

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

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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 1,883 families receiving early intervention services. From these responses, a random sample of 1280 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 645.2. The standard deviation was 183.0, and the standard error of the sample mean was 5.15. The 95% confidence interval for the population mean was 635.1 – 655.3. 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 66.1%. The 95% confidence interval for the true population percentage is 63.4% – 68.7%. 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 62.3%. The 95% confidence interval for the true population percentage is 59.6% - 64.9%.

The percent of families who reported that early intervention services helped them *help their child develop and learn* (Indicator 4c) was 77.5%. The 95% confidence interval for the true population percentage is 75.1% - 79.7%.

3. Minimum Measurable Target Percentage

The mean value of 645.2 exceeded the target value of 637.3 established two years prior in the 2007 report (i.e., 637.3 was the target mean value for the 2009 report). The obtained percentage of 62.3% for indicator 4b exceeded the target percentage of 62.2%. However, the obtained percentage meeting indicators 4a and 4c (66.1% and 77.5%, respectively) did not meet the targeted percentages (66.2 % and 78.0%, respectively).

4. Statewide Mean Measure on the FCSS

The mean FCSS measure for families participating in the Virginia survey was 577.5 with a standard deviation of 109.4 and a standard error of the mean of 2.52. The 95% confidence interval for the mean was 572.5 – 582.4. 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 1883 individuals. 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 1280 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 1883 (Table 3.1), and the representative sample of 1280 (Table 3.2). As can be seen in the Table 3.2, the distribution of race/ethnicity in the sample is highly reflective of the distribution of race/ethnicity in the population of families receiving early intervention services in Virginia.

Table 3.1. Distribution of Child's Race/Ethnicity in the Total Sample		
Gender	N	Percentage
White	1170	62.1%
Black or African-American	245	13.0%
Hispanic or Latino	168	8.9%
Asian or Pacific Islander	92	4.9%
American Indian or Alaskan Native	5	0.3%
Multi-racial	143	7.6%
Missing	60	3.2%
Total	1883	100%

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

Gender	N	Percentage
White	750	58.6%
Black or African-American	245	19.1%
Hispanic or Latino	140	10.9%
Asian or Pacific Islander	55	4.3%
American Indian or Alaskan Native	2	0.2%
Multi-Racial	88	6.9%
Total	1280	100%

Note. The distribution of race/ethnicity for the children receiving early intervention services in Virginia under Part C are: White = 58.5%, Black/African American = 19.9%, Hispanic = 10.7%, Asian/Pacific Islander = 4.2%, American Indian or Alaskan Native = 0.1%, Other/Multiracial = 6.5%.

3.2. Distribution of Child's Gender in the Sample

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

Table 3.3. Distribution of Child's Gender in the Total Sample		
Gender	N	Percentage
Male	1169	62.1%
Female	677	36.0%
Missing	37	2.0%
Total	1883	100%

Table 3.4. Distribution of Child's Gender in the Representative Sample		
Gender	N	Percentage
Male	806	63.0%
Female	468	36.6%
Missing	6	0.5%
Total	1280	100%

SECTION 4

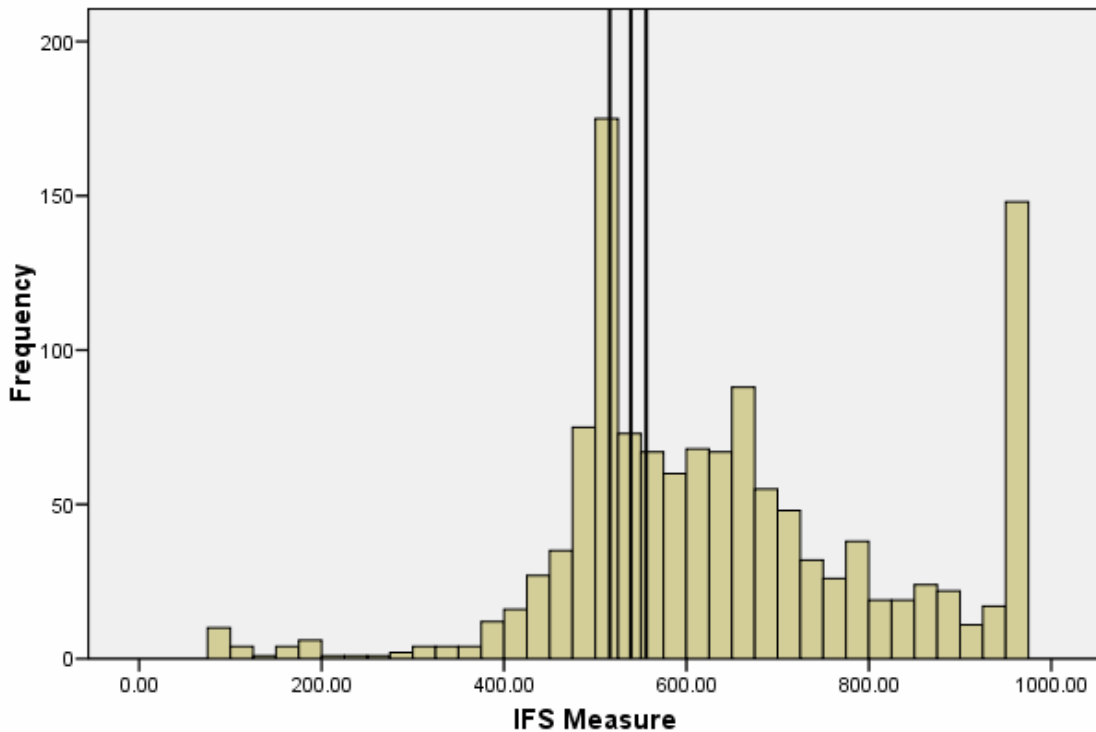
RESULTS PERTAINING TO INDICATOR #4

4.1 Distribution of IFS Measures

Of the 1280 respondents included in the representative sample, 1264 had valid responses to the IFS. The distribution of IFS measures for the 1264 respondents is shown in the figure below.

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

Figure 1. Distribution of IFS Measures



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

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

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

Table 4.1. Properties of IFS Measures for the Representative Sample			
Sample Mean	Standard Deviation	Standard Error of the Sample Mean	95% Confidence Interval for the Population Mean
645.2	183.0	5.15	635.1 – 655.3

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 645.2 on the IFS indicates that the Virginia early intervention system is helping families to achieve many positive outcomes. These positive outcomes are evident from the response percentages displayed in Table 4.2, below. (The table also displays each item’s calibration value, to be discussed in Section 6.)

