

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: November 12, 2010

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
- 6 Results Pertaining to the Psychometric Properties of the Impact on Families Scale (IFS)
 - 5.1 Psychometric Properties of the IFS Measures
 - 5.2 Psychometric Properties of the IFS Items
- 7 Results Pertaining to the Family-Centered Services Scale (FCSS)

- 7.1 Results Pertaining to the Mean Measure on the FCSS
- 7.1 Psychometric Properties of the FCSS Measures and Items
- 8 Relationship between IFS and FCSS Measures
- 9 Calibration Methodology for the IFS
- 10 Calibration Methodology for the FCSS

References

Appendix A: Item Response Frequencies for the IFS

Appendix B: Item Response Frequencies for the FCSS

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

Appendix D: Control File for the Winsteps Rasch Analysis of the FCSS

Appendix E: 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 two rating scales developed and validated by the National Center for Special Education Accountability Monitoring (NCSEAM). 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. The 25-item Family-Centered Services Scale (FCSS) measures the quality of family-centered services provided to families.

Surveys were returned by 1,911 families receiving early intervention services. From these responses, a random sample of 1188 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 655.1. The standard deviation was 182.7, and the standard error of the sample mean was 5.3. The 95% confidence interval for the population mean was 644.7 – 665.6. 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 69.5%. The 95% confidence interval for the true population percentage is 66.8% – 72.1%. 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 66.8%. The 95% confidence interval for the true population percentage is 64.1% - 69.4%.

The percent of families who reported that early intervention services helped them *help their child develop and learn* (Indicator 4c) was 80.3%. The 95% confidence interval for the true population percentage is 77.9% - 82.5%.

3. Minimum Measurable Target Percentage

The observed percentage of families meeting the standards for Indicators 4a, 4b, and 4c exceeded target percentages previously established for the 2010 outcomes. Specifically, the observed percentages of 69.5%, 66.8%, and 80.3% for Indicators 4a, 4b, and 4c exceeded the corresponding target values of 67.7%, 63.5%, and 79.5%.

4. Statewide Mean Measure on the FCSS

The mean FCSS measure for families participating in the Virginia survey was 581.8 with a standard deviation of 113.6 and a standard error of the mean of 2.6. The 95% confidence interval for the mean was 576.7 – 586.9. Because there is no federal requirement to report families' perceptions of the quality of early intervention services, no standard was set for this scale. Further descriptive information is found in Section 7.

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 and 25 items for the FCSS. 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.

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 1911 families. A random sample of 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. The final representative sample consisted of 1188 cases.

3.1. Distribution of Race/Ethnicity in the Sample

The tables below display the distribution of race/ethnicity in the total survey sample of 1911 (Table 3.1), and the representative sample of 1188 (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	1126	58.9%
Black or African-American	234	12.2%
Hispanic or Latino	219	11.5%
Asian	81	4.2%
American Indian or Alaskan Native	4	0.2%
Pacific Islander or Hawaiian Native	6	0.3%
Two or more races	194	10.2%
Missing	47	2.5%
Total	1911	100%

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

Gender	N	Percentage
White	670	56.4%
Black or African-American	234	19.7%
Hispanic or Latino	145	12.2%
Asian	51	4.3%
American Indian or Alaskan Native	4	0.3%
Pacific Islander or Hawaiian Native	6	0.5%
Two or more races	78	6.6%
Total	1188	100%

Note. The distribution of race/ethnicity for the children receiving early intervention services in Virginia under Part C are: White = 56.0%, Black/African American = 20.7%, Hispanic = 12.2%, Asian = 4.3%, American Indian or Alaskan Native = 0.2%, Pacific Islander of Hawaiian Native = 0.2%, Other/Multiracial = 6.5%.

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	1163	60.9%
Female	701	36.7%
Missing	47	2.5%
Total	1911	100%

Table 3.4. Distribution of Child's Gender in the Representative Sample		
Gender	N	Percentage
Male	730	61.4%
Female	445	37.5%
Missing	13	1.1%
Total	1188	100%

SECTION 4

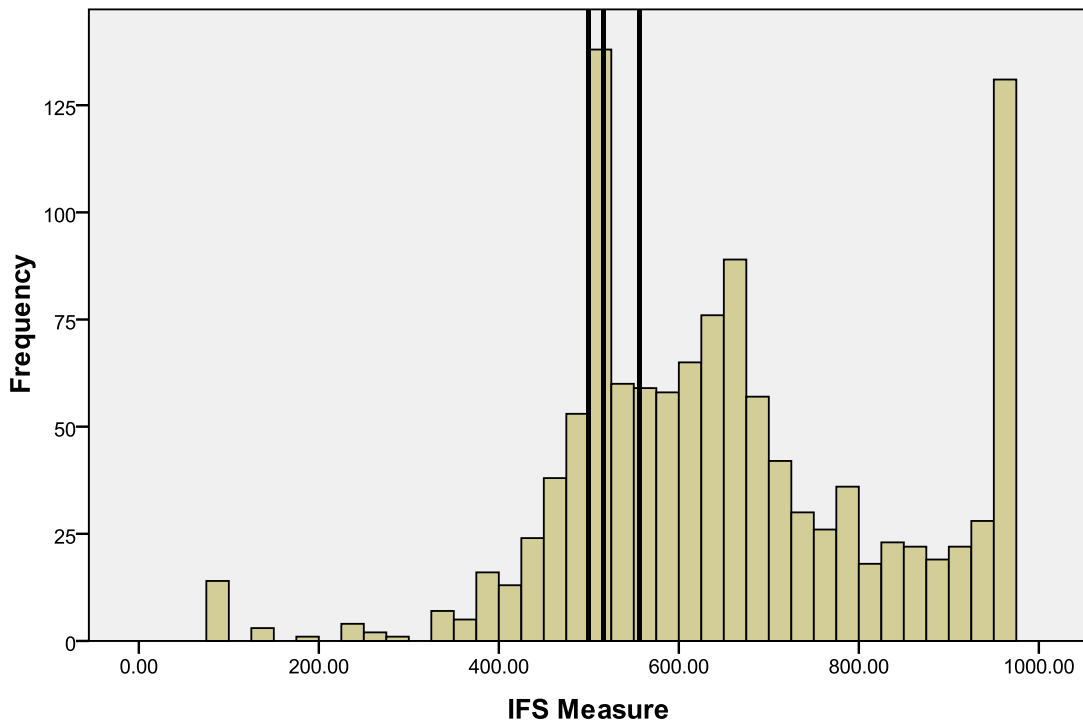
RESULTS PERTAINING TO INDICATOR #4

4.1 Distribution of IFS Measures

Of the 1188 respondents included in the representative sample, 1180 had valid responses to the IFS. The distribution of IFS measures for the 1180 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).

