

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 to 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 1,529 families receiving early intervention services. From these responses, a random sample of 788 families reflecting the distribution of race/ethnicity in the larger population was selected for data analysis. This number exceeds the minimum number required for an adequate confidence level based on established survey sample guidelines (e.g., <http://www.surveysystem.com/sscalc.htm>).

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 Impact on Family Scale, 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 644.2. The standard deviation was 175.0, and the standard error of the mean was 6.28. The 95% confidence interval for the mean was 631.8 – 656.5. 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 67.2%. The 95% confidence interval for the true

population percentage is 63.8% – 70.4%. 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 64.7%. The 95% confidence interval for the true population percentage is 61.3% - 68.0%.

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 74.4% - 80.3%.

3. Minimum Measurable Target Percentage

In the previous year's report, targets for improved performance on the SPP indicators were established. The obtained mean of 644.2 on the 2007 survey exceeded the target of 627.3, indicating that Virginia exceeded its targeted value. The obtained percentage of 67.2% for indicator 4a exceeded the targeted percentage of 65.8% and the obtained percentage of 64.7% for indicator 4b exceeded the targeted percentage of 61.9%. However, the obtained percentage of 77.5 for indicator 4c did not meet the targeted percentage of 77.6.

4. Statewide Mean Measure on the FCSS

The mean FCSS measure for families participating in the Virginia survey was 575.6 with a standard deviation of 105.6 and a standard error of the mean of 2.72. The 95% confidence interval for the mean was 570.2 – 580.9. Because there is no federal requirement to report families' perceptions of the quality of early intervention services, no standard was set for this scale. Further descriptive information is found in Section 7.

SECTION 2

BACKGROUND

2.1. Federal Requirements

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

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

2.2. Survey Instrument

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

across the country. A full description of the development of the item content is available on the NCSEAM website, <http://www.monitoringcenter.lsuhs.edu>.

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 made operational 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 1529 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 788 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 1529 (Table 3.1), and the representative sample of 788 (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	Percentage¹
White	1023	66.9%
Black or African-American	158	10.3%
Hispanic or Latino	106	6.9%
Asian or Pacific Islander	61	4.0%
American Indian or Alaskan Native	2	0.1%
Multi-racial	125	8.2%
Missing	54	3.5%
Total	1529	100.0%

¹ Percentages have been rounded and may not sum to exactly 100%.

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

Gender	N	Percentage²
White	510	64.7%
Black or African-American	158	20.1%
Hispanic or Latino	83	10.5%
Asian or Pacific Islander	36	4.6%
American Indian or Alaskan Native	1	0.1%
Total	788	100.0%

Note. The distribution of race/ethnicity for the children receiving early intervention services in Virginia under Part C are: White = 64.6%, Black/African American = 20.2%, Hispanic = 10.5%, Asian/Pacific Islander = 4.6%, American Indian or Alaskan Native = .07%.

² Percentages have been rounded and may not sum to exactly 100%.

3.2. Distribution of Child's Gender in the Sample

Table 3.3, below, displays the distribution of child's gender in the sample.

Table 3.3. Distribution of Child's Gender in the Sample		
Gender	N	Percentage³
Male	935	61%
Female	558	37%
Missing	36	2%
Total	1529	100%

³ Percentages have been rounded and may not sum to exactly 100%.

SECTION 4

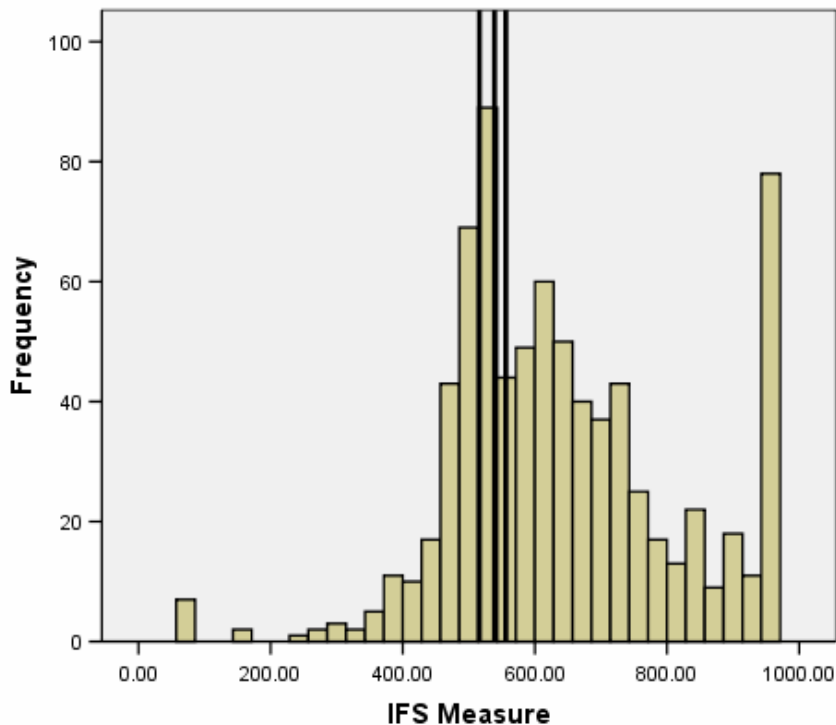
RESULTS PERTAINING TO INDICATOR #4

4.1 Distribution of IFS Measures

Of the 788 respondents included in the representative sample, 777 had valid responses to the IFS. The distribution of IFS measures for the 777 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 three 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 between the first two standard values. Many of these individuals responded in the “agree” category to each and every item. The third and more minor exception is the somewhat elevated number of respondents with measures at the extreme negative end of the scale, represented by the extended bar at the extreme left of the graph. When individuals fail to make any distinction among items that are known to have different levels of agreeability, they are said to display a “response set,” that is, a uniform way of responding that makes it hard to judge whether the responses are authentic or are, in effect, a way of complying with the task that does not really provide useful information. This phenomenon should be taken into consideration when interpreting the findings.