Table 4.2. Percent of Families Expressing Agreement with IFS Items			
Item Calibration	Item <u>Stem</u>: Over the past year, Early Intervention services have helped me and/or my family:	% Strongly/ Very strongly agree	% Agree in any category
678	Participate in typical activities for children and families in my community.	32%	59%
656	Know about services in the community.	38%	72%
640	Know where to go for support to meet my family's needs.	42%	76%
625	Keep up friendships for my child and family.	45%	77%
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.	52%	88%
577	Find information I need.	51%	88%
570	Improve my family's quality of life.	50%	87%
565	Feel that I can get the services and supports that my child and family need.	56%	90%
562	Feel that my family will be accepted and welcomed in the community	55%	89%

559	Feel more confident in my skills as a parent.	56%	91%
559	Feel that my child will be accepted and welcomed in the community.	56%	90%
556	Communicate more effectively with the people who work with my child and family.	58%	91%
553	Understand how the Early Intervention system works.	57%	93%
546	Understand the roles of the people who work with my child and family.	57%	93%
540	Figure out solutions to problems as they come up.	54%	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.	60%	93%
534	Be able to evaluate how much progress my child is making.	60%	93%
516	Understand my child's special needs.	64%	94%
498	Feel that my efforts are helping my child.	66%	95%
498	Do things with and for my child that are good for my child's development.	66%	95%

As seen in the table, over 95% of families agreed, with approximately 65% 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 50% 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 85% and 90% 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 59% 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 $n = 1280$ having an IFS measure that meets or exceeds each of the three standards for Indicator #4, as well as a 95% confidence interval for the true population percentage. Note that the confidence interval is asymmetric about the

sample percentage, in that there is a greater distance in the confidence interval below the sample percentage than above the sample percentage. The asymmetric confidence interval represents a more accurate confidence interval for percentages than normal-distribution based symmetric confidence intervals (due to the fact that percentages are bounded between 0 and 100). The asymmetric confidence interval reported here is the Score interval proposed by Wilson (1927), and described in greater detail in Agresti (1996) and Penfield (2003).

Table 4.3. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4 (Using Representative Sample of n = 1280)			
	Indicator 4A Percent of families who report that early intervention services helped them know their rights	Indicator 4B Percent of families who report that early intervention services helped them effectively communicate their children's needs	Indicator 4C Percent of families who report that early intervention services helped them help their child develop and learn
Percentage	66.1%	62.3%	77.5%
95% Confidence Interval	63.4% - 68.7%	59.6% – 64.9%	75.1% – 79.7%

4.4 Percentage Meeting Each of the Standards by Race/Ethnicity

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

Table 4.4. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4%, by Race/Ethnicity			
Race/Ethnicity	Indicator 4A Percent of families who report that early intervention services helped them know their rights	Indicator 4B Percent of families who report that early intervention services helped them effectively communicate their children’s needs	Indicator 4C Percent of families who report that early intervention services helped them help their child develop and learn
White/Caucasian (N = 1158)	66.2% 95% CI: 63.4% - 68.9%	62.8% 95% CI: 60.0% - 65.5%	77.2% 95% CI: 74.7% - 79.5%
Black or African American (N = 243)	63.8% 95% CI: 57.6% - 69.6%	59.7% 95% CI: 53.4% - 65.7%	75.7% 95% CI: 69.9% - 80.7%
Hispanic or Latino (N = 160)	74.4% 95% CI: 67.1% - 80.5%	71.3% 95% CI: 63.9% - 77.7%	83.1% 95% CI: 76.5% - 88.1%
Asian or Pacific Islander (N = 92)	57.6% 95% CI: 47.4% - 67.2%	55.4% 95% CI: 45.2% - 65.1%	71.7% 95% CI: 61.8% - 79.9%
American Indian (N = 5)	40.0% 95% CI: 11.8% - 76.9%	40.0% 95% CI: 11.8% - 76.9%	60.0% 95% CI: 23.1% - 88.2%

Multiracial/Other (N = 141)	66.7% 95% CI: 58.6% - 73.9%	63.8% 95% CI: 55.6% - 71.3%	76.6% 95% CI: 68.9% - 82.8%
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4.5. Percentage Meeting Each of the Standards by Program Location

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

Table 4.5. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4%, by Program Location				
Program Location	N	Indicator 4A	Indicator 4B	Indicator 4C
Alexandria	34	55.9%	52.9%	70.6%
Alleghany Highlands	13	*	*	*
Arlington	97	71.1%	69.1%	82.5%
Central VA	57	56.1%	56.1%	71.9%
Chesapeake	72	61.1%	58.3%	77.8%
Chesterfield	87	69.0%	67.8%	78.2%
Colonial	24	66.7%	66.7%	70.8%
Cumberland Mountain	22	86.4%	81.8%	95.5%
D19/Crater	30	43.3%	40.0%	56.7%
Danville Pittsylvania	25	80.0%	80.0%	88.0%
DILENOWISCO	19	47.4%	47.4%	73.7%
Eastern Shore	22	72.7%	63.6%	86.4%
Fairfax-Falls Church	276	66.7%	61.6%	77.5%
Goochland-Powhatan	16	75.0%	75.0%	75.0%
Hampton-Newport News	71	64.8%	59.2%	76.1%
Hanover	22	68.2%	63.6%	81.8%
Harrisonburg/Rock.	20	85.0%	80.0%	85.0%
Heartland	16	56.3%	56.3%	68.8%
Henrico	91	56.0%	52.7%	70.3%
Highlands	23	69.6%	65.2%	78.3%
ITC of the Blue Ridge	45	77.8%	75.6%	80.0%
Loudoun	46	54.3%	54.3%	63.0%
Middle Peninsula Northern Neck	32	65.6%	65.6%	84.4%
Mt Rogers CSB	23	82.6%	78.3%	91.3%
New River Valley	30	76.7%	76.7%	83.3%
Norfolk	60	76.7%	75.0%	83.3%

Piedmont	23	47.8%	47.8%	69.6%
Portsmouth	41	51.2%	43.9%	68.3%
Prince William, Manassas, Manassas Park	93	74.2%	72.0%	81.7%
Rappahannock Area	73	67.1%	64.4%	79.5%
Rappahannock Rapidan	26	61.5%	57.7%	76.9%
Richmond	36	66.7%	58.3%	77.8%
Roanoke Valley	64	65.6%	59.4%	70.3%
Rockbridge	25	80.0%	76.0%	96.0%
Shenandoah Valley	37	59.5%	54.1%	70.3%
Southside	13	*	*	*
Valley	21	66.7%	61.9%	71.4%
Virginia Beach	81	66.7%	65.4%	77.8%
Western Tidewater	44	70.5%	61.4%	79.5%

*In order to ensure the confidentiality of respondents and high confidence that the results accurately reflect the status of the local system, percentages are not reported for local systems with a total number of respondents (N) of 15 or less.

