

Analysis of the Virginia Family Survey Data Addressing  
Part C SPP/APR Indicator #4:  
Final Report

Report prepared for the  
University of Kentucky Research Foundation

Report prepared by: Randall D. Penfield

Date of Delivery: November 11, 2009

## 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 1,957 families receiving early intervention services. From these responses, a random sample of 1201 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 647.2. The standard deviation was 179.0, and the standard error of the sample mean was 5.2. The 95% confidence interval for the population mean was 637.0 – 657.5. 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 70.8%. The 95% confidence interval for the true population percentage is 68.1% – 73.3%. 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 67.3%. The 95% confidence interval for the true population percentage is 64.6% - 69.9%.

The percent of families who reported that early intervention services helped them *help their child develop and learn* (Indicator 4c) was 80.6%. The 95% confidence interval for the true population percentage is 78.2% - 82.8%.

### **3. Minimum Measurable Target Percentage**

The mean value of 647.2 exceeded the target value of 647.1 established three years prior in the 2007 report (i.e., 647.1 was the target mean value for the 2009 report). Similarly, the observed percentage of families meeting the standards for Indicators 4a, 4b and 4c were higher than the target percentages. Specifically, the observed percentages of 70.8%, 67.3% and 80.6% for Indicators 4a, 4b and 4c exceeded the target values of 66.9%, 62.7%, and 78.6%.

### **4. Statewide Mean Measure on the FCSS**

The mean FCSS measure for families participating in the Virginia survey was 575.1 with a standard deviation of 105.8 and a standard error of the mean of 2.4. The 95% confidence interval for the mean was 570.4 – 579.8. 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 1957 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 1201 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 1957 (Table 3.1), and the representative sample of 1201 (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.

| <b>Table 3.1. Distribution of Child's Race/Ethnicity in the Total Sample</b> |          |                   |
|--|----------|-------------------|
| <b>Gender</b>  | <b>N</b> | <b>Percentage</b> |
| White  | 1152     | 58.9%             |
| Black or African-American  | 245      | 12.5%             |
| Hispanic or Latino   | 253      | 12.9%             |
| Asian or Pacific Islander  | 90       | 4.6%              |
| American Indian or Alaskan Native  | 3        | 0.2%              |
| Multi-racial   | 172      | 8.8%              |
| Missing  | 42       | 2.1%              |
| Total  | 1957     | 100%              |

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

| <b>Gender</b>                     | <b>N</b> | <b>Percentage</b> |
|-----------------------------------|----------|-------------------|
| White                             | 670      | 55.8%             |
| Black or African-American         | 245      | 20.4%             |
| Hispanic or Latino                | 155      | 12.9%             |
| Asian or Pacific Islander         | 51       | 4.3%              |
| American Indian or Alaskan Native | 3        | 0.2%              |
| Multi-Racial                      | 77       | 6.4%              |
| Total                             | 1201     | 100%              |

Note. The distribution of race/ethnicity for the children receiving early intervention services in Virginia under Part C are: White = 55.6%, Black/African American = 20.8%, Hispanic = 12.9%, Asian/Pacific Islander = 4.2%, American Indian or Alaskan Native = 0.2%, Other/Multiracial = 6.3%.

### 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.

| <b>Table 3.3. Distribution of Child's Gender in the Total Sample</b> |          |                   |
|--|----------|-------------------|
| <b>Gender</b>  | <b>N</b> | <b>Percentage</b> |
| Male   | 1203     | 61.5%             |
| Female   | 721      | 36.8%             |
| Missing  | 33       | 1.7%              |
| Total  | 1957     | 100%              |

| <b>Table 3.4. Distribution of Child's Gender in the Representative Sample</b> |          |                   |
|---|----------|-------------------|
| <b>Gender</b>   | <b>N</b> | <b>Percentage</b> |
| Male  | 757      | 63.0%             |
| Female  | 439      | 36.6%             |
| Missing   | 5        | 0.4%              |
| Total   | 1201     | 100%              |

## SECTION 4

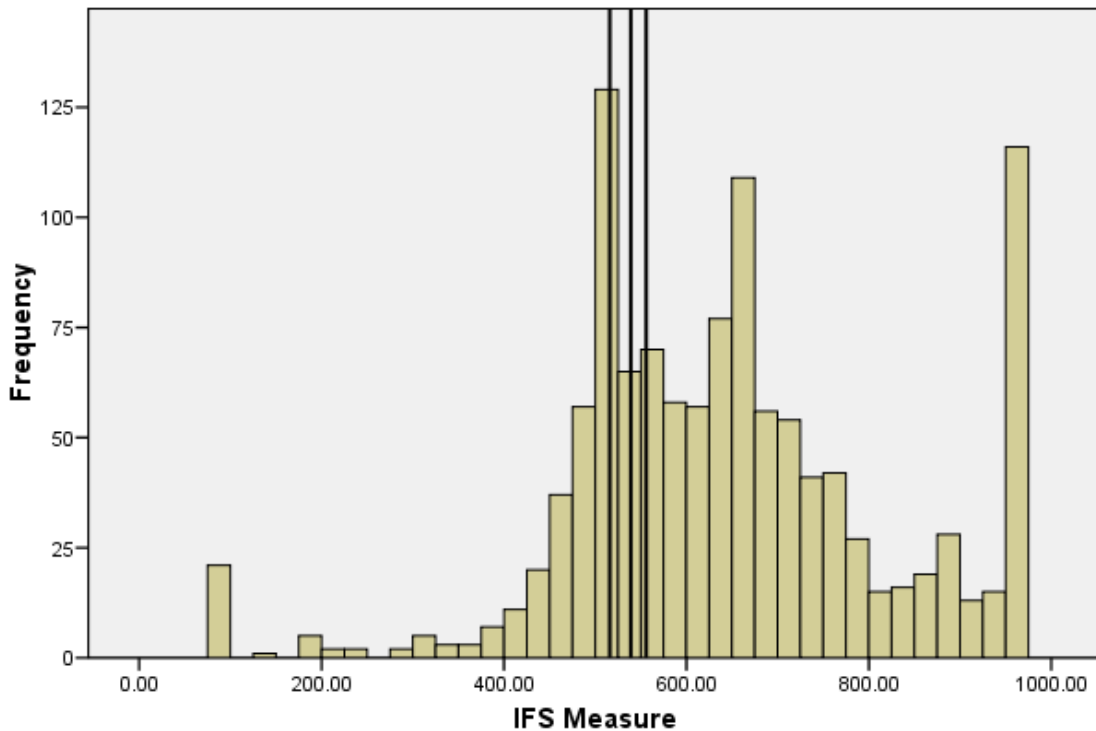
### RESULTS PERTAINING TO INDICATOR #4

#### 4.1 Distribution of IFS Measures

Of the 1201 respondents included in the representative sample, 1183 had valid responses to the IFS. The distribution of IFS measures for the 1183 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.

| <b>Table 4.1. Properties of IFS Measures for the Representative Sample</b> |                           |  |  |
|--|---------------------------|--|--|
| <b>Sample Mean</b>   | <b>Standard Deviation</b> | <b>Standard Error of the Sample Mean</b> | <b>95% Confidence Interval for the Population Mean</b> |
| 647.2  | 179.0                     | 5.2                                      | 637.0 – 657.5  |

#### 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 647.2 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.)

| <b>Table 4.2. Percent of Families Expressing Agreement with IFS Items</b> |   |  |                                |
|---|---|--|--------------------------------|
| <b>Item Calibration</b>   | <b>Item<br/><u>Stem</u>: Over the past year, Early Intervention services have helped me and/or my family:</b> | <b>% Strongly/ Very strongly agree</b> | <b>% Agree in any category</b> |
| 678   | Participate in typical activities for children and families in my community.                                  | 32%                                    | 60%                            |
| 656   | Know about services in the community.   | 38%                                    | 72%                            |
| 640   | Know where to go for support to meet my family's needs.   | 44%                                    | 77%                            |
| 625   | Keep up friendships for my child and family.  | 46%                                    | 76%                            |
| 609   | Know where to go for support to meet my child's needs.  | 48%                                    | 84%                            |
| 584   | Be more effective in managing my child's behavior.  | 54%                                    | 88%                            |
| 577   | Find information I need.  | 51%                                    | 87%                            |
| 570   | Improve my family's quality of life.  | 53%                                    | 88%                            |
| 565   | Feel that I can get the services and supports that my child and family need.                                  | 57%                                    | 91%                            |
| 562   | Feel that my family will be accepted and welcomed in the community  | 57%                                    | 90%                            |

|     |   |     |     |
|-----|---|-----|-----|
| 559 | Feel more confident in my skills as a parent.                                     | 58% | 91% |
| 559 | Feel that my child will be accepted and welcomed in the community.                | 59% | 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% | 94% |
| 546 | Understand the roles of the people who work with my child and family.             | 59% | 93% |
| 540 | Figure out solutions to problems as they come up.                                 | 55% | 90% |
| 539 | Feel that I can handle the challenges of parenting a child with special needs.    | 57% | 91% |
| 539 | Know about my child's and family's rights concerning Early Intervention services. | 62% | 93% |
| 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% | 95% |