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
644.2	175.0	6.28	631.8 – 656.5

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 644.2 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.	27%	58%
656	Know about services in the community.	34%	71%
640	Know where to go for support to meet my family's needs.	40%	75%
625	Keep up friendships for my child and family.	40%	72%

609	Know where to go for support to meet my child's needs.	46%	83%
584	Be more effective in managing my child's behavior.	47%	88%
577	Find information I need.	48%	87%
570	Improve my family's quality of life.	47%	89%
565	Feel that I can get the services and supports that my child and family need.	53%	90%
562	Feel that my family will be accepted and welcomed in the community	53%	89%
559	Feel more confident in my skills as a parent.	54%	91%
559	Feel that my child will be accepted and welcomed in the community.	53%	90%
556	Communicate more effectively with the people who work with my child and family.	55%	91%
553	Understand how the Early Intervention system works.	56%	92%
546	Understand the roles of the people who work with my child and family.	55%	94%
540	Figure out solutions to problems as they come up.	52%	90%
539	Feel that I can handle the challenges of parenting a child with special needs.	53%	91%
539	Know about my child's and family's rights concerning Early Intervention services.	58%	94%
534	Be able to evaluate how much progress my child is making.	59%	93%
516	Understand my child's special needs.	63%	95%
498	Feel that my efforts are helping my child.	67%	96%
498	Do things with and for my child that are good for my child's development.	65%	96%

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 approximately 45%-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 25% 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 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			
	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	67.2%	64.7%	77.5%
95% Confidence Interval	63.8% - 70.4%	61.3% – 68.0%	74.4% – 80.3%

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 = 1013)	63.7% 95% CI: 60.7% - 66.6%	61.0% 95% CI: 58.0% - 64.0%	74.5% 95% CI: 71.8% - 77.1%
Black or African American (N = 155)	66.5% 95% CI: 58.7% - 73.4%	65.2% 95% CI: 57.4% - 72.2%	79.4% 95% CI: 72.3% - 85.0%
Hispanic or Latino (N = 104)	75.0% 95% CI: 65.9% - 82.3%	70.2% 95% CI: 60.8% - 78.1%	92.3% 95% CI: 85.6% - 96.1%
Asian or Pacific Islander (N = 60)	58.3% 95% CI: 45.7% - 69.9%	56.7% 95% CI: 44.1% - 68.4%	66.7% 95% CI: 54.1% - 77.3%
American Indian (N = 2)	0% 95% CI: --	0% 95% CI: --	100.0% 95% CI: --
Multiracial/Other (N = 124)	66.9% 95% CI: 58.3% - 74.6%	61.3% 95% CI: 52.5% - 69.4%	77.4% 95% CI: 69.3% - 83.9%

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	26	53.8%	53.8%	61.5%
Alleghany Highlands	10	*	*	*
Arlington	67	58.2%	55.2%	79.1%
Blue Ridge	37	70.3%	67.6%	86.5%
Central	47	51.1%	51.1%	66.0%
Chesapeake	52	69.2%	67.3%	76.9%
Chesterfield	64	68.8%	67.2%	73.4%
Colonial	38	71.1%	71.1%	81.6%
Crater_District 19	18	72.2%	72.2%	100.0%
Cumberland	21	76.2%	76.2%	90.5%
Danville	21	71.4%	71.4%	85.7%
Dickenson	3	*	*	*
Eastern Shore	9	*	*	*
Fairfax	229	62.0%	58.5%	71.6%
Goochland	13	*	*	*
Hampton Newport News	45	68.9%	64.4%	73.3%
Hanover	23	65.2%	65.2%	69.6%
Harrisonburg	26	61.5%	61.5%	80.8%
Henrico	87	64.4%	56.3%	74.7%
Highlands	9	*	*	*
Lenowisco	8	*	*	*
Loudoun	50	60.0%	56.0%	68.0%
Middle Penninsula	19	89.5%	73.7%	100.0%
Mount Rogers	26	57.7%	57.7%	84.6%
New River Valley	31	64.5%	61.3%	77.4%
Norfolk	50	72.0%	72.0%	90.0%
PD 14	7	*	*	*
Piedmont	21	61.9%	61.9%	85.7%
Portsmouth	18	55.6%	50.0%	77.8%
Prince William County	69	66.7%	62.3%	71.0%
Rappahannock	45	51.1%	51.1%	66.7%
Rappahannock Rapidan	27	44.4%	40.7%	51.9%
Richmond	37	67.6%	64.9%	78.4%

Roanoke	52	57.7%	53.8%	73.1%
Rockbridge	12	*	*	*
Shenandoah	21	52.4%	47.6%	71.4%
Southside	4	*	*	*
Valley	22	68.2%	63.6%	72.7%
Virginia Beach	100	69.0%	68.0%	77.0%
Western Tidewater	35	68.6%	60.0%	85.7%

* 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 previous year's report, targets for improved performance on the SPP indicators were established. The targets for Federal Fiscal Year (FFY) 2006 (July 1, 2006 – June 30, 2007), along with the observed results, are displayed in Table 4.6. The obtained 2007 mean of 644.2 exceeded the target of 627.3, indicating that Virginia exceeded its targeted value. The obtained percentage of 67.2% for indicator 4a exceeded the targeted percentage of 65.8% and the obtained percentage of 64.7% for indicator 4b exceeded the targeted percentage of 61.9%. However, the obtained percentage of 77.5 for indicator 4c did not meet the targeted percentage of 77.6.