Figure 1. Distribution of IFS Measures



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
655.1	182.7	5.3	644.7 – 665.6

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 655.1 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.	31%	59%
656	Know about services in the community.	36%	70%
640	Know where to go for support to meet my family's needs.	44%	76%
625	Keep up friendships for my child and family.	46%	78%
609	Know where to go for support to meet my child's needs.	51%	83%
584	Be more effective in managing my child's behavior.	53%	88%
577	Find information I need.	52%	87%
570	Improve my family's quality of life.	52%	89%
565	Feel that I can get the services and supports that my child and family need.	59%	91%
562	Feel that my family will be accepted and welcomed in the community	56%	91%

559	Feel more confident in my skills as a parent.	60%	92%
559	Feel that my child will be accepted and welcomed in the community.	58%	91%
556	Communicate more effectively with the people who work with my child and family.	60%	92%
553	Understand how the Early Intervention system works.	59%	93%
546	Understand the roles of the people who work with my child and family.	60%	94%
540	Figure out solutions to problems as they come up.	58%	90%
539	Feel that I can handle the challenges of parenting a child with special needs.	58%	90%
539	Know about my child's and family's rights concerning Early Intervention services.	63%	94%
534	Be able to evaluate how much progress my child is making.	63%	93%
516	Understand my child's special needs.	67%	94%
498	Feel that my efforts are helping my child.	70%	96%
498	Do things with and for my child that are good for my child's development.	69%	96%

As seen in the table, over 94% of families agreed, with over 67% 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 90% of families agreed, with somewhat over 58% expressing strong or very strong agreement, that early intervention helped them be able to evaluate how much progress their child is making, feel that they can handle the challenges

of parenting a child with special needs, 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 88% and 92% of families agreed, with over 52% expressing strong or very strong agreement, that early intervention helped them feel that their family will be accepted and welcomed in the community, improve their family's quality of life, and be more effective in managing their child's behavior.

Approximately 75% of families agreed, with about 40% 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. Only 59% of families agreed, with 31% 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 $n = 1180$ 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. Recall that of the 1188 individuals included in the

representative sample, only 1180 were assigned an IFS measure (8 cases were not assigned an IFS measure due to missing data). 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 = 1188, of which 1180 had IFS Measure)			
	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	69.5% 820 of 1180 met standard	66.8% 788 of 1180 met standard	80.3% 948 of 1180 met standard
95% Confidence Interval	66.8% - 72.1%	64.1% – 69.4%	77.9% – 82.5%

4.4 Percentage Meeting Each of the Standards by Race/Ethnicity

Table 4.4. presents the percentage of respondents with 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 = 1122)	68.4% 95% CI: 65.6% - 71.1%	65.1% 95% CI: 62.3% - 67.8%	78.9% 95% CI: 76.4% - 81.2%
Black or African American (N = 232)	66.0% 95% CI: 59.7% - 71.8%	63.4% 95% CI: 57.0% - 69.3%	79.7% 95% CI: 74.1% - 84.4%
Hispanic or Latino (N = 212)	78.3% 95% CI: 72.3% - 83.3%	76.9% 95% CI: 70.8% - 82.1%	85.4% 95% CI: 80.0% - 89.5%
Asian (N = 81)	72.8% 95% CI: 62.2% - 81.3%	67.9% 95% CI: 57.1% - 77.1%	77.8% 95% CI: 67.6% - 85.5%
American Indian Or Alaskan Native (N = 4)	75.0% 95% CI: 30.1% - 95.4%	75.0% 95% CI: 30.1% - 95.4%	75.0% 95% CI: 30.1% - 95.4%

Pacific Islander or Hawaiian Native (N = 6)	83.3% 95% CI: 43.6% - 97.0%	83.3% 95% CI: 43.6% - 97.0%	100.0% 95% CI: ---
Two or More Races (N = 189)	66.1% 95% CI: 59.1% - 72.5%	65.6% 95% CI: 58.6% - 72.0%	77.3% 95% CI: 70.8% - 82.7%

4.5. Percentage Meeting Each of the Standards by Program Location

Table 4.5 presents the percentage of respondents with 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	34	67.6%	67.6%	79.4%
Alleghany Highlands	16	75.0%	75.0%	81.3%
Arlington	81	75.3%	72.8%	81.5%
Blue Ridge	39	82.1%	79.5%	84.6%
Central Virginia	45	57.8%	57.8%	77.8%
Chesapeake	47	72.3%	66.0%	80.9%
Chesterfield	75	76.0%	74.7%	81.3%
Crater District	21	47.6%	42.9%	52.4%
Cumberland Mountain	20	70.0%	70.0%	90.0%
Danville Pittsylvania	31	64.5%	61.3%	74.2%
DILENOWISCO	19	73.7%	73.7%	78.9%
Eastern Shore	28	64.3%	64.3%	82.1%
Fairfax - Falls Church	306	67.6%	63.4%	78.4%
Goochland - Powhatan	18	66.7%	66.7%	88.9%
Hampton Newport News	55	72.7%	67.3%	81.8%
Hanover	33	75.8%	72.7%	78.8%
Harrisonburg/Rockingham	29	69.0%	65.5%	82.8%
Heartland	21	52.4%	52.4%	85.7%
Henrico - Charles City - New Kent	81	67.9%	64.2%	80.2%
Highlands	25	76.0%	72.0%	92.0%
Loudoun	71	57.7%	54.9%	64.8%
Middle Peninsula Northern Neck	33	66.7%	63.6%	81.8%

Mount Rogers	32	75.0%	71.9%	81.3%
New River Valley	40	70.0%	67.5%	80.0%
Norfolk	62	79.0%	79.0%	85.5%
Piedmont	18	44.4%	44.4%	66.7%
Portsmouth	27	59.3%	55.6%	77.8%
Prince William	94	70.2%	69.1%	75.5%
Rappahannock Area	79	70.9%	64.6%	75.9%
Rappahannock Rapidan	36	83.3%	80.6%	91.7%
Richmond	58	79.3%	75.9%	86.2%
Roanoke Valley	58	67.2%	65.5%	79.3%
Rockbridge Area	22	68.2%	63.6%	81.8%
Shenandoah Valley	39	51.3%	46.2%	71.8%
Southside	20	70.0%	70.0%	75.0%
Valley	23	78.3%	78.3%	87.0%
Virginia Beach	77	64.9%	63.6%	76.6%
Western Tidewater	28	64.3%	64.3%	85.7%
Williamsburg*James City*York*Poquoson	39	76.9%	74.4%	84.6%

4.6. Meeting the Established Performance Targets

Table 4.6 presents the observed percentage of families meeting indicators 4a, 4b, and 4c, along with previously established target values for the 2010 outcomes. The obtained percentage of families meeting indicators 4a, 4b, and 4c (69.5%, 66.8%, and 80.3%, respectively) exceeded the targeted percentages for each of the three indicators (67.7%, 63.5%, and 79.5%, respectively).

