q10 q13 q16 q17 q18 q6
      .# | q11 q14 q19
      .#### |S q21
500 .### S|
      .## + q20 q22
      .# |
      .# |T
      # |
      . |
      . |
      . |
400 . T+
      . |
      . |
      . |
300 . +
      . |
      . |
      . |
      . |
200 . +
      . |
      . |
  
```



```

      |
100      .# +
      <less>|<frequent>
EACH "#" IS 18. EACH "." IS 1 TO 17

```

TABLE 3.1 Virginia Impact all individuals, 2014 ZOU904WS.TXT Jul 23 9:42 2013of 2013
 eq
 INPUT: 1799 PERSON 22 ITEM REPORTED: 1798 PERSON 22 ITEM 5 CATS WINSTEPS 3.74.0

SUMMARY OF 1561 MEASURED (NON-EXTREME) PERSON

	TOTAL SCORE	COUNT	MEASURE	REAL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	76.0	20.2	630.76	25.73	.96	-.5	.98	-.4
S.D.	19.0	2.9	114.36	9.82	.73	2.1	.92	2.0
MAX.	109.0	22.0	897.28	105.59	9.90	9.9	9.90	9.9
MIN.	3.0	1.0	151.73	18.06	.00	-5.9	.00	-5.6
REAL RMSE	27.55	TRUE SD	110.99	SEPARATION	4.03	PERSON RELIABILITY	.94	
MODEL RMSE	24.85	TRUE SD	111.63	SEPARATION	4.49	PERSON RELIABILITY	.95	
S.E. OF PERSON MEAN = 2.90								

MAXIMUM EXTREME SCORE: 202 PERSON
 MINIMUM EXTREME SCORE: 35 PERSON
 LACKING RESPONSES: 1 PERSON
 VALID RESPONSES: 91.7% (APPROXIMATE)

SUMMARY OF 1798 MEASURED (EXTREME AND NON-EXTREME) PERSON

	TOTAL SCORE	COUNT	MEASURE	REAL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	77.7	20.2	656.65	36.61				
S.D.	21.6	2.9	168.93	29.36				
MAX.	110.0	22.0	969.89	109.47				
MIN.	3.0	1.0	79.68	18.06	.00	-5.9	.00	-5.6
REAL RMSE	46.93	TRUE SD	162.28	SEPARATION	3.46	PERSON RELIABILITY	.92	
MODEL RMSE	45.60	TRUE SD	162.66	SEPARATION	3.57	PERSON RELIABILITY	.93	
S.E. OF PERSON MEAN = 3.99								

PERSON RAW SCORE-TO-MEASURE CORRELATION = .85 (approximate due to missing data)
 CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .99 (approximate due to missing data)

SUMMARY OF 22 MEASURED (NON-EXTREME) ITEM

	TOTAL SCORE	COUNT	MEASURE	REAL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	6349.2	1650.4	567.41	2.67	.96	-2.6	1.02	-1.2
S.D.	770.2	138.3	45.74	.32	.31	5.6	.48	5.2
MAX.	7319.0	1781.0	677.50	3.82	1.94	9.9	2.84	9.9
MIN.	4408.0	1262.0	497.80	2.46	.62	-9.9	.59	-9.7
REAL RMSE	2.69	TRUE SD	45.66	SEPARATION	16.98	ITEM RELIABILITY	1.00	
MODEL RMSE	2.56	TRUE SD	45.67	SEPARATION	17.84	ITEM RELIABILITY	1.00	
S.E. OF ITEM MEAN = 9.98								

UMEAN=568.3000 USCALE=58.9100
 ITEM RAW SCORE-TO-MEASURE CORRELATION = -.86 (approximate due to missing data)
 31506 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE: 52399.10 with 29921 d.f. p=.0000
 Global Root-Mean-Square Residual (excluding extreme scores): .5938

TABLE 10.1 Virginia Impact all individuals, 2014 ZOU904WS.TXTm Jul 23 9:42 2013 of 2013 eq
 INPUT: 1799 PERSON 22 ITEM REPORTED: 1798 PERSON 22 ITEM 5 CATS WINSTEPS 3.74.0

PERSON: REAL SEP.: 3.46 REL.: .92 ... ITEM: REAL SEP.: 16.98 REL.: 1.00

ITEM STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	REAL MEASURE	REAL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	EXACT EXP.	MATCH OBS%	DISPLACE EXP%	ITEM	
1	4437	1304	677.50A	3.82	1.94	9.9	2.84	9.9	A .73	.84	44.7	58.4	-33.94	q1
2	5710	1603	656.00A	3.26	1.71	9.9	1.83	9.9	B .76	.84	43.3	58.0	-39.94	q2
3	6180	1640	569.80A	2.83	1.24	5.7	1.45	8.1	C .79	.82	59.5	60.7	10.06	q3
8	4408	1262	624.80A	3.06	1.16	3.5	1.17	3.2	D .82	.84	58.6	58.3	1.85	q8
4	6402	1692	608.80A	2.55	1.07	1.8	1.08	1.8	E .82	.83	61.0	59.8	-33.15	q4
5	5465	1526	639.80A	2.62	1.04	1.0	1.08	1.6	F .84	.84	59.7	58.9	-28.63	q5
13	6953	1781	552.90A	2.46	.93	-2.0	.98	-4	G .82	.81	67.6	61.0	1.36	q13
11	6302	1651	540.40A	2.59	.92	-2.0	.95	-1.0	H .85	.80	66.5	61.6	33.01	q11
10	6389	1661	556.80A	2.55	.89	-3.0	.92	-1.7	I .84	.81	69.0	61.0	10.19	q10
6	6709	1706	545.90A	2.52	.88	-3.4	.91	-1.8	J .82	.81	67.8	61.3	2.97	q6
15	5968	1517	559.10A	2.67	.85	-4.0	.90	-1.9	K .83	.82	69.1	61.5	-7.54	q15
9	6323	1706	576.80A	2.49	.86	-3.9	.88	-2.7	k .85	.82	64.1	60.4	14.60	q9
7	6549	1691	559.30A	2.51	.82	-5.1	.87	-2.7	j .84	.81	68.3	60.9	3.35	q7
19	6948	1765	538.90A	2.49	.87	-3.7	.87	-2.6	i .83	.80	71.0	61.6	9.78	q19
14	7078	1780	534.40A	2.49	.82	-5.0	.85	-3.0	h .83	.80	70.5	61.5	6.41	q14
22	7282	1769	498.10A	2.59	.82	-5.0	.84	-2.5	g .82	.77	70.4	63.5	16.81	q22
20	7319	1767	497.80A	2.59	.76	-6.7	.71	-4.9	f .82	.77	72.3	63.6	12.22	q20
18	6398	1649	545.50A	2.57	.73	-7.6	.71	-6.0	e .85	.80	70.8	61.5	16.00	q18
17	6197	1604	555.90A	2.60	.71	-8.2	.72	-5.9	d .85	.81	69.4	61.0	8.30	q17
12	6729	1746	564.50A	2.47	.71	-8.5	.70	-7.1	c .85	.81	71.6	60.6	-5.56	q12
21	7174	1766	526.10A	2.52	.68	-9.8	.63	-7.4	b .83	.79	74.5	62.1	-4.40	q21
16	6762	1722	553.90A	2.50	.62	-9.9	.59	-9.7	a .86	.81	74.3	60.9	-1.85	q16
MEAN	6349.2	1650.4	567.41	2.67	.96	-2.6	1.02	-1.2			65.6	60.8		
S.D.	770.2	138.3	45.74	.32	.31	5.6	.48	5.2			8.2	1.4		