Table 4.6. Comparing the Obtained Outcomes in 2007 to the State Targets				
Year	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
Target	627.3	65.8%	61.9%	77.6%
Obtained Outcomes for FFY 2006	644.2	67.2%	64.7%	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. Guidelines for creating comparable item sets are available at:

<http://www.monitoringcenter.lsuhscc.edu/PDF%20Word/Guidelines%20for%20Item%20Shopping%20December%202006.pdf>.

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 measure⁴ (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).⁵ 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

⁴ 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).

⁵ 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, or less than 0.5, 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	1.89	1.99	0.75
q27	656.0	1.38	1.43	0.81
q28	569.8	1.09	1.17	0.82
q29	608.8	1.01	1.03	0.85
q30	639.8	1.03	1.06	0.85
q31	539.0	1.02	0.98	0.83
q32	559.3	0.88	0.89	0.84
q33	624.8	1.28	1.32	0.83
q34	576.8	0.88	0.88	0.85
q35	583.5	0.88	0.88	0.85

q36	540.4	0.87	0.84	0.86
q37	564.5	0.8	0.76	0.85
q38	552.9	0.92	0.92	0.83
q39	534.4	0.81	0.87	0.84
q40	559.1	0.9	0.87	0.84
q41	562.2	0.9	0.89	0.84
q42	555.9	0.74	0.78	0.85
q43	545.5	0.73	0.74	0.85
q44	538.9	0.88	0.84	0.82
q45	497.8	0.78	0.81	0.81
q46	516.1	0.86	0.9	0.81
q47	498.1	0.85	0.9	0.79

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 575.6, with a standard deviation of 105.6 and a standard error of the sample mean equal to 2.72. The 95% confidence interval for the mean was 570.2 – 580.9.

Table 7.1. Properties of FCSS Measures for the representative sample			
Sample Mean	Standard Deviation	Standard Error of the Sample Mean	95% Confidence Interval for the Population Mean
575.6	105.6	2.72	570.2 – 580.9

A mean of 575.6.9 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
608.94	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.	20%	36%
563.84	My family was given information about opportunities for my child to play with other children.	31%	60%
556.75	My family was given information about ways of connecting with other families for information and mutual support.	34%	64%
546.07	My family was asked whether other children in the family needed help in understanding the needs of the brother or sister with a disability.	39%	68%
531.12	My family was given information about where to go for help or support if I feel worried or stressed.	43%	75%
531.01	My family was given information about how to advocate for my child and my family.	42%	78%
529.54	My family was given information about community programs that are open to all children.	44%	75%
524.02	Someone from the Early Intervention program asked if I was having any problems getting the services I needed.	45%	78%
519.71	I was offered help I needed, such as child care or transportation, to participate in the Individualized Family Service Plan (IFSP) meeting(s).	48%	77%
515.52	My family was given information about what my options are if I disagree with a decision about my child's services.	47%	84%
506.6	Someone from the Early Intervention program asked whether the services my family was receiving were meeting our needs.	53%	85%
505.23	My family was given information about the public school system's programs and services for children age three and older.	52%	84%
494.89	I was given information to help me prepare for my child's transition.	59%	87%
482.14	The IFSP is keeping up with my family's changing needs.	62%	92%
478.99	My service coordinator is available to speak with me on a regular basis.	63%	91%
474.99	I know who to call if I have problems with the services and supports my child and family are	64%	93%

	receiving.		
465.67	My family's daily routines were considered when planning for my child's services.	68%	95%
464.62	My family was given information about activities that I could do with my child in our everyday lives.	69%	94%
462.78	The Early Intervention service provider(s) that work with my child do what they say they are going to do.	68%	95%
461.1	Written information I receive is written in an understandable way.	68%	97%
461.02	My service coordinator is knowledgeable and professional.	69%	95%
457.48	My family was given information about the rights of parents regarding Early Intervention services.	70%	96%
455.72	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%	96%
452.13	I have felt part of the team when meeting to discuss my child.	74%	96%
450.13	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%	96%

7.2. Psychometric Properties of the FCSS Measures and Items

An initial analysis and Rasch calibration of the FCSS was conducted to provide information concerning the reliability and validity of the FCSS measures. The response frequencies for each of the 25 items of the FCSS are provided in Appendix B. The reliability of the FCSS measures estimated within the Rasch framework was .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 – only one item displayed substantially poor fit (q1). The discrimination of the items was greater than 0.6, 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	1.63	1.71	0.68
q2	531.12	1.21	1.18	0.73
q3	474.99	1.01	1.03	0.69
q4	465.67	0.87	0.91	0.70
q5	452.13	0.75	0.71	0.70
q6	482.14	0.76	0.77	0.74
q7	464.62	0.97	0.95	0.68
q8	457.48	0.81	0.77	0.70
q9	529.54	1.12	1.08	0.74
q10	556.75	1.2	1.18	0.75
q11	505.23	1.27	1.37	0.69
q12	563.84	1.3	1.28	0.74
q13	531.01	0.87	0.86	0.78
q14	515.52	0.84	0.83	0.77
q15	524.02	0.99	0.98	0.76
q16	506.6	0.82	0.8	0.77
q17	608.94	2.04	2.28	0.63
q18	462.78	0.77	0.78	0.71
q19	450.13	0.72	0.63	0.70
q20	455.72	0.66	0.59	0.72
q21	478.99	0.87	1.01	0.72
q22	461.02	0.74	0.7	0.72
q23	461.1	0.7	0.82	0.72
q24	494.89	1.01	0.99	0.72
q25	546.07	1.55	1.58	0.70

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).

