Psychometric Study of The Parenting Skills Assessment

A Practitioner Approach to Measuring Parenting Practices

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Summary

This study demonstrated that the Parenting Skills Assessment (10th version; PSA-10) is reliable and provided some support for its validity. The PSA-10 was originally designed to measure five domains: communication with child, child management and supervision, parent/child activities, nurturing and enriched environment. These domains were derived from the experiences, training and intuitions of the Early Childhood staff in the Allegan County Intermediate School District but are consistent with research on early childhood development and parenting.

Psychometrically, the PSA-10 demonstrated high internal consistency and adequate interrater reliability. Construct validity analyses supported the PSA-10's ability to assess parenting behavior in general, although there was mixed support for the measure's ability to assess specific aspects of parenting behavior. That is, it is less clear whether the PSA-10 should be recommended to measure one aspect of parenting behavior, such as communication, as separate from nurturing or parent-child activities.

Although a new two-factor solution presented a better fit to the data, moderate support for the original 5-factor PSA was found. Additionally, the construct validity analyses suggested that the two-factor solution was less distinctive in measuring different types of parenting behavior compared to the five-factor solution. Still, neither version was particularly effective at differentiating among types of parenting behavior. Identifying the unique behaviors that each item is intended to measure would be an excellent area for increased training and manualization.

The five domains (factors) are also useful for ESS staff who work with mothers on their parenting skills. The factors provide an easy way to talk with these parents about their practices and thus focus training and problem-solving on the areas that were giving them the most difficulty. Finally, the PSA-10 provides a structure for program consistency. It creates a framework for conceptualizing desirable parenting skills, helping focus staff training, and allowing parent educators to assess their own effectiveness transmitting information to their families.

Introduction

Home visiting programs in early childhood seek to make changes in parents' understanding and behavior that will result in a positive impact on the parent's interactions with their infant or toddler (Tableman, 1999-2000). Since approximately 2000, Michigan Department of Education–Early Childhood & Family Services has recognized the critical role that home visiting programs can play by requiring home visits as one of their components in early childhood programs for achieving children's school readiness. However, in the late 1980s, the Early Education Services (EES) staff at the Allegan County Intermediate School District (ISD) began offering a home visiting program designed to improve parenting skills among low-income families. In the mid-1990s, EES staff began an instrument development process in order to assess parenting skills gains made by their participants. Their criteria for a workable tool included multiple requirements. The tool needed to: (a) provide information that could be used to plan with the parent; (b) provide information for program improvement; (c) be minimally invasive; (d) require a minimal amount of training for staff to gain competency in its use; and (e) be inexpensive to use. They developed the Parenting Skills Assessment (PSA), a tool that was in its tenth version (PSA-10) when tested and which continues to be used by home visitors in Allegan County.

Development of the PSA

The final PSA-10 measure was comprised of five domains: (a) communication with child, (b) child management and supervision, (c) parent/child activities, (d) nurturing and (e) home environment. These domains were originally derived from the experiences, training, and intuitions of staff in Allegan County. However, these domains also match the theoretical and empirical literature (e.g., Shonkoff & Phillips, 2000). For example, language acquisition is known to be critical for pre-school (Guralnick et al., 1996), school entry and lifetime success (e.g., Chen, Lees, & Stephenson, 1996; Haveman & Wolf, 1984). Parents' interactions with children are also known to subtly contribute to language and learning styles (Tomasello, 1996). In contrast, mothers who restrict or interfere with their infants' activities, hold unrealistic expectations, or respond harshly to their misbehavior may foster behaviors that ultimately lead to less favorable developmental outcomes (Hart & Risley, 1995). Avoiding harsh restrictions appears to enhance both socio-emotional and cognitive functioning (Egeland, Pianta, & O'Brien, 1993). Maternally guided learning opportunities, such as mothers engaging their infants in joint activities, providing a range of interactive experiences, and challenging their infants to develop new skills enhance children's initiative to take on increasingly complex tasks (Vygotsky, 1978). A child's first relationships, especially with his/her parents, address two functions (Ainsworth et al., 1978): The reduction of fear in novel situations that enables a child to explore with confidence; and the strengthening of the young child's sense of competency and efficacy. Finally, the importance of the early home environment for children's' developmental outcomes has been well documented (Bradley et al., 1989).