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 55% 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 87% and 91% of families agreed, with over 50% 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 one-third 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 60% of families agreed, with 32% 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  $n = 1201$  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).

| <b>Table 4.3. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4<br/>(Using Representative Sample of n = 1201)</b> |   |  |  |
|--|---|--|--|
|  | <b>Indicator 4A<br/>Percent of families<br/>who report that early<br/>intervention<br/>services helped<br/>them know their<br/>rights</b> | <b>Indicator 4B<br/>Percent of families<br/>who report that early<br/>intervention<br/>services helped<br/>them effectively<br/>communicate their<br/>children's needs</b> | <b>Indicator 4C<br/>Percent of families<br/>who report that early<br/>intervention<br/>services helped<br/>them help their child<br/>develop and learn</b> |
| <b>Percentage</b>  | 70.8%   | 67.3%  | 80.6%  |
| <b>95%<br/>Confidence<br/>Interval</b>   | 68.1% - 73.3%   | 64.6% – 69.9%  | 78.2% – 82.8%  |

#### 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.

| <b>Table 4.4. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4%, by Race/Ethnicity</b> |   |  |  |
|--|---|--|--|
| <b>Race/Ethnicity</b>  | <b>Indicator 4A<br/>Percent of families who report that early intervention services helped them know their rights</b> | <b>Indicator 4B<br/>Percent of families who report that early intervention services helped them effectively communicate their children's needs</b> | <b>Indicator 4C<br/>Percent of families who report that early intervention services helped them help their child develop and learn</b> |
| White/Caucasian<br>(N = 1138)  | 68.3%<br>95% CI:<br>65.5% - 70.9%   | 65.1%<br>95% CI:<br>62.3% - 67.8%  | 79.4%<br>95% CI:<br>76.9% - 81.6%  |
| Black or African American<br>(N = 244)   | 68.4%<br>95% CI:<br>62.3% - 73.9%   | 64.3%<br>95% CI:<br>58.1% - 70.0%  | 80.3%<br>95% CI:<br>74.9% - 84.8%  |
| Hispanic or Latino<br>(N = 245)  | 79.6%<br>95% CI:<br>74.1% - 84.2%   | 75.1%<br>95% CI:<br>69.3% - 80.1%  | 89.8%<br>95% CI:<br>85.4% - 93.0%  |
| Asian or Pacific Islander<br>(N = 88)  | 72.7%<br>95% CI:<br>62.6% - 80.9%   | 72.7%<br>95% CI:<br>62.6% - 80.9%  | 83.0%<br>95% CI:<br>73.8% - 89.4%  |
| American Indian<br>(N = 3)   | 33.3%<br>95% CI:<br>6.1% - 79.2%  | 33.3%<br>95% CI:<br>6.1% - 79.2%   | 66.7%<br>95% CI:<br>20.8% - 93.9%  |

|                                |                                       |                                       |                                       |
|--------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Multiracial/Other<br>(N = 170) | 66.5%<br><br>95% CI:<br>59.1% - 73.2% | 62.4%<br><br>95% CI:<br>54.9% - 69.3% | 75.9%<br><br>95% CI:<br>68.9% - 81.7% |
|--------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|

#### 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.

| <b>Table 4.5. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4%, by Program Location</b> |     |              |              |              |
|--|-----|--------------|--------------|--------------|
| Program Location   | N   | Indicator 4A | Indicator 4B | Indicator 4C |
| Alexandria   | 24  | 66.7%        | 62.5%        | 75.0%        |
| Allegheny Highlands  | 10  | 70.0%        | 70.0%        | 90.0%        |
| Arlington  | 95  | 73.7%        | 72.6%        | 80.0%        |
| Blue Ridge   | 37  | 83.8%        | 78.4%        | 97.3%        |
| Central Virginia   | 38  | 60.5%        | 60.5%        | 73.7%        |
| Chesapeake   | 65  | 73.8%        | 69.2%        | 83.1%        |
| Chesterfield   | 76  | 71.1%        | 67.1%        | 77.6%        |
| Colonial   | 46  | 82.6%        | 82.6%        | 91.3%        |
| Crater   | 20  | 60.0%        | 60.0%        | 80.0%        |
| Cumberland Mountain  | 34  | 64.7%        | 61.8%        | 94.1%        |
| Danville-Pittsylvania  | 28  | 89.3%        | 89.3%        | 92.9%        |
| Dilenoisco   | 21  | 42.9%        | 28.6%        | 71.4%        |
| Eastern Shore  | 22  | 59.1%        | 59.1%        | 81.8%        |
| Fairfax  | 304 | 67.4%        | 62.8%        | 79.3%        |
| Goochland-Powhatan   | 21  | 61.9%        | 61.9%        | 85.7%        |
| Hampton-Newport News   | 59  | 72.9%        | 62.7%        | 83.1%        |
| Hanover  | 20  | 90.0%        | 85.0%        | 95.0%        |
| Harrisonburg-Rockingham  | 25  | 88.0%        | 80.0%        | 100.0%       |
| Heartland  | 30  | 66.7%        | 60.0%        | 83.3%        |
| Henrico  | 103 | 56.3%        | 53.4%        | 68.0%        |
| Highlands  | 16  | 68.8%        | 68.8%        | 87.5%        |
| Loudoun  | 50  | 74.0%        | 70.0%        | 84.0%        |
| Middle Peninsula   | 29  | 69.0%        | 69.0%        | 75.9%        |
| Mount Rogers   | 23  | 78.3%        | 73.9%        | 87.0%        |
| New River Valley   | 42  | 64.3%        | 64.3%        | 78.6%        |
| Norfolk  | 76  | 75.0%        | 72.4%        | 80.3%        |

|                      |     |       |       |       |
|----------------------|-----|-------|-------|-------|
| Piedmont             | 28  | 60.7% | 50.0% | 85.7% |
| Portsmouth           | 20  | 80.0% | 80.0% | 85.0% |
| Prince William       | 109 | 66.1% | 61.5% | 74.3% |
| Rappahannock         | 71  | 74.6% | 74.6% | 81.7% |
| Rappahannock-Rapidan | 33  | 72.7% | 72.7% | 81.8% |
| Richmond             | 46  | 71.7% | 65.2% | 78.3% |
| Roanoke Valley       | 80  | 68.8% | 67.5% | 77.5% |
| Rockbridge           | 30  | 83.3% | 83.3% | 96.7% |
| Shenandoah           | 23  | 65.2% | 60.9% | 73.9% |
| Southside            | 24  | 58.3% | 50.0% | 70.8% |
| Valley               | 23  | 52.2% | 52.2% | 65.2% |
| Virginia Beach       | 80  | 70.0% | 68.8% | 76.3% |
| Western Tidewater    | 39  | 61.5% | 59.0% | 76.9% |

#### 4.6. Meeting the Established Performance Targets

In the report dated 2007 (the initial report), targets for improved performance on the SPP indicators were established. The targets for 2009, along with the observed results, are displayed in Table 4.6. The obtained 2009 mean of 647.2 exceeded the target of 647.1, indicating that Virginia exceeded its targeted value. Similarly, the obtained percentage meeting indicators 4a, 4b and 4c (70.8%, 67.3% and 80.6%, respectively) exceeded the targeted percentages (66.9%, 62.7% and 78.6%, respectively).

**Table 4.6. Comparing the Obtained Outcomes in 2009 to the State Targets for 2009**

|                                  | <b>Target Mean</b> | <b>Target % for Indicator 4A<br/>Percent of families who report that early intervention services helped them know their rights</b> | <b>Target % for Indicator 4B<br/>Percent of families who report that early intervention services helped them effectively communicate their children's needs</b> | <b>Target % for Indicator 4C<br/>Percent of families who report that early intervention services helped them help their child develop and learn</b> |
|----------------------------------|--------------------|--|---|---|
| <b>2009 Target</b>               | 647.1              | 66.9%  | 62.7%   | 78.6%   |
| <b>Obtained Outcomes in 2009</b> | 647.2              | 70.8%  | 67.3%   | 80.6%   |

## 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.

| <b>Table 5.1. IFS Items in Calibration Order</b> |   |
|--|---|
| <b>Item Calibration</b>                          | <b>Item<br/><u>Stem</u>: Over the past year, Early Intervention services have helped me and/or my family:</b> |
| 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 measure<sup>1</sup> (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).<sup>2</sup> 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

---

<sup>1</sup> 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).