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 645.2 exceeded the target of 637.2, indicating that Virginia exceeded its targeted value. The obtained percentage of 62.3% for indicator 4b exceeded the target percentage of 62.2%. However, the obtained percentage meeting indicators 4a and 4c (66.1% and 77.5%, respectively) did not meet the targeted percentages (66.2 % and 78.0%, respectively).

Table 4.6. Comparing the Obtained Outcomes in 2008 to the State Targets for 2008

	Target Mean	Target % for Indicator 4A Percent of families who report that early intervention services helped them know their rights	Target % for Indicator 4B Percent of families who report that early intervention services helped them effectively communicate their children's needs	Target % for Indicator 4C Percent of families who report that early intervention services helped them help their child develop and learn
2009 Target	637.2	66.2%	62.2%	78.0%
Obtained Outcomes in 2009	645.2	66.1%	62.3%	77.5%

SECTION 5

MEASUREMENT FRAMEWORK

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

Second, it is possible to determine where each item is located on the measurement ruler. The item’s location is referred to as the item’s “calibration.”

Typically, items in a test or survey are not all equal with respect to the amount of the attribute or quality that the items are measuring. It has been empirically demonstrated, in fact, that items in the IFS are not all of equal agreeability. Items range from those that are most likely to draw agree responses to those that are least likely to draw agree responses. Highly agreeable items have low calibrations; less agreeable items have higher calibrations. Table 5.1, below, displays the IFS items in calibration order.

Table 5.1. IFS Items in Calibration Order	
Item Calibration	Item <u>Stem</u> : Over the past year, Early Intervention services have helped me and/or my family:
678	Participate in typical activities for children and families in my community.
656	Know about services in the community.
640	Know where to go for support to meet my family's needs.
625	Keep up friendships for my child and family.
609	Know where to go for support to meet my child's needs.
584	Be more effective in managing my child's behavior.
576	Make changes in family routines that will benefit my child with special needs.
576	Do activities that are good for my child even in times of stress
570	Improve my family's quality of life.
565	Feel that I can get the services and supports that my child and family need.
563	Get the services that my child and family need.
562	Feel that my family will be accepted and welcomed in the community
559	Feel more confident in my skills as a parent.
559	Feel that my child will be accepted and welcomed in the community.

556	Communicate more effectively with the people who work with my child and family.
553	Understand how the Early Intervention system works.
546	Understand the roles of the people who work with my child and family.
539	Know about my child's and family's rights concerning Early Intervention services.
534	Be able to evaluate how much progress my child is making.
516	Understand my child's special needs.
498	Feel that my efforts are helping my child.
498	Do things with and for my child that are good for my child's development.

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

Third, a Rasch analysis condenses information from a person’s responses to all the items in a scale into a single number. That number is the person’s measure on the scale. Since the Rasch framework puts measures on the same metric as item calibrations, a person’s measure on a scale can be meaningfully

interpreted in terms of the items on the scale. A person with a higher measure is expressing more agreement with items, overall, than a person with a lower measure. When IFS measures from a representative sample of parents are aggregated, the average value represents a reliable and highly interpretable measure of the extent to which schools are facilitating parent involvement.

Fourth, a Rasch analysis yields an estimate of the reliability of both the calibration values (related to the items) and the measures (related to people's responses). Scientific approaches to measurement require that the amount of "error," or imprecision, in the system be estimated, so that interpretations based on the measures can take this into consideration.

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

SECTION 6

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

6.1 Psychometric Properties of the IFS Measures

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

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

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

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

measures for the Virginia sample was measured in the Rasch framework to be .92. An alternative approach to estimating the reliability of the IFS measures is to employ Cronbach's alpha, which makes no assumptions about the fit of the responses to any particular model (Cronbach's alpha is based on the simpler true score model, and is commonly used in the behavioral sciences as a model-free index of reliability). The value of Cronbach's alpha was 0.98, which is consistent with the value of .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).

Table 6.1. Calibration, Fit, and Discrimination of the IFS Items				
Item	Item Calibration	Infit	Outfit	Discrimination
q26	677.5	1.92	2.25	0.77
q27	656.0	1.50	1.75	0.82
q28	569.8	1.13	1.22	0.84
q29	608.8	0.98	0.97	0.86
q30	639.8	1.10	1.12	0.85
q31	539.0	1.00	1.03	0.84
q32	559.3	0.87	0.85	0.85
q33	624.8	1.33	1.38	0.83
q34	576.8	0.89	0.87	0.86
q35	583.5	0.89	0.92	0.86

q36	540.4	0.83	0.90	0.87
q37	564.5	0.76	0.70	0.86
q38	552.9	0.90	0.88	0.84
q39	534.4	0.87	0.85	0.84
q40	559.1	0.95	0.97	0.84
q41	562.2	0.92	0.90	0.85
q42	555.9	0.73	0.72	0.86
q43	545.5	0.66	0.64	0.86
q44	538.9	1.00	0.96	0.82
q45	497.8	0.84	0.75	0.82
q46	516.1	0.82	0.79	0.83
q47	498.1	0.89	0.97	0.81

The rightmost column of the table presents an index of discrimination for each item, calculated as the corrected 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 577.5, with a standard deviation of 109.4 and a standard error of the sample mean equal to 2.52. The 95% confidence interval for the mean was 572.5 – 582.4.