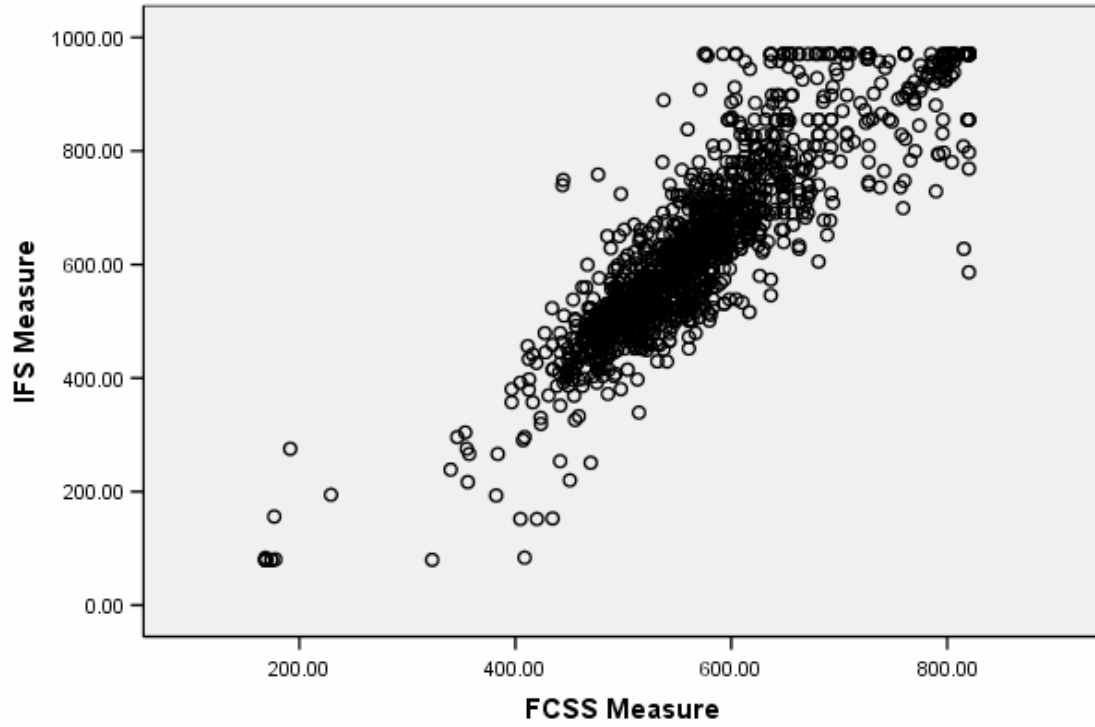
SECTION 8

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 calibration was set by equating 21 of the 22 items in relation to the calibrated values obtained by Dr. William Fisher, Consultant to NCSEAM, for a large dataset of five states (one of the items on the IFS was not contained in Dr. Fisher's analyses). 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 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 9

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

Frequency Table

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	74	4.8	6.5	6.5
	Strongly Disagree	44	2.9	3.9	10.4
	Disagree	356	23.3	31.3	41.6
	Agree	363	23.7	31.9	73.5
	Strongly Agree	95	6.2	8.3	81.8
	Very Strongly Agree	207	13.5	18.2	100.0
	Total	1139	74.5	100.0	
Missing	System	390	25.5		
Total		1529	100.0		

Know about services in the community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	58	3.8	4.5	4.5
	Strongly Disagree	40	2.6	3.1	7.7
	Disagree	272	17.8	21.3	28.9
	Agree	470	30.7	36.7	65.6
	Strongly Agree	172	11.2	13.4	79.1
	Very Strongly Agree	268	17.5	20.9	100.0
	Total	1280	83.7	100.0	
Missing	System	249	16.3		
Total		1529	100.0		

Improve my family's quality of life.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	23	1.5	1.8	1.8
	Strongly Disagree	12	.8	.9	2.7
	Disagree	110	7.2	8.4	11.1
	Agree	542	35.4	41.5	52.6
	Strongly Agree	229	15.0	17.5	70.1
	Very Strongly Agree	391	25.6	29.9	100.0
	Total	1307	85.5	100.0	
Missing	System	222	14.5		
Total		1529	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	38	2.5	2.9	2.9
	Strongly Disagree	20	1.3	1.5	4.4
	Disagree	170	11.1	12.8	17.1
	Agree	490	32.0	36.8	53.9
	Strongly Agree	249	16.3	18.7	72.6
	Very Strongly Agree	365	23.9	27.4	100.0
	Total	1332	87.1	100.0	
Missing	System	197	12.9		
Total		1529	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	38	2.5	3.1	3.1
	Strongly Disagree	22	1.4	1.8	4.9
	Disagree	248	16.2	20.3	25.2
	Agree	429	28.1	35.1	60.3
	Strongly Agree	183	12.0	15.0	75.3
	Very Strongly Agree	302	19.8	24.7	100.0
	Total	1222	79.9	100.0	
Missing	System	307	20.1		
Total		1529	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	22	1.4	1.7	1.7
	Strongly Disagree	13	.9	1.0	2.7
	Disagree	82	5.4	6.4	9.2
	Agree	478	31.3	37.5	46.7
	Strongly Agree	238	15.6	18.7	65.3
	Very Strongly Agree	442	28.9	34.7	100.0
	Total	1275	83.4	100.0	
Missing	System	254	16.6		
Total		1529	100.0		

Feel more confident in my skills as a parent.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	20	1.3	1.5	1.5
	Strongly Disagree	12	.8	.9	2.4
	Disagree	90	5.9	6.8	9.2
	Agree	486	31.8	36.7	45.9
	Strongly Agree	287	18.8	21.6	67.5
	Very Strongly Agree	431	28.2	32.5	100.0
	Total	1326	86.7	100.0	
Missing	System	203	13.3		
Total		1529	100.0		