<sup>2</sup> 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 .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. 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).

| <b>Table 6.1. Calibration, Fit, and Discrimination of the IFS Items</b> |                         |              |               |                       |
|---|-------------------------|--------------|---------------|-----------------------|
| <b>Item</b>   | <b>Item Calibration</b> | <b>Infit</b> | <b>Outfit</b> | <b>Discrimination</b> |
| q26   | 677.5                   | 2.15         | 2.66          | 0.75                  |
| q27   | 656.0                   | 1.72         | 1.79          | 0.79                  |
| q28   | 569.8                   | 1.25         | 1.31          | 0.82                  |
| q29   | 608.8                   | 1.00         | 0.96          | 0.85                  |
| q30   | 639.8                   | 1.15         | 1.16          | 0.85                  |
| q31   | 539.0                   | 1.09         | 1.18          | 0.83                  |
| q32   | 559.3                   | 0.86         | 0.83          | 0.85                  |
| q33   | 624.8                   | 1.49         | 1.62          | 0.81                  |
| q34   | 576.8                   | 0.95         | 0.90          | 0.85                  |
| q35   | 583.5                   | 0.97         | 0.99          | 0.85                  |

|     |       |      |      |      |
|-----|-------|------|------|------|
| q36 | 540.4 | 0.93 | 0.91 | 0.86 |
| q37 | 564.5 | 0.81 | 0.80 | 0.86 |
| q38 | 552.9 | 1.03 | 1.07 | 0.82 |
| q39 | 534.4 | 0.93 | 0.92 | 0.83 |
| q40 | 559.1 | 0.90 | 0.85 | 0.84 |
| q41 | 562.2 | 0.97 | 0.97 | 0.84 |
| q42 | 555.9 | 0.78 | 0.84 | 0.85 |
| q43 | 545.5 | 0.73 | 0.67 | 0.86 |
| q44 | 538.9 | 1.05 | 1.03 | 0.82 |
| q45 | 497.8 | 0.90 | 0.87 | 0.81 |
| q46 | 516.1 | 0.89 | 0.84 | 0.82 |
| q47 | 498.1 | 0.93 | 0.93 | 0.80 |

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 575.1, with a standard deviation of 105.8 and a standard error of the sample mean equal to 2.4. The 95% confidence interval for the mean was 570.4 – 579.8.

| <b>Table 7.1. Properties of FCSS Measures for the representative sample</b> |                           |  |  |
|---|---------------------------|--|--|
| <b>Sample Mean</b>  | <b>Standard Deviation</b> | <b>Standard Error of the Sample Mean</b> | <b>95% Confidence Interval for the Population Mean</b> |
| 575.1   | 105.8                     | 2.4                                      | 570.4 – 579.8  |

A mean of 575.1 indicates that families have 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<br><i>Stem:</i> Over the past year, Early Intervention services have helped me and/or my family:  | % Strongly/ Very strongly agree | % Agree in any category |
|------------------|--|---------------------------------|-------------------------|
| 601              | 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. | 24%                             | 39%                     |
| 555              | My family was given information about ways of connecting with other families for information and mutual support.   | 37%                             | 65%                     |
| 552              | My family was given information about opportunities for my child to play with other children.  | 39%                             | 64%                     |
| 544              | 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%                     |
| 528              | My family was given information about where to go for help or support if I feel worried or stressed.   | 47%                             | 78%                     |
| 528              | I was offered help I needed, such as child care or transportation, to participate in the Individualized Family Service Plan (IFSP) meeting(s).             | 48%                             | 76%                     |
| 525              | My family was given information about how to advocate for my child and my family.  | 47%                             | 80%                     |
| 524              | My family was given information about community programs that are open to all children.  | 49%                             | 78%                     |
| 519              | Someone from the Early Intervention program asked if I was having any problems getting the services I needed.  | 51%                             | 80%                     |
| 510              | My family was given information about what my options are if I disagree with a decision about my child's services.   | 54%                             | 85%                     |
| 505              | My family was given information about the public school system's programs and services for children age three and older.                                   | 56%                             | 86%                     |
| 503              | Someone from the Early Intervention program asked whether the services my family was receiving were meeting our needs.                                     | 58%                             | 86%                     |
| 494              | I was given information to help me prepare for my  | 61%                             | 88%                     |

|     |  |     |     |
|-----|--|-----|-----|
|     | child's transition.  |     |     |
| 483 | The IFSP is keeping up with my family's changing needs.  | 66% | 92% |
| 483 | My service coordinator is available to speak with me on a regular basis.   | 65% | 91% |
| 477 | I know who to call if I have problems with the services and supports my child and family are receiving.  | 68% | 93% |
| 468 | My family was given information about activities that I could do with my child in our everyday lives.  | 72% | 94% |
| 468 | My family's daily routines were considered when planning for my child's services.  | 72% | 95% |
| 467 | Written information I receive is written in an understandable way.   | 71% | 96% |
| 467 | The Early Intervention service provider(s) that work with my child do what they say they are going to do.  | 71% | 94% |
| 465 | My service coordinator is knowledgeable and professional.  | 71% | 95% |
| 461 | My family was given information about the rights of parents regarding Early Intervention services.   | 74% | 96% |
| 460 | 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% | 94% |
| 459 | I have felt part of the team when meeting to discuss my child.   | 75% | 95% |
| 454 | 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% | 95% |

## 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 .97 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 0.65 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).

| <b>Table 7.3. Calibration, Fit, and Discrimination of the FCSS Items</b> |          |       |        |                |
|--|----------|-------|--------|----------------|
| Item   | Location | Infit | Outfit | Discrimination |
| q1   | 528      | 1.68  | 1.97   | 0.66           |
| q2   | 528      | 1.18  | 1.28   | 0.73           |
| q3   | 477      | 1.00  | 1.10   | 0.70           |
| q4   | 468      | 0.87  | 0.97   | 0.70           |
| q5   | 459      | 0.76  | 0.77   | 0.71           |
| q6   | 483      | 0.72  | 0.76   | 0.75           |
| q7   | 468      | 0.84  | 0.83   | 0.71           |
| q8   | 461      | 0.84  | 0.76   | 0.70           |
| q9   | 524      | 1.06  | 1.02   | 0.74           |
| q10  | 555      | 1.32  | 1.31   | 0.72           |
| q11  | 505      | 1.25  | 1.32   | 0.69           |
| q12  | 552      | 1.41  | 1.39   | 0.72           |

|     |     |      |      |      |
|-----|-----|------|------|------|
| q13 | 525 | 0.85 | 0.84 | 0.78 |
| q14 | 510 | 0.87 | 0.86 | 0.76 |
| q15 | 519 | 0.97 | 0.96 | 0.75 |
| q16 | 503 | 0.87 | 0.85 | 0.75 |
| q17 | 601 | 1.83 | 2.09 | 0.68 |
| q18 | 467 | 0.81 | 0.82 | 0.72 |
| q19 | 454 | 0.71 | 0.63 | 0.71 |
| q20 | 460 | 0.72 | 0.67 | 0.72 |
| q21 | 483 | 0.92 | 0.92 | 0.72 |
| q22 | 465 | 0.72 | 0.73 | 0.73 |
| q23 | 467 | 0.82 | 0.81 | 0.71 |
| q24 | 494 | 0.89 | 0.89 | 0.74 |
| q25 | 544 | 1.43 | 1.49 | 0.72 |

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).