With the PSA domains identified, the task became to design a way to measure parents' contributions to children's development in these domains—that is, to measure parents' ability to parent effectively. Two tools, a rating scale and a content test, were developed, tested, and rejected. The first rating scale was rejected because it did not mirror the home visitors' training interventions, and the content test was rejected because parents could have the necessary knowledge without changing their parenting behavior.

At that point, staff embarked on an extensive literature search that resulted in the identification of 13 available scales; however, none were considered to be suitable (See Appendix A for the rejected instruments). These tools were discarded for a variety of reasons; they measured knowledge or attitudes rather than behavior (a problem similar to the content test above), demonstrated reliability only for particular types of families (i.e., high risk), were considered to be too intrusive, were costly,

and/or were too unwieldy to administer. Moreover, none of these was a good fit with the *Parents as Teachers* (PAT) curriculum being used in by the parent educators in their home visiting program.

The PAT program is comprised of home visits by parent educators who teach principles of child development, model appropriate activities and facilitate access to social and supportive services. Often, child development screenings and observations are also provided. All of these activities are oriented toward improving parents' skills as their child's first teacher.[1] Thus having a tool that focused on parenting *behavior* was critical.

Others have agreed that observation is the best way to document changes in behavior. In addition to the Allegan County staff's experience that parents can know something without being able to do it, reasons to use an observational approach include (Aspland & Gardner, 2003):

- Ability to have a window on real rather than perceived processes, including parenting strategies and child problem behaviors in the home
- Behavior can be consistently and reliably defined by the researcher rather than the parent
- Parent self-reports tend to overestimate change

Using a combination of personal experiences and knowledge, the PAT curricula, and child development literature, Allegan County staff developed and tested a series of Parenting Skills Assessment tools. Each domain was designed with the same number of items and each item was scaled using behavioral ratings such as "child is limited to a small play area" vs. "child is encourage to explore." The final PSA measure consisted of 25 items covering five hypothesized domains: (a) communication with child, (b) child management and supervision, (c) parent/child activities, (d) nurturing and (e) home environment. Each of the five domains had five items scored on a Likert-type scale with scores ranging from 1 to 4, with higher scores representing more positive parenting. For each items, each score had descriptors of the types of behavior that would be seen at that level (Appendix B, PSA-10).

The Study

In this study, Allegan County staff were interested in the answers to three questions:

1. *Factor structure study.* Does the PSA-10 consist of five different domains of parenting behavior, as intended?
2. *Reliability study.* Do items within a PSA-10 domain tend to measure the same set of behaviors (internal consistency reliability)? Do different observers rate the same behavior in the same way (interrater reliability)?
3. *Validity study.* Does the PSA-10 measure what it was intended to measure?

This study was designed to answer those questions.

[1] See the Parents as Teachers web site for more information: http://www.parentsasteachers.org/

Study 1: PSA-10 Factor Structure

Domains of Parenting Behavior

Study 1 focused on whether the five domains of parenting behavior intended to be assessed through the PSA-10 represented the actual domains observed. In other words, whereas the PSA-10 was designed to measure five distinct domains of behavior (i.e., communication with child, child management and supervision, parent/child activities, nurturing, and home environment), in practice, it was possible that raters did not distinguish among the different domains.

If raters perceived domains to be distinct, a parent would be able to receive high ratings in some domains and lower ratings in others depending on the skills that needed development. For example, a parent might be rated as very nurturing with her/his child, but not be rated as particularly communicative and receive quite low ratings around managing and supervising child behavior.

Alternatively, if in practice raters perceived a single domain of general parenting behavior, regardless of the domain that the item was *intended* to measure, all items would tend to be rated in the same way; parents would essentially be rated as higher or lower across the entire PSA.

The purpose of Study 1 was to determine whether the raters used the PSA-10 to assess parenting behavior overall, or were able to distinguish among different domains of parenting behavior—specifically, the five domains hypothesized.

Method

To assess whether the PSA-10 assessed the intended five domains of parenting behavior, 215 completed PSA-10s were identified from the existing files of the EES home visiting program. These PSA-10s were completed by 24 EES parent educators in families of children aged 1 to 4 years during the course of their regular home visiting program.