Table 4.6. Comparing the Obtained Outcomes in 2010 to the State Targets for 2010

	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
2010 Target	67.7%	63.5%	79.5%
Obtained Outcomes in 2010	69.5%	66.8%	80.3%

SECTION 5

MEASUREMENT FRAMEWORK

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 the 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.
584	Be more effective in managing my child's behavior.
576	Make changes in family routines that will benefit my child with special needs.
576	Do activities that are good for my child even in times of stress .
570	Improve my family's quality of life.
565	Feel that I can get the services and supports that my child and family need.
563	Get the services that my child and family need.
562	Feel that my family will be accepted and welcomed in the community
559	Feel more confident in my skills as a parent.
559	Feel that my child will be accepted and welcomed in the community.
556	Communicate more effectively with the people who work with my child and family.
553	Understand how the Early Intervention system works.
546	Understand the roles of the people who work with my child and family.

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.
516	Understand my child's special 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 0.98, which is consistent with the value of .91 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. The results of the dimensionality analyses are presented in Winsteps output

displayed in Appendix E. 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
q26	677.5	1.95	2.10	0.78
q27	656.0	1.58	2.05	0.81
q28	569.8	1.20	1.22	0.83
q29	608.8	1.04	1.06	0.85
q30	639.8	1.20	1.24	0.85
q31	539.0	1.12	1.23	0.83
q32	559.3	0.93	0.90	0.84
q33	624.8	1.31	1.35	0.83
q34	576.8	0.92	0.96	0.86
q35	583.5	0.95	0.95	0.85

q36	540.4	0.91	0.88	0.86
q37	564.5	0.70	0.65	0.87
q38	552.9	0.93	0.94	0.84
q39	534.4	0.91	0.98	0.83
q40	559.1	0.94	0.96	0.84
q41	562.2	0.93	0.95	0.84
q42	555.9	0.77	0.72	0.85
q43	545.5	0.68	0.65	0.86
q44	538.9	1.02	0.99	0.81
q45	497.8	0.85	0.77	0.81
q46	516.1	0.95	0.93	0.81
q47	498.1	0.99	0.91	0.79

The rightmost column of the table presents an index of discrimination for each item, calculated as the item-total 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 q26 ("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 PERTAINING TO THE FAMILY-CENTERED SERVICES SCALE (FCSS)

7.1. Results Pertaining to the Mean Measure on the FCSS

Table 7.1, below, displays statewide results for the FCSS. The statewide mean was 581.8, with a standard deviation of 113.6 and a standard error of the sample mean equal to 2.6. The 95% confidence interval for the mean was 576.7 – 586.9.

Table 7.1. Properties of FCSS Measures for the representative sample			
Sample Mean	Standard Deviation	Standard Error of the Sample Mean	95% Confidence Interval for the Population Mean
581.8	113.6	2.6	576.7 – 586.9

A mean of 581.8 indicates that families typically had a .95 likelihood of agreeing with all items in the scale except the item with the highest calibration value (“Someone from the Early Intervention program went out into the community with me and my child to help get us involved in community activities and services”), for which there was a considerably smaller likelihood of overall agreement. Table 7.2, below, displays the percent of families that agreed, as well as the percent that expressed strong or very strong agreement, with each item in the FCSS.

Table 7.2. Percent of Families Expressing Agreement with FCSS 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
603.0	Someone from the Early Intervention program went out into the community with me and my child to help us get involved in community activities and services.	23%	38%
560.9	My family was given information about ways of connecting with other families for information and mutual support.	35%	63%
558.0	My family was given information about opportunities for my child to play with other children.	37%	62%
543.6	My family was asked whether other children in the family needed help in understanding the needs of the brother or sister with a disability.	43%	68%
530.8	My family was given information about where to go for help or support if I feel worried or stressed.	47%	77%
529.6	My family was given information about community programs that are open to all children.	47%	75%
528.5	I was offered help I needed, such as child care or transportation, to participate in the Individualized Family Service Plan (IFSP) meeting(s).	49%	77%
527.4	My family was given information about how to advocate for my child and my family.	47%	80%
516.5	Someone from the Early Intervention program asked if I was having any problems getting the services I needed.	52%	81%
509.6	My family was given information about what my options are if I disagree with a decision about my child's services.	54%	85%
505.9	My family was given information about the public school system's programs and services for children age three and older.	55%	85%
500.2	Someone from the Early Intervention program	59%	87%

	asked whether the services my family was receiving were meeting our needs.		
491.4	I was given information to help me prepare for my child's transition.	63%	88%
479.5	My service coordinator is available to speak with me on a regular basis.	66%	92%
478.8	The IFSP is keeping up with my family's changing needs.	67%	93%
474.7	I know who to call if I have problems with the services and supports my child and family are receiving.	68%	93%
470.6	My family's daily routines were considered when planning for my child's services.	71%	94%
467.0	My family was given information about activities that I could do with my child in our everyday lives.	72%	94%
465.4	The Early Intervention service provider(s) that work with my child do what they say they are going to do.	71%	94%
464.8	Written information I receive is written in an understandable way.	71%	95%
464.5	My service coordinator is knowledgeable and professional.	72%	95%
459.6	My family was given information about the rights of parents regarding Early Intervention services.	74%	95%
459.0	The Early Intervention service provider(s) that work with my child show a willingness to learn about the strengths and needs of my child and family.	74%	95%
458.0	I have felt part of the team when meeting to discuss my child.	75%	95%
452.7	The Early Intervention service provider(s) that work with my child are easy for me to talk to about my child and my family.	75%	96%

7.2. Psychometric Properties of the FCSS Measures and Items

An initial analysis and Rasch calibration of the FCSS was conducted to provide information concerning the reliability and validity of the FCSS measures. The response frequencies for each of the 25 items of the FCSS are provided in Appendix B. The reliability of the FCSS measures estimated within the Rasch

framework was .89, which was consistent with the value of .98 obtained using Cronbach's alpha. The properties of the items of the FCSS (calibrations, fit indices, and discrimination) are displayed in Table 7.3. The results suggest that overall the fit of the items to the Rasch model was adequate. The discrimination of the items was greater than 0.69 for all items, suggesting that all items are providing useful information concerning the primary target (i.e., all items are successfully discriminating between individuals with a high versus low level of endorsement of the quality of early intervention services).