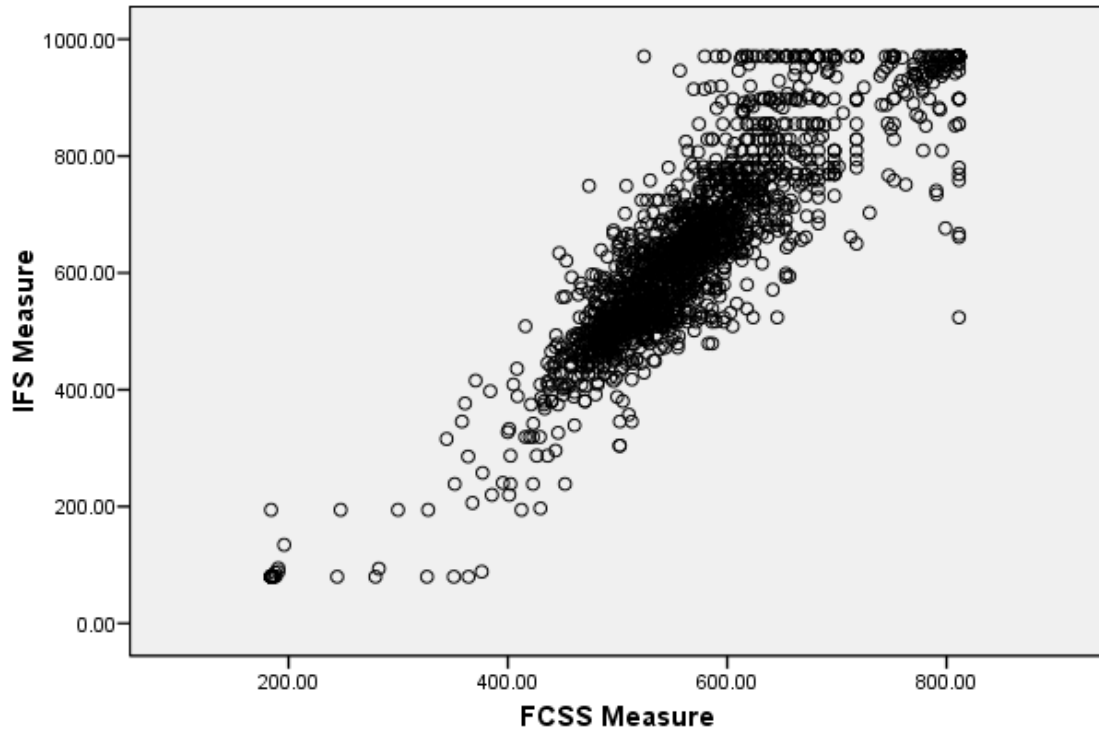
## SECTION 8

### 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 | 115       | 5.9     | 7.5           | 7.5                |
|         | Strongly Disagree      | 58        | 3.0     | 3.8           | 11.3               |
|         | Disagree               | 438       | 22.4    | 28.6          | 39.9               |
|         | Agree                  | 428       | 21.9    | 28.0          | 67.9               |
|         | Strongly Agree         | 173       | 8.8     | 11.3          | 79.2               |
|         | Very Strongly Agree    | 319       | 16.3    | 20.8          | 100.0              |
|         | Total                  | 1531      | 78.2    | 100.0         |                    |
| Missing | System                 | 426       | 21.8    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Know about services in the community.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 99        | 5.1     | 5.9           | 5.9                |
|         | Strongly Disagree      | 59        | 3.0     | 3.5           | 9.5                |
|         | Disagree               | 311       | 15.9    | 18.6          | 28.1               |
|         | Agree                  | 568       | 29.0    | 34.0          | 62.1               |
|         | Strongly Agree         | 227       | 11.6    | 13.6          | 75.7               |
|         | Very Strongly Agree    | 405       | 20.7    | 24.3          | 100.0              |
|         | Total                  | 1669      | 85.3    | 100.0         |                    |
| Missing | System                 | 288       | 14.7    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Improve my family's quality of life.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 56        | 2.9     | 3.2           | 3.2                |
|         | Strongly Disagree      | 24        | 1.2     | 1.4           | 4.6                |
|         | Disagree               | 130       | 6.6     | 7.5           | 12.1               |
|         | Agree                  | 610       | 31.2    | 35.2          | 47.4               |
|         | Strongly Agree         | 373       | 19.1    | 21.5          | 68.9               |
|         | Very Strongly Agree    | 538       | 27.5    | 31.1          | 100.0              |
|         | Total                  | 1731      | 88.5    | 100.0         |                    |
| Missing | System                 | 226       | 11.5    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

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

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 66        | 3.4     | 3.8           | 3.8                |
|         | Strongly Disagree      | 28        | 1.4     | 1.6           | 5.4                |
|         | Disagree               | 188       | 9.6     | 10.7          | 16.1               |
|         | Agree                  | 635       | 32.4    | 36.3          | 52.4               |
|         | Strongly Agree         | 300       | 15.3    | 17.2          | 69.6               |
|         | Very Strongly Agree    | 532       | 27.2    | 30.4          | 100.0              |
|         | Total                  | 1749      | 89.4    | 100.0         |                    |
| Missing | System                 | 208       | 10.6    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

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

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 71        | 3.6     | 4.3           | 4.3                |
|         | Strongly Disagree      | 38        | 1.9     | 2.3           | 6.6                |
|         | Disagree               | 272       | 13.9    | 16.5          | 23.2               |
|         | Agree                  | 547       | 28.0    | 33.3          | 56.4               |
|         | Strongly Agree         | 254       | 13.0    | 15.4          | 71.9               |
|         | Very Strongly Agree    | 463       | 23.7    | 28.1          | 100.0              |
|         | Total                  | 1645      | 84.1    | 100.0         |                    |
| Missing | System                 | 312       | 15.9    |               |                    |
| Total   |                        | 1957      | 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 | 42        | 2.1     | 2.5           | 2.5                |
|         | Strongly Disagree      | 28        | 1.4     | 1.7           | 4.2                |
|         | Disagree               | 79        | 4.0     | 4.7           | 8.9                |
|         | Agree                  | 578       | 29.5    | 34.5          | 43.4               |
|         | Strongly Agree         | 354       | 18.1    | 21.1          | 64.5               |
|         | Very Strongly Agree    | 596       | 30.5    | 35.5          | 100.0              |
|         | Total                  | 1677      | 85.7    | 100.0         |                    |
| Missing | System                 | 280       | 14.3    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Feel more confident in my skills as a parent.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 43        | 2.2     | 2.4           | 2.4                |
|         | Strongly Disagree      | 24        | 1.2     | 1.4           | 3.8                |
|         | Disagree               | 86        | 4.4     | 4.9           | 8.7                |
|         | Agree                  | 590       | 30.1    | 33.6          | 42.3               |
|         | Strongly Agree         | 364       | 18.6    | 20.7          | 63.0               |
|         | Very Strongly Agree    | 651       | 33.3    | 37.0          | 100.0              |
|         | Total                  | 1758      | 89.8    | 100.0         |                    |
| Missing | System                 | 199       | 10.2    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Keep up friendships for my child and family.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 64        | 3.3     | 4.2           | 4.2                |
|         | Strongly Disagree      | 40        | 2.0     | 2.6           | 6.7                |
|         | Disagree               | 260       | 13.3    | 16.9          | 23.6               |
|         | Agree                  | 470       | 24.0    | 30.5          | 54.1               |
|         | Strongly Agree         | 244       | 12.5    | 15.8          | 69.9               |
|         | Very Strongly Agree    | 464       | 23.7    | 30.1          | 100.0              |
|         | Total                  | 1542      | 78.8    | 100.0         |                    |
| Missing | System                 | 415       | 21.2    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Find information I need.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 59        | 3.0     | 3.4           | 3.4                |
|         | Strongly Disagree      | 27        | 1.4     | 1.5           | 4.9                |
|         | Disagree               | 140       | 7.2     | 8.0           | 12.9               |
|         | Agree                  | 639       | 32.7    | 36.4          | 49.2               |
|         | Strongly Agree         | 307       | 15.7    | 17.5          | 66.7               |
|         | Very Strongly Agree    | 585       | 29.9    | 33.3          | 100.0              |
|         | Total                  | 1757      | 89.8    | 100.0         |                    |
| Missing | System                 | 200       | 10.2    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Be more effective in managing my child's behavior.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 47        | 2.4     | 2.9           | 2.9                |
|         | Strongly Disagree      | 25        | 1.3     | 1.5           | 4.4                |
|         | Disagree               | 122       | 6.2     | 7.4           | 11.8               |
|         | Agree                  | 554       | 28.3    | 33.8          | 45.6               |
|         | Strongly Agree         | 363       | 18.5    | 22.1          | 67.7               |
|         | Very Strongly Agree    | 529       | 27.0    | 32.3          | 100.0              |
|         | Total                  | 1640      | 83.8    | 100.0         |                    |
| Missing | System                 | 317       | 16.2    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Figure out solutions to problems as they come up.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 50        | 2.6     | 2.9           | 2.9                |
|         | Strongly Disagree      | 23        | 1.2     | 1.3           | 4.2                |
|         | Disagree               | 96        | 4.9     | 5.5           | 9.8                |
|         | Agree                  | 602       | 30.8    | 34.8          | 44.5               |
|         | Strongly Agree         | 388       | 19.8    | 22.4          | 66.9               |
|         | Very Strongly Agree    | 573       | 29.3    | 33.1          | 100.0              |
|         | Total                  | 1732      | 88.5    | 100.0         |                    |
| Missing | System                 | 225       | 11.5    |               |                    |
| Total   |                        | 1957      | 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 | 56        | 2.9     | 3.1           | 3.1                |
|         | Strongly Disagree      | 24        | 1.2     | 1.3           | 4.4                |
|         | Disagree               | 91        | 4.6     | 5.0           | 9.4                |
|         | Agree                  | 617       | 31.5    | 34.0          | 43.5               |
|         | Strongly Agree         | 378       | 19.3    | 20.8          | 64.3               |
|         | Very Strongly Agree    | 647       | 33.1    | 35.7          | 100.0              |
|         | Total                  | 1813      | 92.6    | 100.0         |                    |
| Missing | System                 | 144       | 7.4     |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Understand how the Early Intervention system works.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 45        | 2.3     | 2.4           | 2.4                |
|         | Strongly Disagree      | 23        | 1.2     | 1.2           | 3.7                |
|         | Disagree               | 48        | 2.5     | 2.6           | 6.3                |
|         | Agree                  | 633       | 32.3    | 34.3          | 40.6               |
|         | Strongly Agree         | 383       | 19.6    | 20.8          | 61.4               |
|         | Very Strongly Agree    | 712       | 36.4    | 38.6          | 100.0              |
|         | Total                  | 1844      | 94.2    | 100.0         |                    |
| Missing | System                 | 113       | 5.8     |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