Table 7.1. Properties of FCSS Measures for the representative sample			
Sample Mean	Standard Deviation	Standard Error of the Sample Mean	95% Confidence Interval for the Population Mean
577.5	109.4	2.52	572.5 – 582.4

A mean of 577.5 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 <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
605.28	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.	22%	38%
557.63	My family was given information about opportunities for my child to play with other children.	35%	63%
554.47	My family was given information about ways of connecting with other families for information and mutual support.	35%	67%
542.00	My family was asked whether other children in the family needed help in understanding the needs of the brother or sister with a disability.	42%	68%
529.77	My family was given information about how to advocate for my child and my family.	44%	79%
527.72	My family was given information about where to go for help or support if I feel worried or stressed.	46%	79%
527.51	My family was given information about community programs that are open to all children.	47%	77%
525.78	I was offered help I needed, such as child care or transportation, to participate in the Individualized Family Service Plan (IFSP) meeting(s).	47%	77%
517.61	Someone from the Early Intervention program asked if I was having any problems getting the services I needed.	49%	81%
514.96	My family was given information about what my options are if I disagree with a decision about my child's services.	50%	85%
504.36	Someone from the Early Intervention program asked whether the services my family was receiving were meeting our needs.	55%	86%
503.88	My family was given information about the public school system's programs and services for children age three and older.	55%	85%
491.86	I was given information to help me prepare for my	60%	88%

	child's transition.		
483.54	The IFSP is keeping up with my family's changing needs.	64%	92%
477.73	My service coordinator is available to speak with me on a regular basis.	65%	92%
476.54	I know who to call if I have problems with the services and supports my child and family are receiving.	66%	93%
469.12	The Early Intervention service provider(s) that work with my child do what they say they are going to do.	69%	94%
468.09	My family's daily routines were considered when planning for my child's services.	70%	94%
466.02	My family was given information about activities that I could do with my child in our everyday lives.	71%	94%
462.47	My service coordinator is knowledgeable and professional.	71%	95%
462.13	Written information I receive is written in an understandable way.	70%	96%
460.28	My family was given information about the rights of parents regarding Early Intervention services.	71%	96%
459.49	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.	72%	95%
456.91	I have felt part of the team when meeting to discuss my child.	74%	96%
454.85	The Early Intervention service provider(s) that work with my child are easy for me to talk to about my child and my family.	73%	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 .90, 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 0.67 for all items, suggesting that all items are providing useful information concerning the primary target (i.e., all items are successfully discriminating between individuals with a high versus low level of endorsement of the quality of early intervention services).

Table 7.3. Calibration, Fit, and Discrimination of the FCSS Items				
Item	Location	Infit	Outfit	Discrimination
q1	519.71	1.66	1.68	0.67
q2	531.12	1.24	1.32	0.73
q3	474.99	0.98	1.05	0.70
q4	465.67	0.94	1.08	0.70
q5	452.13	0.75	0.69	0.71
q6	482.14	0.77	0.77	0.75
q7	464.62	0.85	0.87	0.71
q8	457.48	0.82	0.75	0.71
q9	529.54	1.14	1.13	0.74
q10	556.75	1.22	1.30	0.74
q11	505.23	1.24	1.32	0.70
q12	563.84	1.42	1.42	0.72

q13	531.01	0.86	0.83	0.79
q14	515.52	0.88	0.91	0.77
q15	524.02	0.98	0.95	0.76
q16	506.6	0.85	0.83	0.77
q17	608.94	1.73	2.35	0.70
q18	462.78	0.80	0.81	0.73
q19	450.13	0.77	0.70	0.71
q20	455.72	0.72	0.71	0.72
q21	478.99	0.85	0.88	0.73
q22	461.02	0.72	0.73	0.73
q23	461.1	0.70	0.70	0.73
q24	494.89	0.89	0.86	0.75
q25	546.07	1.53	1.53	0.71

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).

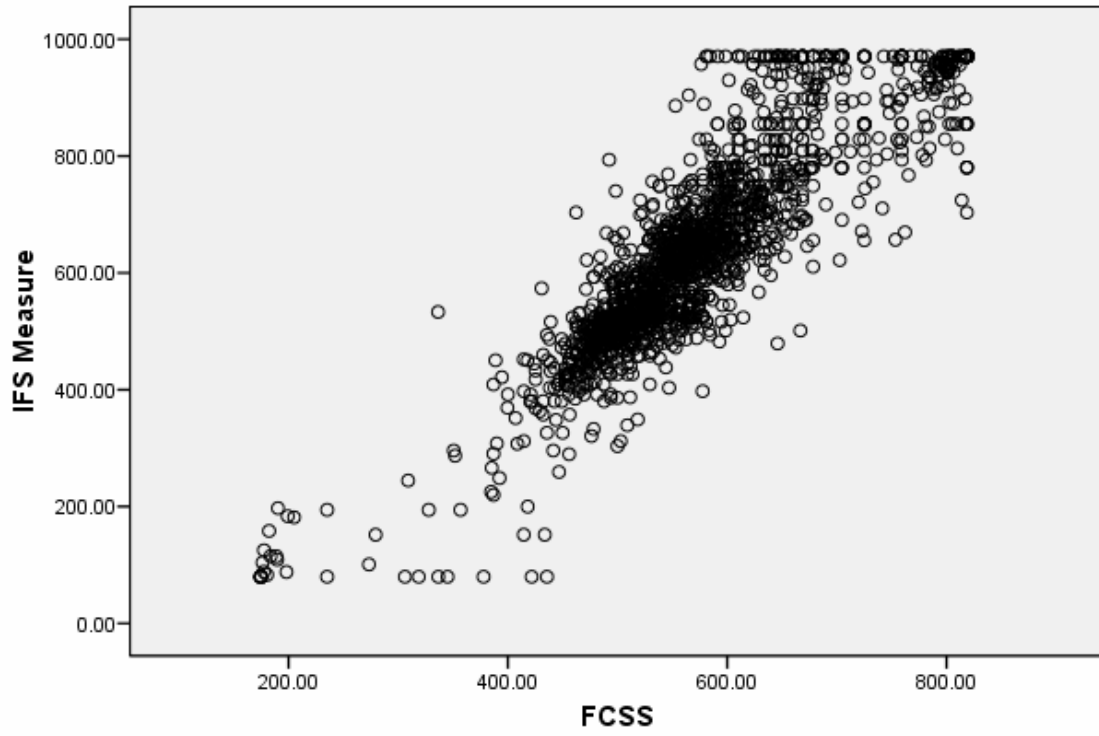
SECTION 8

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.