Results

Descriptives

Descriptive statistics of the items and the hypothesized scales are presented in Table 1. The results indicate that most parents were rated relatively highly on individual PSA-10 items and subscales with averages above 3 point on the 1- to 4-point scale. Nonetheless, a wide range of behavior was evident, with some parents receiving scores near the lowest point on the scale and others receiving the maximum possible scores. In general, parents were rated highest on the hypothesized *Nurturing* scale and lowest on the hypothesized *Parent-Child Activities* scale.

Table 1
Descriptive Statistics for PSA-10 Items and Scales

Hypothesized scale/item	*Minimum*	*Maximum*	*Mean*	*Standard deviation*
Communication	1.40	4	3.18	.60
Words and tone directed to child are positive, with praise and encouragement.	1	4	3.28	.69
Communication between parent and child is responsive and reciprocal.	1	4	3.20	.69
Parent stimulates appropriate vocabulary development.	1	4	3.11	.75
Parent facilitates reading/ literacy activities with child.	1	4	3.22	.80
Language directed to child is frequent and ongoing and varied.	1	4	3.11	.70
Nurturing	1.80	4	3.36	.55
Parent reads and responds appropriately to child's cues.	2	4	3.40	.65
Positive interaction is apparent.	2	4	3.44	.65
Parent displays empathy--identifies with and cares about feelings of child.	2	4	3.39	.65
Parent describes child in positive terms, sees behavior as normal, responds positively to praise of child offered by visitor.	2	4	3.42	.64
Feeding times are pleasant for both parent and child, child is nourished appropriately.	1	4	3.15	.76
Child Management	1.20	4	3.13	.60
Parent expresses realistic, age appropriate expectations of behaviors of infants and toddlers.	1	4	3.11	.77
Child management plan consistently applied for the purpose of teaching child self control.	1	4	2.87	.73
Parent follows child management plan that's essentially non-physical.	1	4	3.02	.71
Uses positive words and tone in child management.	1	4	3.13	.77
Provides for adequate supervision of child at home and in the care of others.	1	4	3.53	.72
Enriched Environment	1.00	4	3.18	.63
Environment is conducive to learning through play.	1	4	3.22	.75
Parent provides space for exploration.	1	4	3.21	.71
Child is exposed to a variety of environments.	1	4	3.05	.78
Environment is safe.	1	4	3.34	.79
Routines and rituals are present in daily activities.	1	4	3.09	.78
Parent-Child Activities	1.20	4	3.05	.65
Interactive, positive, enjoyable participation between parent and child.	1	4	3.27	.71
Parent uses appropriate methods of teaching child new skills.	1	4	3.06	.78
Expands on child's activities to encourage development.	1	4	3.01	.69
Activities with parent and child happen regularly and address all school readiness domains.	1	4	3.03	.78
Parent monitors and limits television watching.	1	4	2.86	.89
Total PSA	1.60	4	3.18	.56

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was used to identify the domains represented within the PSA-10. CFA is a technique used to uncover the number of underlying dimensions in an instrument by assessing whether items hypothesized to form a dimension do in fact contribute to that dimension, or whether an alternative set of dimensions should be specified. In this case, we were testing whether there were really five domains in the PSA-10 as hypothesized, or whether raters' scores suggested a different number of domains. Here, we tested (a) a one-factor model where the entire PSA-10 measure represented a general scale of parenting behavior; (b) the original five-factor model; and (c) a simplified two-factor model.

To assess the best model, indices of fit are calculated that show how well or poorly a certain solution fits the model. These include the χ^2 test, which should not be significant, the root mean square error of approximation, which should be below .08 and optimally below .05, and the comparative fit index, which should be above .95, with closer to 1.00 being better.

Table 2 shows a comparison of the fit among the three models and the detailed results are presented in Appendix C-E. The results moderately supported the five-factor solution as originally developed. However, while the five-factor model fit significantly better than the one-factor model, which fit poorly, the moderate model fit indicated that improvements could be made in the instrument.

Table 2
Comparison of Fit for the Three Models

Model	χ^2	*df*	$\Delta\ \chi^2$	*RMSEA*	*CFI*
1-Factor model	747.69	275		.090	.99
5-Factor model	604.89	270	142.80	.076	.98
2-Factor model	480.44	273	160.45	.060	1.0

Note. Maximum Likelihood estimation used. Models listed in order of most optimal model fit. χ^2 = Chi-Square statistic; df = degrees of freedom; $\Delta\ \chi^2$ = change in chi-square units between nested models; RMSEA = root mean square error of approximation; CFI = comparative fit index; Δ CFI = change in CFI between nested models. Similar results were obtained with full information maximum likelihood estimation and WLS with listwise deletion.