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

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 49        | 2.5     | 2.6           | 2.6                |
|         | Strongly Disagree      | 23        | 1.2     | 1.2           | 3.9                |
|         | Disagree               | 66        | 3.4     | 3.6           | 7.4                |
|         | Agree                  | 553       | 28.3    | 29.8          | 37.3               |
|         | Strongly Agree         | 432       | 22.1    | 23.3          | 60.6               |
|         | Very Strongly Agree    | 731       | 37.4    | 39.4          | 100.0              |
|         | Total                  | 1854      | 94.7    | 100.0         |                    |
| Missing | System                 | 103       | 5.3     |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

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

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 48        | 2.5     | 2.9           | 2.9                |
|         | Strongly Disagree      | 21        | 1.1     | 1.3           | 4.2                |
|         | Disagree               | 81        | 4.1     | 4.9           | 9.1                |
|         | Agree                  | 519       | 26.5    | 31.6          | 40.8               |
|         | Strongly Agree         | 343       | 17.5    | 20.9          | 61.7               |
|         | Very Strongly Agree    | 628       | 32.1    | 38.3          | 100.0              |
|         | Total                  | 1640      | 83.8    | 100.0         |                    |
| Missing | System                 | 317       | 16.2    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

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

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 45        | 2.3     | 2.8           | 2.8                |
|         | Strongly Disagree      | 21        | 1.1     | 1.3           | 4.2                |
|         | Disagree               | 92        | 4.7     | 5.8           | 9.9                |
|         | Agree                  | 518       | 26.5    | 32.6          | 42.5               |
|         | Strongly Agree         | 318       | 16.2    | 20.0          | 62.6               |
|         | Very Strongly Agree    | 595       | 30.4    | 37.4          | 100.0              |
|         | Total                  | 1589      | 81.2    | 100.0         |                    |
| Missing | System                 | 368       | 18.8    |               |                    |
| Total   |                        | 1957      | 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 | 44        | 2.2     | 2.6           | 2.6                |
|         | Strongly Disagree      | 21        | 1.1     | 1.2           | 3.8                |
|         | Disagree               | 78        | 4.0     | 4.6           | 8.4                |
|         | Agree                  | 546       | 27.9    | 32.0          | 40.3               |
|         | Strongly Agree         | 374       | 19.1    | 21.9          | 62.2               |
|         | Very Strongly Agree    | 645       | 33.0    | 37.8          | 100.0              |
|         | Total                  | 1708      | 87.3    | 100.0         |                    |
| Missing | System                 | 249       | 12.7    |               |                    |
| Total   |                        | 1957      | 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 | 48        | 2.5     | 2.7           | 2.7                |
|         | Strongly Disagree      | 16        | .8      | .9            | 3.6                |
|         | Disagree               | 63        | 3.2     | 3.5           | 7.2                |
|         | Agree                  | 594       | 30.4    | 33.5          | 40.6               |
|         | Strongly Agree         | 381       | 19.5    | 21.5          | 62.1               |
|         | Very Strongly Agree    | 673       | 34.4    | 37.9          | 100.0              |
|         | Total                  | 1775      | 90.7    | 100.0         |                    |
| Missing | System                 | 182       | 9.3     |               |                    |
| Total   |                        | 1957      | 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 | 43        | 2.2     | 2.4           | 2.4                |
|         | Strongly Disagree      | 19        | 1.0     | 1.0           | 3.4                |
|         | Disagree               | 63        | 3.2     | 3.5           | 6.8                |
|         | Agree                  | 571       | 29.2    | 31.3          | 38.1               |
|         | Strongly Agree         | 375       | 19.2    | 20.5          | 58.7               |
|         | Very Strongly Agree    | 754       | 38.5    | 41.3          | 100.0              |
|         | Total                  | 1825      | 93.3    | 100.0         |                    |
| Missing | System                 | 132       | 6.7     |               |                    |
| Total   |                        | 1957      | 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 | 41        | 2.1     | 2.2           | 2.2                |
|         | Strongly Disagree      | 19        | 1.0     | 1.0           | 3.2                |
|         | Disagree               | 29        | 1.5     | 1.6           | 4.8                |
|         | Agree                  | 487       | 24.9    | 26.2          | 31.0               |
|         | Strongly Agree         | 394       | 20.1    | 21.2          | 52.2               |
|         | Very Strongly Agree    | 887       | 45.3    | 47.8          | 100.0              |
|         | Total                  | 1857      | 94.9    | 100.0         |                    |
| Missing | System                 | 100       | 5.1     |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Understand my child's special needs.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 44        | 2.2     | 2.5           | 2.5                |
|         | Strongly Disagree      | 9         | .5      | .5            | 3.0                |
|         | Disagree               | 47        | 2.4     | 2.6           | 5.6                |
|         | Agree                  | 495       | 25.3    | 27.6          | 33.2               |
|         | Strongly Agree         | 392       | 20.0    | 21.9          | 55.0               |
|         | Very Strongly Agree    | 807       | 41.2    | 45.0          | 100.0              |
|         | Total                  | 1794      | 91.7    | 100.0         |                    |
| Missing | System                 | 163       | 8.3     |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Feel that my efforts are helping my child.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 37        | 1.9     | 2.0           | 2.0                |
|         | Strongly Disagree      | 17        | .9      | .9            | 2.9                |
|         | Disagree               | 24        | 1.2     | 1.3           | 4.2                |
|         | Agree                  | 478       | 24.4    | 25.7          | 29.9               |
|         | Strongly Agree         | 407       | 20.8    | 21.9          | 51.8               |
|         | Very Strongly Agree    | 896       | 45.8    | 48.2          | 100.0              |
|         | Total                  | 1859      | 95.0    | 100.0         |                    |
| Missing | System                 | 98        | 5.0     |               |                    |
| Total   |                        | 1957      | 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 | 107       | 5.5     | 7.4           | 7.4                |
|         | Strongly Disagree      | 29        | 1.5     | 2.0           | 9.4                |
|         | Disagree               | 207       | 10.6    | 14.4          | 23.8               |
|         | Agree                  | 409       | 20.9    | 28.4          | 52.2               |
|         | Strongly Agree         | 223       | 11.4    | 15.5          | 67.7               |
|         | Very Strongly Agree    | 465       | 23.8    | 32.3          | 100.0              |
|         | Total                  | 1440      | 73.6    | 100.0         |                    |
| Missing | System                 | 517       | 26.4    |               |                    |
| Total   |                        | 1957      | 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 | 99        | 5.1     | 5.8           | 5.8                |
|         | Strongly Disagree      | 48        | 2.5     | 2.8           | 8.6                |
|         | Disagree               | 226       | 11.5    | 13.3          | 21.9               |
|         | Agree                  | 535       | 27.3    | 31.4          | 53.3               |
|         | Strongly Agree         | 311       | 15.9    | 18.3          | 71.5               |
|         | Very Strongly Agree    | 485       | 24.8    | 28.5          | 100.0              |
|         | Total                  | 1704      | 87.1    | 100.0         |                    |
| Missing | System                 | 253       | 12.9    |               |                    |
| Total   |                        | 1957      | 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 | 48        | 2.5     | 2.5           | 2.5                |
|         | Strongly Disagree      | 24        | 1.2     | 1.3           | 3.8                |
|         | Disagree               | 64        | 3.3     | 3.4           | 7.2                |
|         | Agree                  | 473       | 24.2    | 25.1          | 32.3               |
|         | Strongly Agree         | 418       | 21.4    | 22.1          | 54.4               |
|         | Very Strongly Agree    | 861       | 44.0    | 45.6          | 100.0              |
|         | Total                  | 1888      | 96.5    | 100.0         |                    |
| Missing | System                 | 69        | 3.5     |               |                    |
| Total   |                        | 1957      | 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 | 38        | 1.9     | 2.0           | 2.0                |
|         | Strongly Disagree      | 21        | 1.1     | 1.1           | 3.1                |
|         | Disagree               | 42        | 2.1     | 2.2           | 5.3                |
|         | Agree                  | 437       | 22.3    | 22.9          | 28.2               |
|         | Strongly Agree         | 466       | 23.8    | 24.4          | 52.7               |
|         | Very Strongly Agree    | 902       | 46.1    | 47.3          | 100.0              |
|         | Total                  | 1906      | 97.4    | 100.0         |                    |
| Missing | System                 | 51        | 2.6     |               |                    |
| Total   |                        | 1957      | 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 | 40        | 2.0     | 2.1           | 2.1                |
|         | Strongly Disagree      | 9         | .5      | .5            | 2.6                |
|         | Disagree               | 38        | 1.9     | 2.0           | 4.5                |
|         | Agree                  | 389       | 19.9    | 20.3          | 24.8               |
|         | Strongly Agree         | 465       | 23.8    | 24.2          | 49.1               |
|         | Very Strongly Agree    | 977       | 49.9    | 50.9          | 100.0              |
|         | Total                  | 1918      | 98.0    | 100.0         |                    |
| Missing | System                 | 39        | 2.0     |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