Table 7.3. Calibration, Fit, and Discrimination of the FCSS Items				
Item	Location	Infit	Outfit	Discrimination
q1	528.5	1.67	1.94	0.69
q2	530.8	1.18	1.16	0.75
q3	474.7	1.01	1.12	0.70
q4	470.6	0.94	1.09	0.71
q5	458.0	0.77	1.03	0.71
q6	478.8	0.72	0.74	0.75
q7	467.0	0.89	0.93	0.71
q8	459.6	0.83	0.80	0.71
q9	529.6	1.17	1.13	0.75
q10	560.9	1.24	1.25	0.76
q11	505.9	1.23	1.25	0.72
q12	558.0	1.40	1.42	0.74
q13	527.4	0.92	0.93	0.78
q14	509.6	0.86	0.85	0.77
q15	516.5	1.04	1.02	0.75
q16	500.2	0.80	0.77	0.77
q17	603.0	1.74	2.42	0.70
q18	465.4	0.82	0.78	0.72
q19	452.7	0.74	0.64	0.72
q20	459.0	0.69	0.61	0.73
q21	479.5	0.85	0.97	0.73

q22	464.5	0.72	0.69	0.73
q23	464.8	0.84	0.83	0.72
q24	491.4	0.81	0.74	0.76
q25	543.6	1.47	1.49	0.73

It is important to recognize that the Rasch calibration of the FCSS was not equated to that of the IFS. As a result, valid comparisons across the two scales cannot be made. For example, the three standards for the IFS associated with Indicator #4 have no meaning with respect to the FCSS. Similarly, the item calibrations of the IFS and FCSS are not comparable. The Rasch calibration provided in this report is intended to provide an initial glimpse at the properties of the items and the relative locations of the items within the FCSS (not in relation to the IFS).

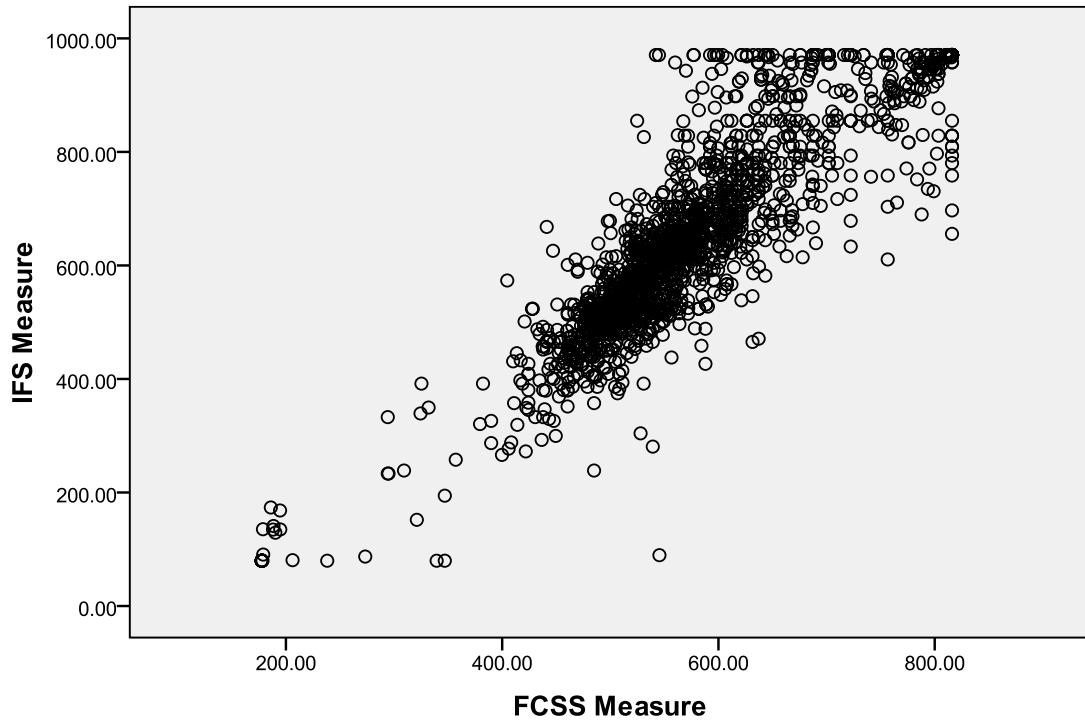
SECTION 8

THE RELATIONSHIP BETWEEN IFS AND FCSS MEASURES

The relationship between the IFS and FCSS measures is shown in the figure below. In general, the relationship follows a linear trend – as the FCSS measure increases, so does the IFS measure. That is, having a higher endorsement of the quality of family-centered services is associated with a higher level of positive impact on the family (but note that this does not necessarily mean that the relationship is causal).

Associations between two variables can be expressed mathematically as a correlation. A correlation of 0 indicates no relationship between the variables; a correlation of 1 indicates a perfect relationship in the positive direction. The correlation between the IFS and FCSS measures is .90. The high positive correlation is also evident from the scatterplot below, in which pairs of measures from each respondent, when plotted on the graph, create a grouping of points around a diagonal line moving from the lower left to the upper right.

Figure 2. Scatterplot of IFS and FCSS Measures



SECTION 9

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 21 of the 22 items to calibrated values obtained by Dr. William Fisher, Consultant to NCSEAM, for a large dataset of five states. 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 C. The pertinent output related to the Rasch analysis of the IFS is given in Appendix E.

SECTION 10

CALIBRATION METHODOLOGY FOR THE FCSS

The Rasch calibrations of the FCSS were conducted using the Winsteps software program. All items were fit using the Rating Scale Model (Wright & Masters, 1982). The metric of the calibration was set by establishing a center of the scale (i.e., mean of item location estimates) equal to 500, and by setting one logit equal to 50 scale units.

Based on the analysis of the current data, and 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 D.

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 IFS

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	108	5.7	7.4	7.4
	Strongly Disagree	44	2.3	3.0	10.5
	Disagree	429	22.4	29.5	40.0
	Agree	412	21.6	28.4	68.4
	Strongly Agree	164	8.6	11.3	79.7
	Very Strongly Agree	295	15.4	20.3	100.0
	Total	1452	76.0	100.0	
Missing	System	459	24.0		
Total		1911	100.0		

Know about services in the community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	93	4.9	5.8	5.8
	Strongly Disagree	46	2.4	2.9	8.7
	Disagree	323	16.9	20.1	28.8
	Agree	534	27.9	33.3	62.0
	Strongly Agree	213	11.1	13.3	75.3
	Very Strongly Agree	397	20.8	24.7	100.0
	Total	1606	84.0	100.0	
Missing	System	305	16.0		
Total		1911	100.0		

Improve my family's quality of life.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	57	3.0	3.4	3.4
	Strongly Disagree	16	.8	.9	4.3
	Disagree	114	6.0	6.7	11.0
	Agree	610	31.9	36.0	47.1
	Strongly Agree	350	18.3	20.7	67.7
	Very Strongly Agree	546	28.6	32.3	100.0
	Total	1693	88.6	100.0	
Missing	System	218	11.4		
Total		1911	100.0		

Know where to go for support to meet my child's needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	64	3.3	3.8	3.8
	Strongly Disagree	25	1.3	1.5	5.3
	Disagree	197	10.3	11.7	17.0
	Agree	556	29.1	33.1	50.1
	Strongly Agree	314	16.4	18.7	68.9
	Very Strongly Agree	523	27.4	31.1	100.0
	Total	1679	87.9	100.0	
Missing	System	232	12.1		
Total		1911	100.0		