Keep up friendships for my child and family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	34	2.2	3.1	3.1
	Strongly Disagree	25	1.6	2.3	5.3
	Disagree	247	16.2	22.3	27.6
	Agree	357	23.3	32.2	59.9
	Strongly Agree	159	10.4	14.4	74.3
	Very Strongly Agree	285	18.6	25.7	100.0
	Total	1107	72.4	100.0	
Missing	System	422	27.6		
Total		1529	100.0		

Find information I need.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	27	1.8	2.0	2.0
	Strongly Disagree	20	1.3	1.5	3.5
	Disagree	131	8.6	9.8	13.3
	Agree	525	34.3	39.1	52.3
	Strongly Agree	231	15.1	17.2	69.5
	Very Strongly Agree	409	26.7	30.5	100.0
	Total	1343	87.8	100.0	
Missing	System	186	12.2		
Total		1529	100.0		

Be more effective in managing my child's behavior.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	26	1.7	2.2	2.2
	Strongly Disagree	16	1.0	1.3	3.5
	Disagree	106	6.9	8.8	12.2
	Agree	487	31.9	40.3	52.5
	Strongly Agree	214	14.0	17.7	70.2
	Very Strongly Agree	360	23.5	29.8	100.0
	Total	1209	79.1	100.0	
Missing	System	320	20.9		
Total		1529	100.0		

Figure out solutions to problems as they come up.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	22	1.4	1.7	1.7
	Strongly Disagree	17	1.1	1.3	3.0
	Disagree	90	5.9	6.9	9.9
	Agree	500	32.7	38.3	48.2
	Strongly Agree	267	17.5	20.4	68.6
	Very Strongly Agree	410	26.8	31.4	100.0
	Total	1306	85.4	100.0	
Missing	System	223	14.6		
Total		1529	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	32	2.1	2.3	2.3
	Strongly Disagree	10	.7	.7	3.0
	Disagree	99	6.5	7.1	10.2
	Agree	517	33.8	37.2	47.4
	Strongly Agree	269	17.6	19.4	66.7
	Very Strongly Agree	462	30.2	33.3	100.0
	Total	1389	90.8	100.0	
Missing	System	140	9.2		
Total		1529	100.0		

Understand how the Early Intervention system works.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	25	1.6	1.7	1.7
	Strongly Disagree	11	.7	.8	2.5
	Disagree	73	4.8	5.1	7.5
	Agree	532	34.8	36.8	44.4
	Strongly Agree	299	19.6	20.7	65.1
	Very Strongly Agree	504	33.0	34.9	100.0
	Total	1444	94.4	100.0	
Missing	System	85	5.6		
Total		1529	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	22	1.4	1.5	1.5
	Strongly Disagree	12	.8	.8	2.4
	Disagree	66	4.3	4.6	6.9
	Agree	496	32.4	34.4	41.3
	Strongly Agree	327	21.4	22.7	64.0
	Very Strongly Agree	520	34.0	36.0	100.0
	Total	1443	94.4	100.0	
Missing	System	86	5.6		
Total		1529	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	21	1.4	1.7	1.7
	Strongly Disagree	14	.9	1.2	2.9
	Disagree	88	5.8	7.3	10.2
	Agree	441	28.8	36.5	46.7
	Strongly Agree	232	15.2	19.2	65.8
	Very Strongly Agree	413	27.0	34.2	100.0
	Total	1209	79.1	100.0	
Missing	System	320	20.9		
Total		1529	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	18	1.2	1.5	1.5
	Strongly Disagree	13	.9	1.1	2.7
	Disagree	96	6.3	8.2	10.9
	Agree	425	27.8	36.5	47.4
	Strongly Agree	229	15.0	19.7	67.1
	Very Strongly Agree	383	25.0	32.9	100.0
	Total	1164	76.1	100.0	
Missing	System	365	23.9		
Total		1529	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	19	1.2	1.5	1.5
	Strongly Disagree	11	.7	.9	2.3
	Disagree	87	5.7	6.7	9.1
	Agree	461	30.2	35.8	44.8
	Strongly Agree	267	17.5	20.7	65.6
	Very Strongly Agree	444	29.0	34.4	100.0
	Total	1289	84.3	100.0	
Missing	System	240	15.7		
Total		1529	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	15	1.0	1.1	1.1
	Strongly Disagree	13	.9	1.0	2.1
	Disagree	59	3.9	4.4	6.4
	Agree	520	34.0	38.5	44.9
	Strongly Agree	291	19.0	21.5	66.4
	Very Strongly Agree	454	29.7	33.6	100.0
	Total	1352	88.4	100.0	
Missing	System	177	11.6		
Total		1529	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	19	1.2	1.3	1.3
	Strongly Disagree	8	.5	.6	1.9
	Disagree	61	4.0	4.3	6.2
	Agree	510	33.4	36.1	42.3
	Strongly Agree	272	17.8	19.2	61.6
	Very Strongly Agree	543	35.5	38.4	100.0
	Total	1413	92.4	100.0	
Missing	System	116	7.6		
Total		1529	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	19	1.2	1.3	1.3
	Strongly Disagree	9	.6	.6	2.0
	Disagree	36	2.4	2.5	4.5
	Agree	431	28.2	30.2	34.7
	Strongly Agree	318	20.8	22.3	57.0
	Very Strongly Agree	613	40.1	43.0	100.0
	Total	1426	93.3	100.0	
Missing	System	103	6.7		
Total		1529	100.0		

Understand my child's special needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	22	1.4	1.6	1.6
	Strongly Disagree	11	.7	.8	2.4
	Disagree	41	2.7	3.0	5.4
	Agree	436	28.5	32.0	37.4
	Strongly Agree	279	18.2	20.5	57.8
	Very Strongly Agree	575	37.6	42.2	100.0
	Total	1364	89.2	100.0	
Missing	System	165	10.8		
Total		1529	100.0		