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

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 41        | 2.1     | 2.3           | 2.3                |
|         | Strongly Disagree      | 29        | 1.5     | 1.6           | 3.9                |
|         | Disagree               | 68        | 3.5     | 3.8           | 7.6                |
|         | Agree                  | 485       | 24.8    | 26.8          | 34.5               |
|         | Strongly Agree         | 428       | 21.9    | 23.7          | 58.2               |
|         | Very Strongly Agree    | 756       | 38.6    | 41.8          | 100.0              |
|         | Total                  | 1807      | 92.3    | 100.0         |                    |
| Missing | System                 | 150       | 7.7     |               |                    |
| Total   |                        | 1957      | 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 | 34        | 1.7     | 1.8           | 1.8                |
|         | Strongly Disagree      | 23        | 1.2     | 1.2           | 3.0                |
|         | Disagree               | 57        | 2.9     | 3.0           | 5.9                |
|         | Agree                  | 421       | 21.5    | 21.9          | 27.8               |
|         | Strongly Agree         | 473       | 24.2    | 24.6          | 52.4               |
|         | Very Strongly Agree    | 914       | 46.7    | 47.6          | 100.0              |
|         | Total                  | 1922      | 98.2    | 100.0         |                    |
| Missing | System                 | 35        | 1.8     |               |                    |
| Total   |                        | 1957      | 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 | 35        | 1.8     | 1.8           | 1.8                |
|         | Strongly Disagree      | 14        | .7      | .7            | 2.5                |
|         | Disagree               | 33        | 1.7     | 1.7           | 4.3                |
|         | Agree                  | 426       | 21.8    | 22.2          | 26.4               |
|         | Strongly Agree         | 443       | 22.6    | 23.0          | 49.5               |
|         | Very Strongly Agree    | 972       | 49.7    | 50.5          | 100.0              |
|         | Total                  | 1923      | 98.3    | 100.0         |                    |
| Missing | System                 | 34        | 1.7     |               |                    |
| Total   |                        | 1957      | 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 | 84        | 4.3     | 4.6           | 4.6                |
|         | Strongly Disagree      | 37        | 1.9     | 2.0           | 6.6                |
|         | Disagree               | 285       | 14.6    | 15.6          | 22.3               |
|         | Agree                  | 519       | 26.5    | 28.5          | 50.8               |
|         | Strongly Agree         | 349       | 17.8    | 19.2          | 69.9               |
|         | Very Strongly Agree    | 548       | 28.0    | 30.1          | 100.0              |
|         | Total                  | 1822      | 93.1    | 100.0         |                    |
| Missing | System                 | 135       | 6.9     |               |                    |
| Total   |                        | 1957      | 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 | 112       | 5.7     | 6.4           | 6.4                |
|         | Strongly Disagree      | 64        | 3.3     | 3.6           | 10.0               |
|         | Disagree               | 434       | 22.2    | 24.7          | 34.7               |
|         | Agree                  | 501       | 25.6    | 28.5          | 63.3               |
|         | Strongly Agree         | 267       | 13.6    | 15.2          | 78.5               |
|         | Very Strongly Agree    | 378       | 19.3    | 21.5          | 100.0              |
|         | Total                  | 1756      | 89.7    | 100.0         |                    |
| Missing | System                 | 201       | 10.3    |               |                    |
| Total   |                        | 1957      | 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 | 59        | 3.0     | 3.6           | 3.6                |
|         | Strongly Disagree      | 25        | 1.3     | 1.5           | 5.1                |
|         | Disagree               | 153       | 7.8     | 9.3           | 14.4               |
|         | Agree                  | 493       | 25.2    | 29.9          | 44.3               |
|         | Strongly Agree         | 301       | 15.4    | 18.3          | 62.5               |
|         | Very Strongly Agree    | 618       | 31.6    | 37.5          | 100.0              |
|         | Total                  | 1649      | 84.3    | 100.0         |                    |
| Missing | System                 | 308       | 15.7    |               |                    |
| Total   |                        | 1957      | 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       | 6.1     | 7.1           | 7.1                |
|         | Strongly Disagree      | 55        | 2.8     | 3.3           | 10.4               |
|         | Disagree               | 431       | 22.0    | 25.6          | 36.0               |
|         | Agree                  | 420       | 21.5    | 25.0          | 61.0               |
|         | Strongly Agree         | 241       | 12.3    | 14.3          | 75.3               |
|         | Very Strongly Agree    | 415       | 21.2    | 24.7          | 100.0              |
|         | Total                  | 1682      | 85.9    | 100.0         |                    |
| Missing | System                 | 275       | 14.1    |               |                    |
| Total   |                        | 1957      | 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 | 75        | 3.8     | 4.3           | 4.3                |
|         | Strongly Disagree      | 36        | 1.8     | 2.1           | 6.4                |
|         | Disagree               | 237       | 12.1    | 13.7          | 20.1               |
|         | Agree                  | 566       | 28.9    | 32.7          | 52.8               |
|         | Strongly Agree         | 310       | 15.8    | 17.9          | 70.7               |
|         | Very Strongly Agree    | 507       | 25.9    | 29.3          | 100.0              |
|         | Total                  | 1731      | 88.5    | 100.0         |                    |
| Missing | System                 | 226       | 11.5    |               |                    |
| Total   |                        | 1957      | 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 | 61        | 3.1     | 3.4           | 3.4                |
|         | Strongly Disagree      | 31        | 1.6     | 1.7           | 5.1                |
|         | Disagree               | 181       | 9.2     | 10.0          | 15.1               |
|         | Agree                  | 550       | 28.1    | 30.4          | 45.5               |
|         | Strongly Agree         | 373       | 19.1    | 20.6          | 66.2               |
|         | Very Strongly Agree    | 611       | 31.2    | 33.8          | 100.0              |
|         | Total                  | 1807      | 92.3    | 100.0         |                    |
| Missing | System                 | 150       | 7.7     |               |                    |
| Total   |                        | 1957      | 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 | 93        | 4.8     | 5.1           | 5.1                |
|         | Strongly Disagree      | 31        | 1.6     | 1.7           | 6.8                |
|         | Disagree               | 250       | 12.8    | 13.6          | 20.4               |
|         | Agree                  | 532       | 27.2    | 29.0          | 49.4               |
|         | Strongly Agree         | 329       | 16.8    | 17.9          | 67.3               |
|         | Very Strongly Agree    | 600       | 30.7    | 32.7          | 100.0              |
|         | Total                  | 1835      | 93.8    | 100.0         |                    |
| Missing | System                 | 122       | 6.2     |               |                    |
| Total   |                        | 1957      | 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 | 80        | 4.1     | 4.2           | 4.2                |
|         | Strongly Disagree      | 27        | 1.4     | 1.4           | 5.7                |
|         | Disagree               | 160       | 8.2     | 8.5           | 14.2               |
|         | Agree                  | 526       | 26.9    | 27.9          | 42.0               |
|         | Strongly Agree         | 391       | 20.0    | 20.7          | 62.8               |
|         | Very Strongly Agree    | 702       | 35.9    | 37.2          | 100.0              |
|         | Total                  | 1886      | 96.4    | 100.0         |                    |
| Missing | System                 | 71        | 3.6     |               |                    |
| Total   |                        | 1957      | 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 | 217       | 11.1    | 14.4          | 14.4               |
|         | Strongly Disagree      | 124       | 6.3     | 8.2           | 22.6               |
|         | Disagree               | 583       | 29.8    | 38.6          | 61.2               |
|         | Agree                  | 221       | 11.3    | 14.6          | 75.8               |
|         | Strongly Agree         | 131       | 6.7     | 8.7           | 84.5               |
|         | Very Strongly Agree    | 234       | 12.0    | 15.5          | 100.0              |
|         | Total                  | 1510      | 77.2    | 100.0         |                    |
| Missing | System                 | 447       | 22.8    |               |                    |
| Total   |                        | 1957      | 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 | 43        | 2.2     | 2.2           | 2.2                |
|         | Strongly Disagree      | 22        | 1.1     | 1.1           | 3.4                |
|         | Disagree               | 49        | 2.5     | 2.5           | 5.9                |
|         | Agree                  | 449       | 22.9    | 23.2          | 29.1               |
|         | Strongly Agree         | 395       | 20.2    | 20.4          | 49.5               |
|         | Very Strongly Agree    | 978       | 50.0    | 50.5          | 100.0              |
|         | Total                  | 1936      | 98.9    | 100.0         |                    |
| Missing | System                 | 21        | 1.1     |               |                    |
| Total   |                        | 1957      | 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 | 35        | 1.8     | 1.8           | 1.8                |
|         | Strongly Disagree      | 17        | .9      | .9            | 2.7                |
|         | Disagree               | 43        | 2.2     | 2.2           | 4.9                |
|         | Agree                  | 382       | 19.5    | 19.7          | 24.6               |
|         | Strongly Agree         | 371       | 19.0    | 19.1          | 43.7               |
|         | Very Strongly Agree    | 1091      | 55.7    | 56.3          | 100.0              |
|         | Total                  | 1939      | 99.1    | 100.0         |                    |
| Missing | System                 | 18        | .9      |               |                    |
| Total   |                        | 1957      | 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 | 34        | 1.7     | 1.8           | 1.8                |
|         | Strongly Disagree      | 20        | 1.0     | 1.0           | 2.8                |
|         | Disagree               | 55        | 2.8     | 2.9           | 5.7                |
|         | Agree                  | 392       | 20.0    | 20.4          | 26.0               |
|         | Strongly Agree         | 402       | 20.5    | 20.9          | 46.9               |
|         | Very Strongly Agree    | 1021      | 52.2    | 53.1          | 100.0              |
|         | Total                  | 1924      | 98.3    | 100.0         |                    |
| Missing | System                 | 33        | 1.7     |               |                    |
| Total   |                        | 1957      | 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 | 53        | 2.7     | 2.8           | 2.8                |
|         | Strongly Disagree      | 31        | 1.6     | 1.6           | 4.4                |
|         | Disagree               | 82        | 4.2     | 4.3           | 8.6                |
|         | Agree                  | 508       | 26.0    | 26.5          | 35.1               |
|         | Strongly Agree         | 364       | 18.6    | 19.0          | 54.1               |
|         | Very Strongly Agree    | 882       | 45.1    | 45.9          | 100.0              |
|         | Total                  | 1920      | 98.1    | 100.0         |                    |
| Missing | System                 | 37        | 1.9     |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**My service coordinator is knowledgeable and professional.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 38        | 1.9     | 2.0           | 2.0                |
|         | Strongly Disagree      | 14        | .7      | .7            | 2.7                |
|         | Disagree               | 45        | 2.3     | 2.3           | 5.0                |
|         | Agree                  | 455       | 23.2    | 23.6          | 28.7               |
|         | Strongly Agree         | 387       | 19.8    | 20.1          | 48.8               |
|         | Very Strongly Agree    | 985       | 50.3    | 51.2          | 100.0              |
|         | Total                  | 1924      | 98.3    | 100.0         |                    |
| Missing | System                 | 33        | 1.7     |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**Written information I receive is written in an understandable way.**