Know where to go for support to meet my family's needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	67	3.5	4.3	4.3
	Strongly Disagree	32	1.7	2.1	6.4
	Disagree	275	14.4	17.7	24.0
	Agree	500	26.2	32.1	56.2
	Strongly Agree	253	13.2	16.3	72.4
	Very Strongly Agree	429	22.4	27.6	100.0
	Total	1556	81.4	100.0	
Missing	System	355	18.6		
Total		1911	100.0		

Feel that I can handle the challenges of parenting a child with special needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	49	2.6	3.0	3.0
	Strongly Disagree	12	.6	.7	3.8
	Disagree	97	5.1	6.0	9.7
	Agree	525	27.5	32.3	42.0
	Strongly Agree	333	17.4	20.5	62.5
	Very Strongly Agree	609	31.9	37.5	100.0
	Total	1625	85.0	100.0	
Missing	System	286	15.0		
Total		1911	100.0		

Feel more confident in my skills as a parent.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	39	2.0	2.3	2.3
	Strongly Disagree	12	.6	.7	3.0
	Disagree	84	4.4	4.9	7.9
	Agree	558	29.2	32.7	40.6
	Strongly Agree	369	19.3	21.6	62.3
	Very Strongly Agree	644	33.7	37.7	100.0
	Total	1706	89.3	100.0	
Missing	System	205	10.7		
Total		1911	100.0		

Keep up friendships for my child and family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	55	2.9	3.8	3.8
	Strongly Disagree	24	1.3	1.7	5.5
	Disagree	255	13.3	17.6	23.1
	Agree	448	23.4	30.9	54.0
	Strongly Agree	249	13.0	17.2	71.2
	Very Strongly Agree	418	21.9	28.8	100.0
	Total	1449	75.8	100.0	
Missing	System	462	24.2		
Total		1911	100.0		

Find information I need.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	53	2.8	3.2	3.2
	Strongly Disagree	28	1.5	1.7	4.8
	Disagree	142	7.4	8.5	13.3
	Agree	585	30.6	34.9	48.2
	Strongly Agree	320	16.7	19.1	67.2
	Very Strongly Agree	550	28.8	32.8	100.0
	Total	1678	87.8	100.0	
Missing	System	233	12.2		
Total		1911	100.0		

Be more effective in managing my child's behavior.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	47	2.5	3.0	3.0
	Strongly Disagree	18	.9	1.2	4.2
	Disagree	116	6.1	7.4	11.6
	Agree	542	28.4	34.7	46.3
	Strongly Agree	320	16.7	20.5	66.8
	Very Strongly Agree	518	27.1	33.2	100.0
	Total	1561	81.7	100.0	
Missing	System	350	18.3		
Total		1911	100.0		

Figure out solutions to problems as they come up.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	43	2.3	2.6	2.6
	Strongly Disagree	18	.9	1.1	3.6
	Disagree	100	5.2	6.0	9.6
	Agree	557	29.1	33.2	42.7
	Strongly Agree	375	19.6	22.3	65.1
	Very Strongly Agree	587	30.7	34.9	100.0
	Total	1680	87.9	100.0	
Missing	System	231	12.1		
Total		1911	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	49	2.6	2.8	2.8
	Strongly Disagree	19	1.0	1.1	3.9
	Disagree	84	4.4	4.8	8.7
	Agree	561	29.4	32.0	40.7
	Strongly Agree	399	20.9	22.8	63.5
	Very Strongly Agree	640	33.5	36.5	100.0
	Total	1752	91.7	100.0	
Missing	System	159	8.3		
Total		1911	100.0		

Understand how the Early Intervention system works.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	38	2.0	2.1	2.1
	Strongly Disagree	13	.7	.7	2.8
	Disagree	80	4.2	4.4	7.3
	Agree	611	32.0	33.9	41.1
	Strongly Agree	355	18.6	19.7	60.8
	Very Strongly Agree	708	37.0	39.2	100.0
	Total	1805	94.5	100.0	
Missing	System	106	5.5		
Total		1911	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	44	2.3	2.4	2.4
	Strongly Disagree	14	.7	.8	3.2
	Disagree	81	4.2	4.5	7.7
	Agree	531	27.8	29.3	36.9
	Strongly Agree	415	21.7	22.9	59.8
	Very Strongly Agree	729	38.1	40.2	100.0
	Total	1814	94.9	100.0	
Missing	System	97	5.1		
Total		1911	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	35	1.8	2.2	2.2
	Strongly Disagree	11	.6	.7	2.9
	Disagree	99	5.2	6.2	9.1
	Agree	512	26.8	32.3	41.5
	Strongly Agree	339	17.7	21.4	62.8
	Very Strongly Agree	589	30.8	37.2	100.0
	Total	1585	82.9	100.0	
Missing	System	326	17.1		
Total		1911	100.0		

Feel that my family will be accepted and welcomed in the community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	35	1.8	2.3	2.3
	Strongly Disagree	11	.6	.7	3.0
	Disagree	101	5.3	6.6	9.6
	Agree	514	26.9	33.4	42.9
	Strongly Agree	322	16.8	20.9	63.9
	Very Strongly Agree	556	29.1	36.1	100.0
	Total	1539	80.5	100.0	
Missing	System	372	19.5		
Total		1911	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	32	1.7	2.0	2.0
	Strongly Disagree	15	.8	.9	2.9
	Disagree	88	4.6	5.4	8.3
	Agree	532	27.8	32.5	40.8
	Strongly Agree	349	18.3	21.3	62.1
	Very Strongly Agree	619	32.4	37.9	100.0
	Total	1635	85.6	100.0	
Missing	System	276	14.4		
Total		1911	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	29	1.5	1.7	1.7
	Strongly Disagree	13	.7	.8	2.4
	Disagree	61	3.2	3.6	6.0
	Agree	577	30.2	33.6	39.6
	Strongly Agree	359	18.8	20.9	60.5
	Very Strongly Agree	679	35.5	39.5	100.0
	Total	1718	89.9	100.0	
Missing	System	193	10.1		
Total		1911	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	30	1.6	1.7	1.7
	Strongly Disagree	13	.7	.7	2.4
	Disagree	62	3.2	3.5	5.9
	Agree	554	29.0	31.1	36.9
	Strongly Agree	355	18.6	19.9	56.8
	Very Strongly Agree	770	40.3	43.2	100.0
	Total	1784	93.4	100.0	
Missing	System	127	6.6		
Total		1911	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	34	1.8	1.9	1.9
	Strongly Disagree	7	.4	.4	2.3
	Disagree	34	1.8	1.9	4.2
	Agree	475	24.9	26.3	30.5
	Strongly Agree	409	21.4	22.7	53.2
	Very Strongly Agree	845	44.2	46.8	100.0
	Total	1804	94.4	100.0	
Missing	System	107	5.6		
Total		1911	100.0		