Feel that my efforts are helping my child.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	21	1.4	1.5	1.5
	Strongly Disagree	10	.7	.7	2.2
	Disagree	26	1.7	1.8	4.0
	Agree	420	27.5	29.2	33.2
	Strongly Agree	299	19.6	20.8	54.0
	Very Strongly Agree	661	43.2	46.0	100.0
	Total	1437	94.0	100.0	
Missing	System	92	6.0		
Total		1529	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	65	4.3	5.9	5.9
	Strongly Disagree	26	1.7	2.4	8.3
	Disagree	163	10.7	14.8	23.1
	Agree	314	20.5	28.6	51.7
	Strongly Agree	157	10.3	14.3	66.0
	Very Strongly Agree	373	24.4	34.0	100.0
	Total	1098	71.8	100.0	
Missing	System	431	28.2		
Total		1529	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	60	3.9	4.6	4.6
	Strongly Disagree	39	2.6	3.0	7.7
	Disagree	221	14.5	17.1	24.8
	Agree	420	27.5	32.5	57.3
	Strongly Agree	201	13.1	15.6	72.8
	Very Strongly Agree	351	23.0	27.2	100.0
	Total	1292	84.5	100.0	
Missing	System	237	15.5		
Total		1529	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	33	2.2	2.2	2.2
	Strongly Disagree	13	.9	.9	3.1
	Disagree	55	3.6	3.7	6.8
	Agree	440	28.8	29.5	36.3
	Strongly Agree	296	19.4	19.9	56.2
	Very Strongly Agree	653	42.7	43.8	100.0
	Total	1490	97.4	100.0	
Missing	System	39	2.6		
Total		1529	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	21	1.4	1.4	1.4
	Strongly Disagree	12	.8	.8	2.2
	Disagree	41	2.7	2.7	4.9
	Agree	403	26.4	26.9	31.8
	Strongly Agree	343	22.4	22.9	54.7
	Very Strongly Agree	679	44.4	45.3	100.0
	Total	1499	98.0	100.0	
Missing	System	30	2.0		
Total		1529	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	19	1.2	1.3	1.3
	Strongly Disagree	8	.5	.5	1.8
	Disagree	26	1.7	1.7	3.6
	Agree	337	22.0	22.6	26.2
	Strongly Agree	346	22.6	23.2	49.4
	Very Strongly Agree	755	49.4	50.6	100.0
	Total	1491	97.5	100.0	
Missing	System	38	2.5		
Total		1529	100.0		