|         |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | Very Strongly Disagree | 34        | 1.7     | 1.8           | 1.8                |
|         | Strongly Disagree      | 17        | .9      | .9            | 2.7                |
|         | Disagree               | 31        | 1.6     | 1.6           | 4.3                |
|         | Agree                  | 479       | 24.5    | 24.9          | 29.2               |
|         | Strongly Agree         | 424       | 21.7    | 22.1          | 51.2               |
|         | Very Strongly Agree    | 937       | 47.9    | 48.8          | 100.0              |
|         | Total                  | 1922      | 98.2    | 100.0         |                    |
| Missing | System                 | 35        | 1.8     |               |                    |
| Total   |                        | 1957      | 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 | 46        | 2.4     | 2.8           | 2.8                |
|         | Strongly Disagree      | 26        | 1.3     | 1.6           | 4.3                |
|         | Disagree               | 122       | 6.2     | 7.3           | 11.6               |
|         | Agree                  | 455       | 23.2    | 27.3          | 38.9               |
|         | Strongly Agree         | 324       | 16.6    | 19.4          | 58.3               |
|         | Very Strongly Agree    | 695       | 35.5    | 41.7          | 100.0              |
|         | Total                  | 1668      | 85.2    | 100.0         |                    |
| Missing | System                 | 289       | 14.8    |               |                    |
| Total   |                        | 1957      | 100.0   |               |                    |

**ly 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 | 98        | 5.0     | 6.9           | 6.9                |
|         | Strongly Disagree      | 46        | 2.4     | 3.3           | 10.2               |
|         | Disagree               | 310       | 15.8    | 22.0          | 32.2               |
|         | Agree                  | 357       | 18.2    | 25.3          | 57.5               |
|         | Strongly Agree         | 192       | 9.8     | 13.6          | 71.1               |
|         | Very Strongly Agree    | 408       | 20.8    | 28.9          | 100.0              |
|         | Total                  | 1411      | 72.1    | 100.0         |                    |
| Missing | System                 | 546       | 27.9    |               |                    |
| Total   |                        | 1957      | 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, 2009 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:\consulting\Virginia\2010\IFS\data1.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: 2009 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:\consulting\Virginia\2010\FCSS\data1.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, 2009 D ZOU47lws.txt Nov 4 5:59 2009  
 INPUT: 1957 PERSONS, 22 ITEMS MEASURED: 1920 PERSONS, 22 ITEMS, 5 CATS 3.57.1

```

-----
PERSONS MAP OF 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 24.
  
```

TABLE 3.1 Virginia Impact all individuals, 2009 D ZOU471ws.txt Nov 4 5:59 2009  
 INPUT: 1957 PERSONS, 22 ITEMS MEASURED: 1920 PERSONS, 22 ITEMS, 5 CATS 3.57.1

SUMMARY OF 1608 MEASURED (NON-EXTREME) PERSONS

|                            | RAW<br>SCORE | COUNT  | MEASURE | REAL<br>ERROR | INFIT |                    | OUTFIT |      |
|----------------------------|--------------|--------|---------|---------------|-------|--------------------|--------|------|
|                            |              |        |         |               | MNSQ  | ZSTD               | MNSQ   | ZSTD |
| MEAN                       | 71.3         | 19.9   | 606.97  | 27.16         | 1.07  | -.3                | 1.06   | -.3  |
| S.D.                       | 22.4         | 4.1    | 123.76  | 11.31         | .99   | 2.4                | 1.07   | 2.3  |
| MAX.                       | 109.0        | 22.0   | 898.14  | 103.75        | 9.60  | 9.9                | 9.90   | 9.9  |
| MIN.                       | 2.0          | 1.0    | 194.37  | 18.12         | .00   | -5.4               | .00    | -5.1 |
| REAL RMSE                  | 29.42        | ADJ.SD | 120.21  | SEPARATION    | 4.09  | PERSON RELIABILITY | .94    |      |
| MODEL RMSE                 | 25.50        | ADJ.SD | 121.10  | SEPARATION    | 4.75  | PERSON RELIABILITY | .96    |      |
| S.E. OF PERSON MEAN = 3.09 |              |        |         |               |       |                    |        |      |

MAXIMUM EXTREME SCORE: 283 PERSONS  
 MINIMUM EXTREME SCORE: 29 PERSONS  
 LACKING RESPONSES: 37 PERSONS  
 VALID RESPONSES: 90.4%

SUMMARY OF 1920 MEASURED (EXTREME AND NON-EXTREME) PERSONS

|                            | RAW<br>SCORE | COUNT  | MEASURE | REAL<br>ERROR | INFIT |                    | OUTFIT |      |
|----------------------------|--------------|--------|---------|---------------|-------|--------------------|--------|------|
|                            |              |        |         |               | MNSQ  | ZSTD               | MNSQ   | ZSTD |
| MEAN                       | 74.1         | 19.8   | 649.76  | 40.35         |       |                    |        |      |
| S.D.                       | 25.1         | 4.2    | 181.08  | 31.68         |       |                    |        |      |
| MAX.                       | 110.0        | 22.0   | 970.72  | 115.46        |       |                    |        |      |
| MIN.                       | 2.0          | 1.0    | 79.80   | 18.12         |       |                    |        |      |
| REAL RMSE                  | 51.30        | ADJ.SD | 173.66  | SEPARATION    | 3.39  | PERSON RELIABILITY | .92    |      |
| MODEL RMSE                 | 49.51        | ADJ.SD | 174.18  | SEPARATION    | 3.52  | PERSON RELIABILITY | .93    |      |
| S.E. OF PERSON MEAN = 4.13 |              |        |         |               |       |                    |        |      |

PERSON RAW SCORE-TO-MEASURE CORRELATION = .76 (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<br>SCORE | COUNT  | MEASURE | REAL<br>ERROR | INFIT |                  | OUTFIT |      |
|---------------------------|--------------|--------|---------|---------------|-------|------------------|--------|------|
|                           |              |        |         |               | MNSQ  | ZSTD             | MNSQ   | ZSTD |
| MEAN                      | 5212.0       | 1453.6 | 568.23  | 2.69          | 1.07  | .2               | 1.10   | .4   |
| S.D.                      | 647.2        | 76.7   | 46.35   | .30           | .32   | 4.9              | .43    | 4.6  |
| MAX.                      | 6265.0       | 1560.0 | 677.50  | 3.72          | 2.15  | 9.9              | 2.66   | 9.9  |
| MIN.                      | 3607.0       | 1304.0 | 497.80  | 2.46          | .73   | -7.7             | .67    | -7.0 |
| REAL RMSE                 | 2.70         | ADJ.SD | 46.27   | SEPARATION    | 17.11 | ITEM RELIABILITY | 1.00   |      |
| MODEL RMSE                | 2.54         | ADJ.SD | 46.28   | SEPARATION    | 18.21 | ITEM RELIABILITY | 1.00   |      |
| S.E. OF ITEM MEAN = 10.11 |              |        |         |               |       |                  |        |      |

UMEAN=568.300 USCALE=58.910  
 ITEM RAW SCORE-TO-MEASURE CORRELATION = -.93 (approximate due to missing data)