Understand my child's special needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	40	2.1	2.3	2.3
	Strongly Disagree	10	.5	.6	2.9
	Disagree	55	2.9	3.2	6.1
	Agree	473	24.8	27.3	33.4
	Strongly Agree	383	20.0	22.1	55.5
	Very Strongly Agree	771	40.3	44.5	100.0
	Total	1732	90.6	100.0	
Missing	System	179	9.4		
Total		1911	100.0		

Feel that my efforts are helping my child.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	34	1.8	1.9	1.9
	Strongly Disagree	10	.5	.6	2.4
	Disagree	42	2.2	2.3	4.7
	Agree	451	23.6	24.8	29.6
	Strongly Agree	380	19.9	20.9	50.5
	Very Strongly Agree	898	47.0	49.5	100.0
	Total	1815	95.0	100.0	
Missing	System	96	5.0		
Total		1911	100.0		

Appendix B: Item Response Frequencies for the FCSS

I was offered help I needed, such as child care or transportation, to participate in the Individualized Family Service Plan (IFSP) meeting(s).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	104	5.4	7.5	7.5
	Strongly Disagree	27	1.4	1.9	9.4
	Disagree	195	10.2	14.0	23.5
	Agree	388	20.3	28.0	51.4
	Strongly Agree	206	10.8	14.8	66.3
	Very Strongly Agree	468	24.5	33.7	100.0
	Total	1388	72.6	100.0	
Missing	System	523	27.4		
Total		1911	100.0		

My family was given information about where to go for help or support if I feel worried or stressed.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	87	4.6	5.4	5.4
	Strongly Disagree	35	1.8	2.2	7.6
	Disagree	257	13.4	15.9	23.5
	Agree	477	25.0	29.5	53.0
	Strongly Agree	285	14.9	17.6	70.7
	Very Strongly Agree	474	24.8	29.3	100.0
	Total	1615	84.5	100.0	
Missing	System	296	15.5		
Total		1911	100.0		

I know who to call if I have problems with the services and supports my child and family are receiving.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	45	2.4	2.4	2.4
	Strongly Disagree	19	1.0	1.0	3.5
	Disagree	63	3.3	3.4	6.9
	Agree	455	23.8	24.7	31.6
	Strongly Agree	402	21.0	21.8	53.4
	Very Strongly Agree	859	45.0	46.6	100.0
	Total	1843	96.4	100.0	
Missing	System	68	3.6		
Total		1911	100.0		

My family's daily routines were considered when planning for my child's services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	46	2.4	2.5	2.5
	Strongly Disagree	15	.8	.8	3.3
	Disagree	55	2.9	2.9	6.2
	Agree	435	22.8	23.3	29.5
	Strongly Agree	426	22.3	22.8	52.3
	Very Strongly Agree	892	46.7	47.7	100.0
	Total	1869	97.8	100.0	
Missing	System	42	2.2		
Total		1911	100.0		

I have felt part of the team when meeting to discuss my child.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	37	1.9	2.0	2.0
	Strongly Disagree	14	.7	.8	2.7
	Disagree	41	2.1	2.2	4.9
	Agree	367	19.2	19.7	24.6
	Strongly Agree	434	22.7	23.3	47.9
	Very Strongly Agree	972	50.9	52.1	100.0
	Total	1865	97.6	100.0	
Missing	System	46	2.4		
Total		1911	100.0		

The IFSP is keeping up with my family's changing needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	39	2.0	2.2	2.2
	Strongly Disagree	19	1.0	1.1	3.3
	Disagree	65	3.4	3.7	6.9
	Agree	461	24.1	26.0	32.9
	Strongly Agree	397	20.8	22.4	55.3
	Very Strongly Agree	794	41.5	44.7	100.0
	Total	1775	92.9	100.0	
Missing	System	136	7.1		
Total		1911	100.0		

My family was given information about activities that I could do with my child in our everyday lives.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	46	2.4	2.5	2.5
	Strongly Disagree	7	.4	.4	2.8
	Disagree	64	3.3	3.4	6.2
	Agree	411	21.5	21.9	28.2
	Strongly Agree	433	22.7	23.1	51.3
	Very Strongly Agree	913	47.8	48.7	100.0
	Total	1874	98.1	100.0	
Missing	System	37	1.9		
Total		1911	100.0		

My family was given information about the rights of parents regarding Early Intervention services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	38	2.0	2.0	2.0
	Strongly Disagree	9	.5	.5	2.5
	Disagree	39	2.0	2.1	4.6
	Agree	410	21.5	21.9	26.5
	Strongly Agree	406	21.2	21.7	48.2
	Very Strongly Agree	971	50.8	51.8	100.0
	Total	1873	98.0	100.0	
Missing	System	38	2.0		
Total		1911	100.0		

My family was given information about community programs that are open to all children.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	88	4.6	5.0	5.0
	Strongly Disagree	37	1.9	2.1	7.1
	Disagree	318	16.6	17.9	25.0
	Agree	488	25.5	27.5	52.5
	Strongly Agree	305	16.0	17.2	69.8
	Very Strongly Agree	536	28.0	30.2	100.0
	Total	1772	92.7	100.0	
Missing	System	139	7.3		
Total		1911	100.0		

My family was given information about ways of connecting with other families for information and mutual support.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	121	6.3	7.1	7.1
	Strongly Disagree	62	3.2	3.6	10.8
	Disagree	447	23.4	26.3	37.0
	Agree	469	24.5	27.6	64.6
	Strongly Agree	219	11.5	12.9	77.4
	Very Strongly Agree	384	20.1	22.6	100.0
	Total	1702	89.1	100.0	
Missing	System	209	10.9		
Total		1911	100.0		

My family was given information about the public school system's programs and services for children age three and older.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	60	3.1	3.9	3.9
	Strongly Disagree	21	1.1	1.4	5.2
	Disagree	146	7.6	9.4	14.6
	Agree	463	24.2	29.9	44.5
	Strongly Agree	274	14.3	17.7	62.2
	Very Strongly Agree	586	30.7	37.8	100.0
	Total	1550	81.1	100.0	
Missing	System	361	18.9		
Total		1911	100.0		

My family was given information about opportunities for my child to play with other children.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	120	6.3	7.4	7.4
	Strongly Disagree	63	3.3	3.9	11.3
	Disagree	440	23.0	27.1	38.4
	Agree	395	20.7	24.4	62.8
	Strongly Agree	209	10.9	12.9	75.7
	Very Strongly Agree	394	20.6	24.3	100.0
	Total	1621	84.8	100.0	
Missing	System	290	15.2		
Total		1911	100.0		