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	27	1.8	1.9	1.9
	Strongly Disagree	13	.9	.9	2.8
	Disagree	70	4.6	5.0	7.8
	Agree	421	27.5	29.9	37.7
	Strongly Agree	308	20.1	21.9	59.6
	Very Strongly Agree	569	37.2	40.4	100.0
	Total	1408	92.1	100.0	
Missing	System	121	7.9		
Total		1529	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	22	1.4	1.5	1.5
	Strongly Disagree	11	.7	.7	2.2
	Disagree	55	3.6	3.7	5.9
	Agree	373	24.4	24.8	30.7
	Strongly Agree	345	22.6	22.9	53.6
	Very Strongly Agree	698	45.7	46.4	100.0
	Total	1504	98.4	100.0	
Missing	System	25	1.6		
Total		1529	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	22	1.4	1.5	1.5
	Strongly Disagree	2	.1	.1	1.6
	Disagree	34	2.2	2.3	3.8
	Agree	387	25.3	25.7	29.5
	Strongly Agree	326	21.3	21.6	51.2
	Very Strongly Agree	736	48.1	48.8	100.0
	Total	1507	98.6	100.0	
Missing	System	22	1.4		
Total		1529	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	49	3.2	3.5	3.5
	Strongly Disagree	29	1.9	2.1	5.6
	Disagree	276	18.1	19.7	25.3
	Agree	437	28.6	31.2	56.5
	Strongly Agree	227	14.8	16.2	72.7
	Very Strongly Agree	382	25.0	27.3	100.0
	Total	1400	91.6	100.0	
Missing	System	129	8.4		
Total		1529	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	78	5.1	5.8	5.8
	Strongly Disagree	45	2.9	3.3	9.1
	Disagree	366	23.9	27.0	36.1
	Agree	409	26.7	30.2	66.3
	Strongly Agree	178	11.6	13.1	79.4
	Very Strongly Agree	279	18.2	20.6	100.0
	Total	1355	88.6	100.0	
Missing	System	174	11.4		
Total		1529	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	34	2.2	2.8	2.8
	Strongly Disagree	21	1.4	1.7	4.4
	Disagree	138	9.0	11.2	15.6
	Agree	400	26.2	32.4	48.0
	Strongly Agree	225	14.7	18.2	66.2
	Very Strongly Agree	418	27.3	33.8	100.0
	Total	1236	80.8	100.0	
Missing	System	293	19.2		
Total		1529	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	81	5.3	6.2	6.2
	Strongly Disagree	50	3.3	3.8	10.0
	Disagree	390	25.5	29.9	39.9
	Agree	382	25.0	29.2	69.1
	Strongly Agree	147	9.6	11.3	80.4
	Very Strongly Agree	256	16.7	19.6	100.0
	Total	1306	85.4	100.0	
Missing	System	223	14.6		
Total		1529	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	35	2.3	2.6	2.6
	Strongly Disagree	34	2.2	2.5	5.1
	Disagree	227	14.8	16.9	22.1
	Agree	476	31.1	35.5	57.6
	Strongly Agree	253	16.5	18.9	76.4
	Very Strongly Agree	316	20.7	23.6	100.0
	Total	1341	87.7	100.0	
Missing	System	188	12.3		
Total		1529	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	29	1.9	2.1	2.1
	Strongly Disagree	24	1.6	1.7	3.8
	Disagree	167	10.9	11.8	15.6
	Agree	533	34.9	37.7	53.3
	Strongly Agree	248	16.2	17.6	70.8
	Very Strongly Agree	412	26.9	29.2	100.0
	Total	1413	92.4	100.0	
Missing	System	116	7.6		
Total		1529	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	50	3.3	3.5	3.5
	Strongly Disagree	38	2.5	2.6	6.1
	Disagree	235	15.4	16.3	22.4
	Agree	471	30.8	32.7	55.1
	Strongly Agree	219	14.3	15.2	70.3
	Very Strongly Agree	428	28.0	29.7	100.0
	Total	1441	94.2	100.0	
Missing	System	88	5.8		
Total		1529	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	44	2.9	3.0	3.0
	Strongly Disagree	25	1.6	1.7	4.6
	Disagree	151	9.9	10.2	14.8
	Agree	479	31.3	32.3	47.1
	Strongly Agree	301	19.7	20.3	67.4
	Very Strongly Agree	484	31.7	32.6	100.0
	Total	1484	97.1	100.0	
Missing	System	45	2.9		
Total		1529	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	176	11.5	15.1	15.1
	Strongly Disagree	90	5.9	7.7	22.8
	Disagree	479	31.3	41.1	63.9
	Agree	186	12.2	16.0	79.8
	Strongly Agree	85	5.6	7.3	87.1
	Very Strongly Agree	150	9.8	12.9	100.0
	Total	1166	76.3	100.0	
Missing	System	363	23.7		
Total		1529	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	27	1.8	1.8	1.8
	Strongly Disagree	11	.7	.7	2.5
	Disagree	37	2.4	2.5	5.0
	Agree	402	26.3	26.6	31.6
	Strongly Agree	300	19.6	19.9	51.5
	Very Strongly Agree	733	47.9	48.5	100.0
	Total	1510	98.8	100.0	
Missing	System	19	1.2		
Total		1529	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	23	1.5	1.5	1.5
	Strongly Disagree	10	.7	.7	2.2
	Disagree	24	1.6	1.6	3.8
	Agree	353	23.1	23.3	27.1
	Strongly Agree	290	19.0	19.2	46.3
	Very Strongly Agree	813	53.2	53.7	100.0
	Total	1513	99.0	100.0	
Missing	System	16	1.0		
Total		1529	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	20	1.3	1.3	1.3
	Strongly Disagree	8	.5	.5	1.9
	Disagree	33	2.2	2.2	4.0
	Agree	364	23.8	24.1	28.1
	Strongly Agree	325	21.3	21.5	49.7
	Very Strongly Agree	760	49.7	50.3	100.0
	Total	1510	98.8	100.0	
Missing	System	19	1.2		
Total		1529	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	33	2.2	2.2	2.2
	Strongly Disagree	17	1.1	1.1	3.3
	Disagree	79	5.2	5.3	8.6
	Agree	426	27.9	28.5	37.2
	Strongly Agree	284	18.6	19.0	56.2
	Very Strongly Agree	654	42.8	43.8	100.0
	Total	1493	97.6	100.0	
Missing	System	36	2.4		
Total		1529	100.0		

My service coordinator is knowledgeable and professional.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	24	1.6	1.6	1.6
	Strongly Disagree	11	.7	.7	2.3
	Disagree	39	2.6	2.6	4.9
	Agree	389	25.4	26.0	30.9
	Strongly Agree	288	18.8	19.2	50.1
	Very Strongly Agree	748	48.9	49.9	100.0
	Total	1499	98.0	100.0	
Missing	System	30	2.0		
Total		1529	100.0		

Written information I receive is written in an understandable way.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	22	1.4	1.5	1.5
	Strongly Disagree	3	.2	.2	1.7
	Disagree	21	1.4	1.4	3.1
	Agree	431	28.2	28.8	31.8
	Strongly Agree	310	20.3	20.7	52.5
	Very Strongly Agree	711	46.5	47.5	100.0
	Total	1498	98.0	100.0	
Missing	System	31	2.0		
Total		1529	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	30	2.0	2.4	2.4
	Strongly Disagree	23	1.5	1.8	4.3
	Disagree	115	7.5	9.2	13.5
	Agree	345	22.6	27.7	41.2
	Strongly Agree	245	16.0	19.7	60.9
	Very Strongly Agree	487	31.9	39.1	100.0
	Total	1245	81.4	100.0	
Missing	System	284	18.6		
Total		1529	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	58	3.8	5.5	5.5
	Strongly Disagree	34	2.2	3.2	8.7
	Disagree	245	16.0	23.3	32.0
	Agree	306	20.0	29.1	61.1
	Strongly Agree	120	7.8	11.4	72.5
	Very Strongly Agree	290	19.0	27.5	100.0
	Total	1053	68.9	100.0	
Missing	System	476	31.1		
Total		1529	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"
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\2007\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
NAMELEN = 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"
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\2007\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 3.2 Virginia Impact all individuals ZOU778ws.txt Oct 25 9:40 2007
 INPUT: 1528 PERSONS, 22 ITEMS MEASURED: 1499 PERSONS, 22 ITEMS, 5 CATS 3.57.1

SUMMARY OF CATEGORY STRUCTURE. Model="R"