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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	93	4.9	6.4	6.4
	Strongly Disagree	48	2.5	3.3	9.7
	Disagree	458	24.3	31.6	41.3
	Agree	391	20.8	27.0	68.3
	Strongly Agree	167	8.9	11.5	79.8
	Very Strongly Agree	292	15.5	20.2	100.0
	Total	1449	77.0	100.0	
Missing	System	434	23.0		
Total		1883	100.0		

Know about services in the community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	75	4.0	4.7	4.7
	Strongly Disagree	54	2.9	3.4	8.2
	Disagree	320	17.0	20.3	28.4
	Agree	535	28.4	33.9	62.3
	Strongly Agree	223	11.8	14.1	76.4
	Very Strongly Agree	373	19.8	23.6	100.0
	Total	1580	83.9	100.0	
Missing	System	303	16.1		
Total		1883	100.0		

Improve my family's quality of life.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	48	2.5	2.9	2.9
	Strongly Disagree	17	.9	1.0	3.9
	Disagree	144	7.6	8.7	12.6
	Agree	613	32.6	36.9	49.5
	Strongly Agree	329	17.5	19.8	69.4
	Very Strongly Agree	508	27.0	30.6	100.0
	Total	1659	88.1	100.0	
Missing	System	224	11.9		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	54	2.9	3.2	3.2
	Strongly Disagree	27	1.4	1.6	4.9
	Disagree	191	10.1	11.5	16.3
	Agree	598	31.8	35.9	52.3
	Strongly Agree	308	16.4	18.5	70.8
	Very Strongly Agree	487	25.9	29.2	100.0
	Total	1665	88.4	100.0	
Missing	System	218	11.6		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	57	3.0	3.7	3.7
	Strongly Disagree	32	1.7	2.1	5.7
	Disagree	278	14.8	17.8	23.5
	Agree	532	28.3	34.1	57.7
	Strongly Agree	243	12.9	15.6	73.3
	Very Strongly Agree	417	22.1	26.7	100.0
	Total	1559	82.8	100.0	
Missing	System	324	17.2		
Total		1883	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	40	2.1	2.5	2.5
	Strongly Disagree	17	.9	1.1	3.6
	Disagree	84	4.5	5.3	8.9
	Agree	545	28.9	34.5	43.4
	Strongly Agree	327	17.4	20.7	64.1
	Very Strongly Agree	567	30.1	35.9	100.0
	Total	1580	83.9	100.0	
Missing	System	303	16.1		
Total		1883	100.0		

Feel more confident in my skills as a parent.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	42	2.2	2.5	2.5
	Strongly Disagree	14	.7	.8	3.3
	Disagree	96	5.1	5.7	9.0
	Agree	592	31.4	35.1	44.0
	Strongly Agree	357	19.0	21.1	65.2
	Very Strongly Agree	588	31.2	34.8	100.0
	Total	1689	89.7	100.0	
Missing	System	194	10.3		
Total		1883	100.0		

Keep up friendships for my child and family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	48	2.5	3.4	3.4
	Strongly Disagree	27	1.4	1.9	5.2
	Disagree	249	13.2	17.4	22.6
	Agree	469	24.9	32.8	55.4
	Strongly Agree	237	12.6	16.6	72.0
	Very Strongly Agree	401	21.3	28.0	100.0
	Total	1431	76.0	100.0	
Missing	System	452	24.0		
Total		1883	100.0		

Find information I need.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	53	2.8	3.2	3.2
	Strongly Disagree	20	1.1	1.2	4.3
	Disagree	127	6.7	7.6	11.9
	Agree	620	32.9	36.9	48.8
	Strongly Agree	324	17.2	19.3	68.0
	Very Strongly Agree	538	28.6	32.0	100.0
	Total	1682	89.3	100.0	
Missing	System	201	10.7		
Total		1883	100.0		

Be more effective in managing my child's behavior.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	37	2.0	2.4	2.4
	Strongly Disagree	15	.8	1.0	3.4
	Disagree	134	7.1	8.7	12.1
	Agree	554	29.4	36.1	48.2
	Strongly Agree	322	17.1	21.0	69.2
	Very Strongly Agree	473	25.1	30.8	100.0
	Total	1535	81.5	100.0	
Missing	System	348	18.5		
Total		1883	100.0		

Figure out solutions to problems as they come up.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	38	2.0	2.3	2.3
	Strongly Disagree	13	.7	.8	3.1
	Disagree	111	5.9	6.7	9.8
	Agree	590	31.3	35.8	45.7
	Strongly Agree	359	19.1	21.8	67.5
	Very Strongly Agree	535	28.4	32.5	100.0
	Total	1646	87.4	100.0	
Missing	System	237	12.6		
Total		1883	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	55	2.9	3.2	3.2
	Strongly Disagree	23	1.2	1.3	4.5
	Disagree	88	4.7	5.1	9.6
	Agree	601	31.9	34.8	44.5
	Strongly Agree	357	19.0	20.7	65.2
	Very Strongly Agree	601	31.9	34.8	100.0
	Total	1725	91.6	100.0	
Missing	System	158	8.4		
Total		1883	100.0		