My family was given information about how to advocate for my child and my family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	67	3.5	4.0	4.0
	Strongly Disagree	48	2.5	2.8	6.8
	Disagree	224	11.7	13.3	20.1
	Agree	563	29.5	33.3	53.4
	Strongly Agree	301	15.8	17.8	71.2
	Very Strongly Agree	487	25.5	28.8	100.0
	Total	1690	88.4	100.0	
Missing	System	221	11.6		
Total		1911	100.0		

My family was given information about what my options are if I disagree with a decision about my child's services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	50	2.6	2.8	2.8
	Strongly Disagree	41	2.1	2.3	5.1
	Disagree	172	9.0	9.7	14.8
	Agree	545	28.5	30.7	45.6
	Strongly Agree	362	18.9	20.4	66.0
	Very Strongly Agree	603	31.6	34.0	100.0
	Total	1773	92.8	100.0	
Missing	System	138	7.2		
Total		1911	100.0		

Someone from the Early Intervention program asked if I was having any problems getting the services I needed.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	74	3.9	4.2	4.2
	Strongly Disagree	27	1.4	1.5	5.7
	Disagree	240	12.6	13.6	19.4
	Agree	508	26.6	28.9	48.2
	Strongly Agree	303	15.9	17.2	65.5
	Very Strongly Agree	608	31.8	34.5	100.0
	Total	1760	92.1	100.0	
Missing	System	151	7.9		
Total		1911	100.0		

Someone from the Early Intervention program asked whether the services my family was receiving were meeting our needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	62	3.2	3.4	3.4
	Strongly Disagree	27	1.4	1.5	4.9
	Disagree	156	8.2	8.5	13.4
	Agree	511	26.7	27.9	41.2
	Strongly Agree	367	19.2	20.0	61.2
	Very Strongly Agree	711	37.2	38.8	100.0
	Total	1834	96.0	100.0	
Missing	System	77	4.0		
Total		1911	100.0		

Someone from the Early Intervention program went out into the community with me and my child to help us get involved in community activities and services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	222	11.6	15.3	15.3
	Strongly Disagree	95	5.0	6.6	21.9
	Disagree	583	30.5	40.3	62.2
	Agree	209	10.9	14.4	76.6
	Strongly Agree	102	5.3	7.0	83.6
	Very Strongly Agree	237	12.4	16.4	100.0
	Total	1448	75.8	100.0	
Missing	System	463	24.2		
Total		1911	100.0		

The Early Intervention service provider(s) that work with my child do what they say they are going to do.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	49	2.6	2.6	2.6
	Strongly Disagree	13	.7	.7	3.3
	Disagree	48	2.5	2.6	5.9
	Agree	433	22.7	23.0	28.9
	Strongly Agree	367	19.2	19.5	48.4
	Very Strongly Agree	969	50.7	51.6	100.0
	Total	1879	98.3	100.0	
Missing	System	32	1.7		
Total		1911	100.0		

The Early Intervention service provider(s) that work with my child are easy for me to talk to about my child and my family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	39	2.0	2.1	2.1
	Strongly Disagree	10	.5	.5	2.6
	Disagree	32	1.7	1.7	4.3
	Agree	384	20.1	20.3	24.6
	Strongly Agree	373	19.5	19.7	44.3
	Very Strongly Agree	1052	55.0	55.7	100.0
	Total	1890	98.9	100.0	
Missing	System	21	1.1		
Total		1911	100.0		

The Early Intervention service provider(s) that work with my child show a willingness to learn about the strengths and needs of my child and family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	40	2.1	2.1	2.1
	Strongly Disagree	13	.7	.7	2.8
	Disagree	49	2.6	2.6	5.4
	Agree	388	20.3	20.6	26.0
	Strongly Agree	395	20.7	21.0	47.0
	Very Strongly Agree	999	52.3	53.0	100.0
	Total	1884	98.6	100.0	
Missing	System	27	1.4		
Total		1911	100.0		

My service coordinator is available to speak with me on a regular basis.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	50	2.6	2.7	2.7
	Strongly Disagree	19	1.0	1.0	3.7
	Disagree	75	3.9	4.0	7.7
	Agree	481	25.2	25.9	33.6
	Strongly Agree	381	19.9	20.5	54.1
	Very Strongly Agree	854	44.7	45.9	100.0
	Total	1860	97.3	100.0	
Missing	System	51	2.7		
Total		1911	100.0		

My service coordinator is knowledgeable and professional.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	46	2.4	2.5	2.5
	Strongly Disagree	14	.7	.7	3.2
	Disagree	34	1.8	1.8	5.0
	Agree	434	22.7	23.2	28.2
	Strongly Agree	389	20.4	20.8	49.0
	Very Strongly Agree	956	50.0	51.0	100.0
	Total	1873	98.0	100.0	
Missing	System	38	2.0		
Total		1911	100.0		

Written information I receive is written in an understandable way.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	36	1.9	1.9	1.9
	Strongly Disagree	10	.5	.5	2.4
	Disagree	46	2.4	2.4	4.9
	Agree	454	23.8	24.2	29.1
	Strongly Agree	388	20.3	20.7	49.7
	Very Strongly Agree	944	49.4	50.3	100.0
	Total	1878	98.3	100.0	
Missing	System	33	1.7		
Total		1911	100.0		

I was given information to help me prepare for my child's transition.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	47	2.5	3.0	3.0
	Strongly Disagree	20	1.0	1.3	4.2
	Disagree	123	6.4	7.7	12.0
	Agree	403	21.1	25.4	37.3
	Strongly Agree	311	16.3	19.6	56.9
	Very Strongly Agree	684	35.8	43.1	100.0
	Total	1588	83.1	100.0	
Missing	System	323	16.9		
Total		1911	100.0		

My family was asked whether other children in the family needed help in understanding the needs of the brother or sister with a disability.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	92	4.8	6.7	6.7
	Strongly Disagree	39	2.0	2.9	9.6
	Disagree	302	15.8	22.1	31.7
	Agree	349	18.3	25.6	57.3
	Strongly Agree	162	8.5	11.9	69.2
	Very Strongly Agree	421	22.0	30.8	100.0
	Total	1365	71.4	100.0	
Missing	System	546	28.6		
Total		1911	100.0		

Appendix C: 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, 2010 Data"
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\Valued Customer\Documents\Consulting\Virginia\2011\IFS\IFSDATA.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
6 539.0
7 559.3
8 624.8
9 576.8
10 583.5
11 540.4
12 564.5
13 552.9
14 534.4
15 559.1
16 562.2
17 555.9
18 545.5
19 538.9
20 497.8
21 516.1
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
q26
q27
q28
q29
q30
q31
q32
q33
q34
```

q35
q36
q37
q38
q39
q40
q41
q42
q43
q44
q45
q46
q47
END NAMES

Appendix D: Control File for the Winsteps Rasch Analysis of the FCSS