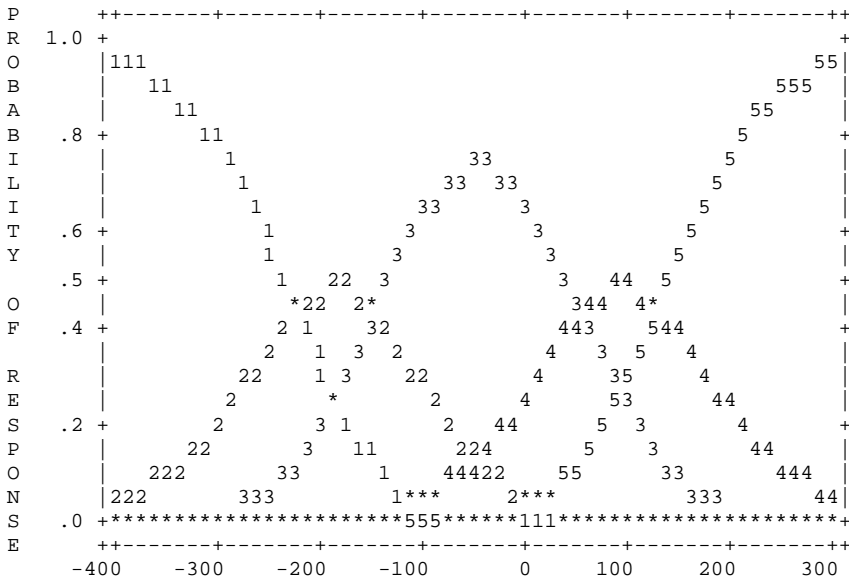
CATEGORY LABEL	OBSERVED SCORE	OBSVD COUNT	SAMPLE %	AVRGE	EXPECT	INFINIT MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE
1	1	758	3	-206.9	-264.	1.58	1.79	NONE	(-295.89)
2	2	2634	9	-112.9	-103.	1.04	.97	-220.93A	-185.38
3	3	10313	37	-29.52	-24.4	.88	.96	-147.88A	-45.97
4	4	5405	19	78.66	74.52	.76	.74	55.95A	93.44
5	5	5468	20	185.74	183.7	1.04	1.07	128.99A	(203.95)
MISSING		3406	12	1.04					

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 C->M	ESTIM DISCR	OBSERVED-EXPECTED RESIDUAL DIFFERENCE
1	NONE		(-295.89)	-INF	-247.18	75% 40%	-14.9%
2	-220.93A	2.64	-185.38	-247.18	-127.29	-233.39	54% 42% .78 4.0%
3	-147.88A	1.41	-45.97	-127.29	35.36	-137.30	72% 77% .94 2.2%
4	55.95A	1.11	93.44	35.36	155.24	45.40	50% 62% 1.18 -4.0%
5	128.99A	1.31	(203.95)	155.24	+INF	141.45	82% 64% 1.04 .5%

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

CATEGORY PROBABILITIES: MODES - Structure measures at intersections



PERSON [MINUS] ITEM MEASURE

TABLE 10.1 Virginia Impact all individuals ZOU778ws.txt Oct 25 9:40 2007
 INPUT: 1528 PERSONS, 22 ITEMS MEASURED: 1499 PERSONS, 22 ITEMS, 5 CATS 3.57.1

PERSON: REAL SEP.: 4.02 REL.: .94 ... ITEM: REAL SEP.: 15.45 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	2655	996	677.50A	3.95	1.89 9.9	1.99 9.9	A .75	5.24	q26
2	3245	1105	656.00A	3.23	1.38 8.2	1.43 7.8	B .81	-7.71	q27
8	2935	949	624.80A	3.42	1.28 5.6	1.32 5.4	C .83	1.19	q33
3	3838	1117	569.80A	3.02	1.09 2.0	1.17 2.9	D .82	6.53	q28
5	3252	1049	639.80A	2.89	1.03 .7	1.06 1.1	E .85	-12.76	q30
4	3765	1140	608.80A	2.80	1.01 .2	1.03 .6	F .85	-10.80	q29
6	3931	1095	539.00A	2.99	1.02 .4	.98 -.3	G .83	14.38	q31
13	4460	1228	552.90A	2.77	.92 -2.0	.92 -1.6	H .83	-6.72	q38
21	4424	1158	516.10A	2.90	.86 -3.2	.90 -1.5	I .81	-2.78	q46
15	3711	1037	559.10A	3.01	.90 -2.2	.87 -2.3	J .84	-2.84	q40
16	3544	999	562.20A	3.06	.90 -2.2	.89 -2.0	K .84	-1.65	q41
22	4803	1220	498.10A	2.85	.85 -3.5	.90 -1.6	k .79	-1.19	q47
7	4028	1129	559.30A	2.88	.88 -2.7	.89 -2.0	j .84	-1.89	q32
9	3883	1141	576.80A	2.84	.88 -2.8	.88 -2.4	i .85	5.18	q34
10	3538	1034	583.50A	2.97	.88 -2.8	.88 -2.2	h .85	-4.06	q35
19	4473	1202	538.90A	2.82	.88 -2.8	.84 -3.0	g .82	-7.46	q44
11	3907	1112	540.40A	2.94	.87 -3.1	.84 -2.8	f .86	27.10	q36
14	4501	1221	534.40A	2.80	.81 -4.8	.87 -2.4	e .84	3.52	q39
20	4715	1215	497.80A	2.86	.78 -5.6	.81 -2.9	d .81	7.51	q45
12	4157	1177	564.50A	2.81	.80 -4.9	.76 -4.9	c .85	-1.52	q37
17	3960	1098	555.90A	2.93	.74 -6.3	.78 -4.3	b .85	-5.29	q42
18	4200	1156	545.50A	2.87	.73 -6.6	.74 -5.0	a .85	-.16	q43
MEAN	3905.7	1117.2	568.23	2.98	.97 -1.3	.99 -.6			
S.D.	546.9	78.1	46.35	.26	.26 4.3	.28 3.8			