Understand how the Early Intervention system works.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	40	2.1	2.2	2.2
	Strongly Disagree	22	1.2	1.2	3.5
	Disagree	65	3.5	3.6	7.1
	Agree	645	34.3	36.0	43.0
	Strongly Agree	376	20.0	21.0	64.0
	Very Strongly Agree	646	34.3	36.0	100.0
	Total	1794	95.3	100.0	
Missing	System	89	4.7		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	45	2.4	2.5	2.5
	Strongly Disagree	23	1.2	1.3	3.8
	Disagree	61	3.2	3.4	7.2
	Agree	586	31.1	32.7	39.9
	Strongly Agree	402	21.3	22.4	62.3
	Very Strongly Agree	675	35.8	37.7	100.0
	Total	1792	95.2	100.0	
Missing	System	91	4.8		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	41	2.2	2.7	2.7
	Strongly Disagree	16	.8	1.0	3.7
	Disagree	94	5.0	6.1	9.9
	Agree	521	27.7	34.0	43.9
	Strongly Agree	325	17.3	21.2	65.1
	Very Strongly Agree	535	28.4	34.9	100.0
	Total	1532	81.4	100.0	
Missing	System	351	18.6		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	42	2.2	2.8	2.8
	Strongly Disagree	15	.8	1.0	3.9
	Disagree	102	5.4	6.9	10.8
	Agree	504	26.8	34.1	44.9
	Strongly Agree	297	15.8	20.1	65.0
	Very Strongly Agree	516	27.4	35.0	100.0
	Total	1476	78.4	100.0	
Missing	System	407	21.6		
Total		1883	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	34	1.8	2.1	2.1
	Strongly Disagree	15	.8	.9	3.1
	Disagree	87	4.6	5.5	8.5
	Agree	530	28.1	33.3	41.8
	Strongly Agree	351	18.6	22.0	63.8
	Very Strongly Agree	576	30.6	36.2	100.0
	Total	1593	84.6	100.0	
Missing	System	290	15.4		
Total		1883	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	33	1.8	2.0	2.0
	Strongly Disagree	14	.7	.8	2.8
	Disagree	63	3.3	3.7	6.5
	Agree	612	32.5	36.4	43.0
	Strongly Agree	346	18.4	20.6	63.5
	Very Strongly Agree	613	32.6	36.5	100.0
	Total	1681	89.3	100.0	
Missing	System	202	10.7		
Total		1883	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	42	2.2	2.4	2.4
	Strongly Disagree	20	1.1	1.1	3.5
	Disagree	59	3.1	3.3	6.9
	Agree	588	31.2	33.3	40.1
	Strongly Agree	353	18.7	20.0	60.1
	Very Strongly Agree	704	37.4	39.9	100.0
	Total	1766	93.8	100.0	
Missing	System	117	6.2		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	34	1.8	1.9	1.9
	Strongly Disagree	14	.7	.8	2.7
	Disagree	32	1.7	1.8	4.6
	Agree	518	27.5	29.5	34.1
	Strongly Agree	370	19.6	21.1	55.1
	Very Strongly Agree	788	41.8	44.9	100.0
	Total	1756	93.3	100.0	
Missing	System	127	6.7		
Total		1883	100.0		

Understand my child's special needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	36	1.9	2.1	2.1
	Strongly Disagree	13	.7	.8	2.9
	Disagree	51	2.7	3.0	5.9
	Agree	516	27.4	30.4	36.3
	Strongly Agree	361	19.2	21.3	57.6
	Very Strongly Agree	720	38.2	42.4	100.0
	Total	1697	90.1	100.0	
Missing	System	186	9.9		
Total		1883	100.0		

Feel that my efforts are helping my child.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	35	1.9	2.0	2.0
	Strongly Disagree	16	.8	.9	2.9
	Disagree	36	1.9	2.0	4.9
	Agree	505	26.8	28.6	33.6
	Strongly Agree	360	19.1	20.4	54.0
	Very Strongly Agree	811	43.1	46.0	100.0
	Total	1763	93.6	100.0	
Missing	System	120	6.4		
Total		1883	100.0		

Appendix B: Item Response Frequencies for the FCSS

Frequency Table

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	91	4.8	6.6	6.6
	Strongly Disagree	30	1.6	2.2	8.8
	Disagree	191	10.1	13.9	22.6
	Agree	412	21.9	29.9	52.5
	Strongly Agree	209	11.1	15.2	67.7
	Very Strongly Agree	445	23.6	32.3	100.0
	Total	1378	73.2	100.0	
Missing	System	505	26.8		
Total		1883	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	72	3.8	4.4	4.4
	Strongly Disagree	46	2.4	2.8	7.3
	Disagree	224	11.9	13.8	21.1
	Agree	530	28.1	32.7	53.7
	Strongly Agree	295	15.7	18.2	71.9
	Very Strongly Agree	456	24.2	28.1	100.0
	Total	1623	86.2	100.0	
Missing	System	260	13.8		
Total		1883	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	44	2.3	2.4	2.4
	Strongly Disagree	20	1.1	1.1	3.5
	Disagree	59	3.1	3.2	6.7
	Agree	507	26.9	27.7	34.4
	Strongly Agree	391	20.8	21.4	55.8
	Very Strongly Agree	809	43.0	44.2	100.0
	Total	1830	97.2	100.0	
Missing	System	53	2.8		
Total		1883	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	34	1.8	1.9	1.9
	Strongly Disagree	24	1.3	1.3	3.2
	Disagree	51	2.7	2.8	5.9
	Agree	447	23.7	24.4	30.3
	Strongly Agree	417	22.1	22.7	53.0
	Very Strongly Agree	862	45.8	47.0	100.0
	Total	1835	97.5	100.0	
Missing	System	48	2.5		
Total		1883	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	41	2.2	2.2	2.2
	Strongly Disagree	11	.6	.6	2.8
	Disagree	29	1.5	1.6	4.4
	Agree	395	21.0	21.5	25.9
	Strongly Agree	434	23.0	23.6	49.5
	Very Strongly Agree	930	49.4	50.5	100.0
	Total	1840	97.7	100.0	
Missing	System	43	2.3		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	43	2.3	2.5	2.5
	Strongly Disagree	19	1.0	1.1	3.6
	Disagree	76	4.0	4.4	8.0
	Agree	482	25.6	27.8	35.8
	Strongly Agree	404	21.5	23.3	59.1
	Very Strongly Agree	708	37.6	40.9	100.0
	Total	1732	92.0	100.0	
Missing	System	151	8.0		
Total		1883	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	37	2.0	2.0	2.0
	Strongly Disagree	15	.8	.8	2.8
	Disagree	54	2.9	2.9	5.7
	Agree	438	23.3	23.7	29.4
	Strongly Agree	442	23.5	23.9	53.4
	Very Strongly Agree	862	45.8	46.6	100.0
	Total	1848	98.1	100.0	
Missing	System	35	1.9		
Total		1883	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	33	1.8	1.8	1.8
	Strongly Disagree	12	.6	.6	2.4
	Disagree	35	1.9	1.9	4.3
	Agree	451	24.0	24.3	28.7
	Strongly Agree	409	21.7	22.1	50.7
	Very Strongly Agree	913	48.5	49.3	100.0
	Total	1853	98.4	100.0	
Missing	System	30	1.6		
Total		1883	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	67	3.6	3.8	3.8
	Strongly Disagree	38	2.0	2.2	6.0
	Disagree	300	15.9	17.1	23.1
	Agree	533	28.3	30.4	53.4
	Strongly Agree	313	16.6	17.8	71.2
	Very Strongly Agree	505	26.8	28.8	100.0
	Total	1756	93.3	100.0	
Missing	System	127	6.7		
Total		1883	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	80	4.2	4.7	4.7
	Strongly Disagree	54	2.9	3.2	7.9
	Disagree	428	22.7	25.4	33.3
	Agree	527	28.0	31.2	64.5
	Strongly Agree	234	12.4	13.9	78.4
	Very Strongly Agree	365	19.4	21.6	100.0
	Total	1688	89.6	100.0	
Missing	System	195	10.4		
Total		1883	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	37	2.0	2.4	2.4
	Strongly Disagree	26	1.4	1.7	4.0
	Disagree	164	8.7	10.5	14.5
	Agree	477	25.3	30.5	45.0
	Strongly Agree	298	15.8	19.1	64.1
	Very Strongly Agree	562	29.8	35.9	100.0
	Total	1564	83.1	100.0	
Missing	System	319	16.9		
Total		1883	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	98	5.2	6.0	6.0
	Strongly Disagree	55	2.9	3.4	9.4
	Disagree	442	23.5	27.3	36.7
	Agree	455	24.2	28.1	64.8
	Strongly Agree	204	10.8	12.6	77.4
	Very Strongly Agree	367	19.5	22.6	100.0
	Total	1621	86.1	100.0	
Missing	System	262	13.9		
Total		1883	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	62	3.3	3.7	3.7
	Strongly Disagree	43	2.3	2.6	6.3
	Disagree	248	13.2	14.9	21.3
	Agree	572	30.4	34.5	55.7
	Strongly Agree	282	15.0	17.0	72.7
	Very Strongly Agree	453	24.1	27.3	100.0
	Total	1660	88.2	100.0	
Missing	System	223	11.8		
Total		1883	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	54	2.9	3.1	3.1
	Strongly Disagree	33	1.8	1.9	5.0
	Disagree	182	9.7	10.4	15.4
	Agree	606	32.2	34.7	50.1
	Strongly Agree	332	17.6	19.0	69.1
	Very Strongly Agree	539	28.6	30.9	100.0
	Total	1746	92.7	100.0	
Missing	System	137	7.3		
Total		1883	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	60	3.2	3.4	3.4
	Strongly Disagree	42	2.2	2.4	5.8
	Disagree	241	12.8	13.6	19.4
	Agree	559	29.7	31.6	51.0
	Strongly Agree	295	15.7	16.7	67.7
	Very Strongly Agree	572	30.4	32.3	100.0
	Total	1769	93.9	100.0	
Missing	System	114	6.1		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	62	3.3	3.4	3.4
	Strongly Disagree	34	1.8	1.9	5.3
	Disagree	159	8.4	8.8	14.1
	Agree	562	29.8	31.0	45.1
	Strongly Agree	348	18.5	19.2	64.3
	Very Strongly Agree	646	34.3	35.7	100.0
	Total	1811	96.2	100.0	
Missing	System	72	3.8		
Total		1883	100.0		