```
&INST ; THIS FILE MUST BE SAVED AS ASCII DOS TEXT BEFORE USE WITH WINSTEPS
Title="Virginia Family Centered Services all individuals: 2010 Data"
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\Valued Customer\Documents\Consulting\Virginia\2011\FCSS\FCSSData.TXT ; Name
of data file
NI=25
XWIDE = 1
CODES = "123456"
NAME1 = 1; Column containing person name
NAMLEN = 15; Length of person name
PRCOMP=S
UDECIM=2
UMEAN=500
USCALE=50
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
q23
q24
q25
END NAMES
```

Appendix E: Selected Winsteps Output for the IFS

TABLE 1.2 Virginia Impact all individuals, 2010 D ZOU218WS.TXT Nov 3 8:46 2010
 INPUT: 1911 PERSONS 22 ITEMS MEASURED: 1880 PERSONS 22 ITEMS 5 CATS 3.66.0

```

-----
PERSONS - MAP - ITEMS
<more>|<rare>
900 .##### +
    . |
    . |
    .# |
    . T|
    . |
800 . |
    .# |
    . |
    . |
    # |
    .# |
    .# S|
700 .# +
    .# |
    .## | q26
    .### |T q27
    .## | q30
    .## | q33
    .# |S q29
600 .# M+
    .## | q35
    .# |M q28 q34 q37
    .# | q32 q38 q40 q41 q42
    .## | q31 q36 q43 q44
    .### |S q39
    .### | q46
500 .## + q45 q47
    .# S|
    .# |T
    .# |
    . |
    . |
400 . |
    . |
    . |
    . T|
    . |
    . |
300 . |
    . |
    . |
    . |
200 . |
    . |
100 .# +
    <less>|<frequ>
EACH '#' IS 27.
  
```

TABLE 3.1 Virginia Impact all individuals, 2010 D ZOU218WS.TXT Nov 3 8:46 2010
 INPUT: 1911 PERSONS 22 ITEMS MEASURED: 1880 PERSONS 22 ITEMS 5 CATS 3.66.0

SUMMARY OF 1510 MEASURED (NON-EXTREME) PERSONS

	RAW SCORE	COUNT	MEASURE	REAL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	70.4	19.8	601.63	26.68	1.05	-.4	1.03	-.4
S.D.	22.0	4.2	119.37	11.00	.97	2.4	1.04	2.3
MAX.	109.0	22.0	898.14	105.59	9.73	9.9	9.90	9.9
MIN.	3.0	1.0	151.87	18.12	.00	-5.8	.00	-5.6
REAL RMSE	28.86	ADJ.SD	115.82	SEPARATION	4.01	PERSON RELIABILITY	.94	
MODEL RMSE	24.93	ADJ.SD	116.73	SEPARATION	4.68	PERSON RELIABILITY	.96	
S.E. OF PERSON MEAN = 3.07								

MAXIMUM EXTREME SCORE: 338 PERSONS
 MINIMUM EXTREME SCORE: 32 PERSONS
 LACKING RESPONSES: 31 PERSONS
 VALID RESPONSES: 90.1%

SUMMARY OF 1880 MEASURED (EXTREME AND NON-EXTREME) PERSONS

	RAW SCORE	COUNT	MEASURE	REAL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	73.4	19.5	654.99	42.77				
S.D.	25.5	4.6	184.60	33.97				
MAX.	110.0	22.0	970.72	115.46				
MIN.	1.0	1.0	79.80	18.12				
REAL RMSE	54.62	ADJ.SD	176.34	SEPARATION	3.23	PERSON RELIABILITY	.91	
MODEL RMSE	53.04	ADJ.SD	176.82	SEPARATION	3.33	PERSON RELIABILITY	.92	
S.E. OF PERSON MEAN = 4.26								

PERSON RAW SCORE-TO-MEASURE CORRELATION = .73 (approximate due to missing data)
 CRONBACH ALPHA (KR-20) PERSON RAW SCORE RELIABILITY = 1.00 (approximate due to missing data)

SUMMARY OF 22 MEASURED (NON-EXTREME) ITEMS

	RAW SCORE	COUNT	MEASURE	REAL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	6276.3	1666.7	568.23	2.73	1.04	-.1	1.06	.1
S.D.	780.1	108.4	46.35	.26	.28	4.9	.37	4.8
MAX.	7491.0	1815.0	677.50	3.68	1.95	9.9	2.10	9.9
MIN.	4377.0	1449.0	497.80	2.52	.68	-9.0	.65	-8.4
REAL RMSE	2.74	ADJ.SD	46.27	SEPARATION	16.87	ITEM RELIABILITY	1.00	
MODEL RMSE	2.60	ADJ.SD	46.28	SEPARATION	17.78	ITEM RELIABILITY	1.00	
S.E. OF ITEM MEAN = 10.11								

UMEAN=568.300 USCALE=58.910
 ITEM RAW SCORE-TO-MEASURE CORRELATION = -.92 (approximate due to missing data)
 29917 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE: 52932.24 with 28383 d.f. p=.0000

TABLE 3.2 Virginia Impact all individuals, 2010 D ZOU218WS.TXT Nov 3 8:46 2010
 INPUT: 1911 PERSONS 22 ITEMS MEASURED: 1880 PERSONS 22 ITEMS 5 CATS 3.66.0

SUMMARY OF CATEGORY STRUCTURE. Model="R"

CATEGORY	OBSERVED	OBSVD	SAMPLE	INFINIT	OUTFIT	STRUCTURE	CATEGORY		
LABEL	SCORE	COUNT	%	AVRGE	EXPECT	MNSQ	MNSQ	CALIBRATN	MEASURE
1	1	980	3	-186.1	-213.	1.63	1.68	NONE	-295.89
2	2	2919	10	-107.9	-105.	1.15	1.12	-220.93A	-185.38
3	3	11618	39	-24.81	-20.2	.89	.99	-147.88A	-45.97
4	4	7325	24	78.83	73.83	.78	.72	55.95A	93.44
5	5	7075	24	185.08	185.6	1.12	1.24	128.99A	(203.95)
MISSING		3303	10	2.47					

OBSERVED AVERAGE is mean of measures in category. It is not a parameter estimate.

CATEGORY	STRUCTURE	SCORE-TO-MEASURE	50% CUM.	COHERENCE	ESTIM	OBSERVED-EXPECTED		
LABEL	MEASURE	S.E.	AT CAT.	---ZONE---	PROBABLTY	M->C C->M	DISCR	RESIDUAL DIFFERENCE
1	NONE		-295.89	-INF	-247.18	69% 29%		.3%
2	-220.93A	2.46	-185.38	-247.18	-127.29	-233.39	49% 40%	.60
3	-147.88A	1.33	-45.97	-127.29	35.36	-137.30	70% 76%	.88
4	55.95A	.99	93.44	35.36	155.24	45.40	52% 65%	1.10
5	128.99A	1.14	(203.95)	155.24	+INF	141.45	82% 63%	1.00

M->C = Does Measure imply Category?
 C->M = Does Category imply Measure?