We then tested a model to examine whether there were two factors that would more adequately fit the data. Although the PSA-10 was hypothesized to measure five different dimensions of parenting, CFA resulted in a significantly better-fitting two-factor solution. The two-factor solution consists of items related to (a) *positive responsivity* and (b) *cognitive growth fostering*. The descriptives for the two new scales are presented in Table 3, and Table 4 indicates the items associated with each new scale.

Table 3
Descriptive Statistics for Scales in Two-Factor Solution

Scale	*Minimum*	*Maximum*	*Mean*	*Standard deviation*
Positive Responsivity	1.73	4	3.29	.55
Cognitive Growth Fostering	1.36	4	3.09	.61

Table 4
PSA Item Two-Factor Solution

	Two-factor solution	
Hypothesized scale/item	*Positive responsivity*	*Cognitive growth fostering*
Communication		
Words and tone directed to child are positive, with praise and encouragement.	X	
Communication between parent and child is responsive and reciprocal.	X	
Parent stimulates appropriate vocabulary development.		X
Parent facilitates reading/ literacy activities with child.		X
Language directed to child is frequent and ongoing and varied.		X
Nurturing		
Parent reads and responds appropriately to child's cues.	X	
Positive interaction is apparent.	X	
Parent displays empathy--identifies with and cares about feelings of child.	X	
Parent describes child in positive terms, sees behavior as normal, responds positively to praise of child offered by visitor.	X	
Feeding times are pleasant for both parent and child, child is nourished appropriately.	X	
Child Management		
Parent expresses realistic, age appropriate expectations of behaviors of infants and toddlers.		X
Child management plan consistently applied for the purpose of teaching child self control.		X
Parent follows child management plan that's essentially non-physical.	X	
Uses positive words and tone in child management.	X	
Provides for adequate supervision of child at home and in the care of others.	X	
Enriched Environment		
Environment is conducive to learning through play.		X
Parent provides space for exploration.		X
Child is exposed to a variety of environments.		X
Environment is safe.		X
Routines and rituals are present in daily activities.		X
Parent-Child Activities		
Interactive, positive, enjoyable participation between parent and child.	X	
Parent uses appropriate methods of teaching child new skills.		X
Expands on child's activities to encourage development.		X
Activities with parent and child happen regularly and address all school readiness domains.		X
Parent monitors and limits television watching.		X

Subsequent sections of this report examine the psychometric properties for the scales that resulted from both the original five-domain model and the new two-domain model.

Correlations

Correlations indicate the strength of the relationship between two variables, ranging from .00 (no relationship) to 1.00 (a perfect relationship). Correlations among the PSA-10 scales were high, ranging from .77 to .87 (see Table 5 for correlations among the original five scales). For the two-factor model, the correlation between Positive Responsivity and Cognitive Growth Fostering was .84 ($p < .001$). These results suggest that parents who score high compared to other parents on one PSA-10 scale will tend to score high on other scales as well; however, because the relationships were not perfect, the results also indicate that the scales do not measure identical aspects of parenting behaviors.

Table 5
Bivariate Correlations Among Scales from Five-Factor Model

Scales	*Nurturing*	*Child management*	*Enriched Environment*	*Parent-Child Activities*
Communication	.84***	.84***	.78***	.86***
Nurturing		.87***	.77***	.83***
Child Management			.78***	.85***
Enriched Environment				.82***

***$p < .001$.

Study 2: Reliability

Reliability refers to the consistency of a measure, whether over time, between different people, or among the items that constitute the measure. For the PSA, we examined two types of reliability: *internal consistency*, or the degree to which the items within a scale are associated with each other and therefore measure the same concept; and *interrater reliability*, or the extent to which two raters score the measure in the same way.

Internal Consistency Reliability

One type of reliability is internal consistency. A scale that has high internal consistency reliability is composed of items that all measure the same concept. This is important because we want to know that the differences we find are due to differences in the concept, not in the measurement tool itself. Internal consistency coefficients (Cronbach's alphas) range from .00 (the items have no relationship to each other) to 1.00 (the items have a perfect relationship to each other).