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.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	195	10.4	13.7	13.7
	Strongly Disagree	117	6.2	8.2	21.8
	Disagree	578	30.7	40.5	62.3
	Agree	226	12.0	15.8	78.2
	Strongly Agree	99	5.3	6.9	85.1
	Very Strongly Agree	213	11.3	14.9	100.0
	Total	1428	75.8	100.0	
Missing	System	455	24.2		
Total		1883	100.0		

he 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	38	2.0	2.0	2.0
	Strongly Disagree	14	.7	.8	2.8
	Disagree	67	3.6	3.6	6.4
	Agree	464	24.6	25.0	31.4
	Strongly Agree	405	21.5	21.8	53.3
	Very Strongly Agree	867	46.0	46.7	100.0
	Total	1855	98.5	100.0	
Missing	System	28	1.5		
Total		1883	100.0		

he 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	38	2.0	2.0	2.0
	Strongly Disagree	10	.5	.5	2.6
	Disagree	49	2.6	2.6	5.2
	Agree	399	21.2	21.5	26.7
	Strongly Agree	369	19.6	19.8	46.5
	Very Strongly Agree	994	52.8	53.5	100.0
	Total	1859	98.7	100.0	
Missing	System	24	1.3		
Total		1883	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	37	2.0	2.0	2.0
	Strongly Disagree	16	.8	.9	2.9
	Disagree	45	2.4	2.4	5.3
	Agree	410	21.8	22.2	27.5
	Strongly Agree	394	20.9	21.3	48.9
	Very Strongly Agree	944	50.1	51.1	100.0
	Total	1846	98.0	100.0	
Missing	System	37	2.0		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	50	2.7	2.7	2.7
	Strongly Disagree	20	1.1	1.1	3.8
	Disagree	75	4.0	4.1	7.9
	Agree	504	26.8	27.5	35.4
	Strongly Agree	356	18.9	19.4	54.9
	Very Strongly Agree	827	43.9	45.1	100.0
	Total	1832	97.3	100.0	
Missing	System	51	2.7		
Total		1883	100.0		

My service coordinator is knowledgeable and professional.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	39	2.1	2.1	2.1
	Strongly Disagree	11	.6	.6	2.7
	Disagree	48	2.5	2.6	5.3
	Agree	440	23.4	23.8	29.1
	Strongly Agree	395	21.0	21.4	50.5
	Very Strongly Agree	913	48.5	49.5	100.0
	Total	1846	98.0	100.0	
Missing	System	37	2.0		
Total		1883	100.0		

Written information I receive is written in an understandable way.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	29	1.5	1.6	1.6
	Strongly Disagree	9	.5	.5	2.1
	Disagree	33	1.8	1.8	3.8
	Agree	487	25.9	26.3	30.1
	Strongly Agree	391	20.8	21.1	51.2
	Very Strongly Agree	904	48.0	48.8	100.0
	Total	1853	98.4	100.0	
Missing	System	30	1.6		
Total		1883	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	48	2.5	3.0	3.0
	Strongly Disagree	13	.7	.8	3.9
	Disagree	133	7.1	8.4	12.3
	Agree	434	23.0	27.5	39.7
	Strongly Agree	306	16.3	19.4	59.1
	Very Strongly Agree	647	34.4	40.9	100.0
	Total	1581	84.0	100.0	
Missing	System	302	16.0		
Total		1883	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	90	4.8	6.9	6.9
	Strongly Disagree	31	1.6	2.4	9.2
	Disagree	300	15.9	22.9	32.1
	Agree	342	18.2	26.1	58.2
	Strongly Agree	176	9.3	13.4	71.6
	Very Strongly Agree	373	19.8	28.4	100.0
	Total	1312	69.7	100.0	
Missing	System	571	30.3		
Total		1883	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, 2008 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=N:\consulting\Virginia\2009\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: 2008 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=N:\consulting\Virginia\2009\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, 2008 D ZOU911ws.txt Nov 9 12:30 2008
 INPUT: 1883 PERSONS, 22 ITEMS MEASURED: 1850 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+
      .## 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, 2008 D ZOU911ws.txt Nov 9 12:30 2008