TABLE 3.2 Virginia Impact all individuals, 2009 D ZOU471ws.txt Nov 4 5:59 2009  
 INPUT: 1957 PERSONS, 22 ITEMS MEASURED: 1920 PERSONS, 22 ITEMS, 5 CATS 3.57.1

SUMMARY OF CATEGORY STRUCTURE. Model="R"

| CATEGORY LABEL | OBSERVED SCORE | OBSVD COUNT | SAMPLE % | OBSVD AVRGE | SAMPLE EXPECT | INFIT MNSQ | OUTFIT MNSQ | STRUCTURE CALIBRATN | CATEGORY MEASURE |
|----------------|----------------|-------------|----------|-------------|---------------|------------|-------------|---------------------|------------------|
| 1              | 1              | 1208        | 3        | -207.7      | -220.         | 1.66       | 1.69        | NONE                | -295.89          |
| 2              | 2              | 2804        | 8        | -102.8      | -110.         | 1.25       | 1.20        | -220.93A            | -185.38          |
| 3              | 3              | 12232       | 35       | -23.23      | -18.5         | .91        | 1.08        | -147.88A            | -45.97           |
| 4              | 4              | 7524        | 21       | 80.57       | 79.35         | .79        | .73         | 55.95A              | 93.44            |
| 5              | 5              | 8211        | 23       | 188.56      | 187.0         | 1.15       | 1.22        | 128.99A             | (203.95)         |
| MISSING        |                | 3397        | 10       | 11.59       |               |            |             |                     |                  |

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

| CATEGORY LABEL | STRUCTURE MEASURE | S.E. | SCORE-TO-MEASURE AT CAT. | 50% CUM. PROBABLTY | COHERENCE M->C | ESTIM DISCR | OBSERVED-EXPECTED RESIDUAL DIFFERENCE |       |
|----------------|-------------------|------|--------------------------|--------------------|----------------|-------------|---------------------------------------|-------|
| 1              | NONE              |      | -295.89                  | -INF               | -247.18        | 79% 40%     | 7.1%                                  |       |
| 2              | -220.93A          | 2.45 | -185.38                  | -247.18            | -127.29        | -233.39     | 46% 38% .55                           | -2.2% |
| 3              | -147.88A          | 1.32 | -45.97                   | -127.29            | 35.36          | -137.30     | 71% 76% .87                           | .1%   |
| 4              | 55.95A            | .97  | 93.44                    | 35.36              | 155.24         | 45.40       | 51% 65% 1.08                          | -1.9% |
| 5              | 128.99A           | 1.09 | (203.95)                 | 155.24             | +INF           | 141.45      | 83% 65% .99                           | 1.5%  |

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

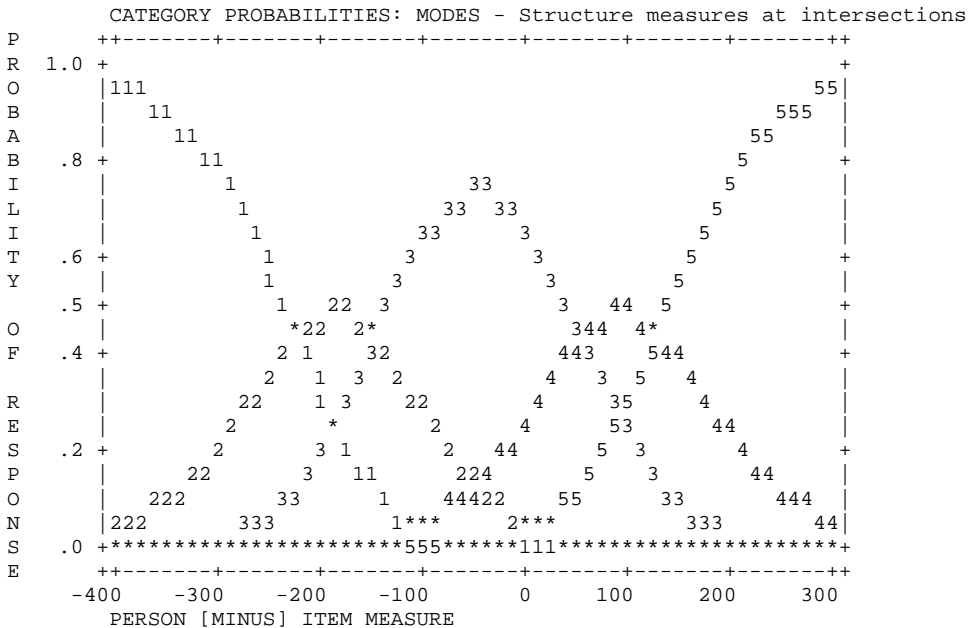


TABLE 10.1 Virginia Impact all individuals, 2009 ZOU471ws.txt Nov 4 5:59 2009  
 INPUT: 1957 PERSONS, 22 ITEMS MEASURED: 1920 PERSONS, 22 ITEMS, 5 CATS 3.57.1

PERSON: REAL SEP.: 4.09 REL.: .94 ... ITEM: REAL SEP.: 17.11 REL.: 1.00

ITEM STATISTICS: MISFIT ORDER

| ENTRY<br>NUMBER | RAW<br>SCORE | COUNT  | MEASURE | REAL<br>S.E. | INFIT<br>MNSQ ZSTD | OUTFIT<br>MNSQ ZSTD | PTMEA<br>CORR. | DISPLACE | ITEM |
|-----------------|--------------|--------|---------|--------------|--------------------|---------------------|----------------|----------|------|
| 1               | 3607         | 1310   | 677.50A | 3.72         | 2.15 9.9           | 2.66 9.9            | A .75          | 10.10    | q26  |
| 2               | 4256         | 1416   | 656.00A | 3.21         | 1.72 9.9           | 1.79 9.9            | B .79          | -2.63    | q27  |
| 8               | 4232         | 1304   | 624.80A | 3.18         | 1.49 9.9           | 1.62 9.9            | C .81          | -4.08    | q33  |
| 3               | 5106         | 1461   | 569.80A | 2.82         | 1.25 5.9           | 1.31 5.9            | D .82          | 12.50    | q28  |
| 6               | 5175         | 1418   | 539.00A | 2.73         | 1.09 2.3           | 1.18 3.0            | E .83          | 18.95    | q31  |
| 5               | 4479         | 1395   | 639.80A | 2.67         | 1.15 3.8           | 1.16 3.6            | F .85          | -14.48   | q30  |
| 13              | 5751         | 1540   | 552.90A | 2.52         | 1.03 .8            | 1.07 1.3            | G .82          | -9.15    | q38  |
| 19              | 5798         | 1528   | 538.90A | 2.57         | 1.05 1.2           | 1.03 .6             | H .82          | -5.07    | q44  |
| 4               | 4971         | 1473   | 608.80A | 2.46         | 1.00 .1            | .96 -.9             | I .85          | -9.27    | q29  |
| 10              | 4875         | 1380   | 583.50A | 2.58         | .97 -.7            | .99 -.1             | J .85          | -7.10    | q35  |
| 16              | 4877         | 1335   | 562.20A | 2.67         | .97 -.7            | .97 -.5             | K .84          | -4.35    | q41  |
| 9               | 5153         | 1478   | 576.80A | 2.50         | .95 -1.3           | .90 -2.2            | k .85          | 6.91     | q34  |
| 11              | 5227         | 1459   | 540.40A | 2.57         | .93 -1.7           | .91 -1.6            | j .86          | 28.88    | q36  |
| 14              | 5847         | 1551   | 534.40A | 2.50         | .93 -1.8           | .92 -1.5            | i .83          | 3.59     | q39  |
| 22              | 6265         | 1560   | 498.10A | 2.55         | .93 -1.9           | .93 -1.2            | h .80          | -1.22    | q47  |
| 20              | 6207         | 1558   | 497.80A | 2.56         | .90 -2.6           | .87 -2.1            | g .81          | 4.57     | q45  |
| 15              | 5101         | 1381   | 559.10A | 2.63         | .90 -2.5           | .85 -3.0            | f .84          | -7.87    | q40  |
| 21              | 5937         | 1512   | 516.10A | 2.56         | .89 -2.9           | .84 -2.9            | e .82          | -5.26    | q46  |
| 7               | 5417         | 1475   | 559.30A | 2.53         | .86 -3.6           | .83 -3.6            | d .85          | -3.97    | q32  |
| 17              | 5333         | 1437   | 555.90A | 2.57         | .78 -5.9           | .84 -3.3            | c .85          | -7.32    | q42  |
| 12              | 5502         | 1519   | 564.50A | 2.48         | .81 -5.4           | .80 -4.4            | b .86          | -2.80    | q37  |
| 18              | 5547         | 1489   | 545.50A | 2.54         | .73 -7.7           | .67 -7.0            | a .86          | .08      | q43  |
| MEAN            | 5212.0       | 1453.6 | 568.23  | 2.69         | 1.07 .2            | 1.10 .4             |                |          |      |
| S.D.            | 647.2        | 76.7   | 46.35   | .30          | .32 4.9            | .43 4.6             |                |          |      |