INPUT: 1883 PERSONS, 22 ITEMS MEASURED: 1850 PERSONS, 22 ITEMS, 5 CATS 3.57.1

SUMMARY OF 1533 MEASURED (NON-EXTREME) PERSONS

	RAW SCORE	COUNT	MEASURE	REAL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	69.0	19.6	596.27	26.72	.98	-.5	.98	-.5
S.D.	22.5	4.4	122.78	11.33	.90	2.3	.98	2.2
MAX.	109.0	22.0	898.14	171.83	9.90	9.9	9.90	9.9
MIN.	2.0	1.0	151.87	18.12	.00	-6.2	.00	-6.1
REAL RMSE	29.03	ADJ.SD	119.30	SEPARATION	4.11	PERSON RELIABILITY	.94	
MODEL RMSE	25.80	ADJ.SD	120.04	SEPARATION	4.65	PERSON RELIABILITY	.96	
S.E. OF PERSON MEAN = 3.14								

MAXIMUM EXTREME SCORE: 291 PERSONS
 MINIMUM EXTREME SCORE: 26 PERSONS
 LACKING RESPONSES: 33 PERSONS
 VALID RESPONSES: 89.0%

SUMMARY OF 1850 MEASURED (EXTREME AND NON-EXTREME) PERSONS

	RAW SCORE	COUNT	MEASURE	REAL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	72.5	19.5	644.96	40.71				
S.D.	25.7	4.5	183.16	32.44				
MAX.	110.0	22.0	970.72	171.83				
MIN.	2.0	1.0	79.80	18.12				
REAL RMSE	52.06	ADJ.SD	175.61	SEPARATION	3.37	PERSON RELIABILITY	.92	
MODEL RMSE	50.63	ADJ.SD	176.03	SEPARATION	3.48	PERSON RELIABILITY	.92	
S.E. OF PERSON MEAN = 4.26								

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 SCORE	COUNT	MEASURE	REAL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	4804.6	1364.9	568.23	2.71	.99	-1.2	1.02	-.6
S.D.	611.4	84.4	46.35	.25	.27	5.0	.36	4.7
MAX.	5720.0	1490.0	677.50	3.60	1.92	9.9	2.25	9.9
MIN.	3372.0	1199.0	497.80	2.51	.66	-9.5	.64	-7.8
REAL RMSE	2.72	ADJ.SD	46.27	SEPARATION	16.99	ITEM RELIABILITY	1.00	
MODEL RMSE	2.61	ADJ.SD	46.28	SEPARATION	17.74	ITEM RELIABILITY	1.00	
S.E. OF ITEM MEAN = 10.11								

UMEAN=568.300 USCALE=58.910
 ITEM RAW SCORE-TO-MEASURE CORRELATION = -.89 (approximate due to missing data)

TABLE 10.1 Virginia Impact all individuals, 2008 ZOU911ws.txt Nov 9 12:30 2008
 INPUT: 1883 PERSONS, 22 ITEMS MEASURED: 1850 PERSONS, 22 ITEMS, 5 CATS 3.57.1

PERSON: REAL SEP.: 4.11 REL.: .94 ... ITEM: REAL SEP.: 16.99 REL.: 1.00

ITEM STATISTICS: MISFIT ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	REAL S.E.	INFIT MNSQ ZSTD	OUTFIT MNSQ ZSTD	PTMEA CORR.	DISPLACE	ITEM
1	3372	1239	677.50A	3.60	1.92 9.9	2.25 9.9	A .77	2.42	q26
2	3945	1326	656.00A	3.09	1.50 9.9	1.75 9.9	B .82	-8.06	q27
8	3833	1199	624.80A	3.11	1.33 7.2	1.38 7.1	C .83	-9.03	q33
3	4761	1384	569.80A	2.74	1.13 3.1	1.22 4.3	D .84	10.95	q28
5	4095	1304	639.80A	2.69	1.10 2.5	1.12 2.6	E .85	-14.99	q30
6	4776	1321	539.00A	2.69	1.00 .0	1.03 .6	F .84	14.72	q31
19	5461	1463	538.90A	2.55	1.00 .0	.96 -.8	G .82	-5.67	q44
4	4611	1384	608.80A	2.53	.98 -.5	.97 -.6	H .86	-11.98	q29
22	5720	1462	498.10A	2.61	.89 -3.0	.97 -.4	I .81	7.59	q47
15	4567	1276	559.10A	2.70	.95 -1.3	.97 -.6	J .84	.47	q40
16	4369	1228	562.20A	2.75	.92 -1.9	.90 -1.9	K .85	-.28	q41
10	4403	1275	583.50A	2.68	.89 -2.6	.92 -1.6	k .86	-4.96	q35
11	4824	1364	540.40A	2.64	.83 -4.5	.90 -1.9	j .87	25.70	q36
13	5437	1490	552.90A	2.51	.90 -2.6	.88 -2.6	i .84	-5.70	q38
9	4830	1395	576.80A	2.57	.89 -2.8	.87 -2.8	h .86	1.42	q34
7	5065	1406	559.30A	2.58	.87 -3.4	.85 -3.0	g .85	-4.34	q32
14	5504	1489	534.40A	2.53	.87 -3.5	.85 -3.1	f .84	4.22	q39
20	5670	1456	497.80A	2.62	.84 -4.2	.75 -4.3	e .82	10.10	q45
21	5412	1414	516.10A	2.63	.82 -4.7	.79 -3.7	d .83	3.33	q46
12	5113	1432	564.50A	2.55	.76 -6.5	.70 -6.9	c .86	-4.78	q37
17	4814	1322	555.90A	2.67	.73 -7.3	.72 -5.9	b .86	-7.09	q42
18	5119	1398	545.50A	2.61	.66 -9.5	.64 -7.8	a .86	.15	q43
MEAN	4804.6	1364.9	568.23	2.71	.99 -1.2	1.02 -.6			
S.D.	611.4	84.4	46.35	.25	.27 5.0	.36 4.7			