Method

To assess the PSA-10's internal consistency, using the data from Study 1 (N = 215), Cronbach's alphas were computed for the scales from both the five-factor and two-factor solutions.

Results

The results, shown in Table 6, indicated that the PSA-10 scales were internally consistent. All alphas approached or were above .90.

Table 6
Internal Consistency Coefficients

Scales	*Cronbach's alpha*
Five domains	
Communication	.88
Nurturing	.88
Child Management	.87
Enriched Environment	.89
Parent-Child Activities	.90
Two domains	
Positive Responsivity	.94
Cognitive Growth Fostering	.95
Total PSA	.97

Interrater Reliability

Interrater reliability assesses the extent to which two different raters observing the same behavior rate that behavior in the same way.

Method

To assess interrater reliability for the PSA-10, a random sample of 50 families being served by the Allegan ISD's home visiting program were simultaneously rated by the parent educator working with

the family and by two additional ISD parent educators who were not serving the family ("external raters"). Families signed informed consent and were paid $20 to participate in the study, and parent educators were paid $25 per observation. A statistic called the intraclass correlation (ICC) coefficient was used to indicate the degree of consistency or agreement between all pairs of observers. With the ICC, a value of 1 indicates perfect agreement and a value of 0 indicates that agreement is no better than chance.

Results

The results are presented in Table 7. ICCs among the rater pairs were fairly high, ranging from .67 to .83 for rater pairs consisting of the parent educator and an external rater; .63 to .78 for pairs of external raters, and .74 to .86 across all pairs of raters. Among individual items, only a few items showed poor agreement (less than .60). These were:

- Communication between parent and child is responsive and reciprocal (average across all raters = .57)
- Language directed to child is frequent and ongoing and varied (.36)
- Positive interaction is apparent (.53)
- Environment is safe (.53)
- Expands on child's activities to encourage development (.56)

These items in particular are recommended for better definition and more training.

Table 7
Interrater reliability (ICCs) for PSA-10 Scales

Hypothesized scale/item	*Average for parent educator and external rater pairs*	*External rater pair*	*Average for all three raters pairs*
Five domains			
Communication	.69***	.63***	.74***
Nurturing	.68***	.70***	.78***
Child Management	.67***	.75***	.77***
Enriched Environment	.73***	.71***	.79***
Parent-Child Activities	.83***	.73***	.85***
Two domains			
Positive Responsivity	.78***	.73***	.82***
Cognitive Growth Fostering	.82***	.71***	.84***
Total PSA	.81***	.78***	.86***

***p < .001. ICC = Intraclass correlation.

Study 3: Validity Study

In addition to reliability, we examined the PSA-10's validity. Validity assess the extent to which an instrument measures what it is intended to measure. In order to test its validity, we compared the results using the PSA-10 with three other observational measures of parenting skills and effectiveness.

Method

Several instruments are available for rating parent-child interactions and parenting. We used three as criterion measures in this study: (a) The Home Observation for Measurement of the Environment (HOME; Bradley & Caldwell, 1984); (b) the Caregiving Assessment (CARE; Barratt, Roach, & Van Egeren, 2000); and (c) select items from the Observational Record of the Caregiving Environment (ORCE; NICHD Early Child Care Research Network, 1996). Parent educators were trained to administer the criterion measures. For each measure, a set of 25 families were randomly selected to participate in the validity study. Pairs of parent educators visited each family together, one completing the PSA-10 and one a criterion measure. Due to missing data and problems in scheduling, final sample sizes were HOME $N = 25$, CARE $N = 22$, and ORCE $N = 21$. Families were paid $20 to participate in the validity study and provided informed consent, while parent educators received $25 per observation.

Results

HOME

The HOME (Bradley & Caldwell, 1984) is designed to measure the quality of the home environment. The infant and toddler version, used here, consists of 45 items scored yes/no across six subscales. Information was collected through observation and parent interview. Table 8 displays correlations between the original five scales and the revised two scales compared to the HOME scales.

Five-factor model. In many cases, moderate to high relations were apparent between the original five scales and the HOME scales. In fact, most scales on the HOME were associated with most scales on the PSA, suggesting that both measured the same broad set of parenting behaviors related to responsiveness and acceptance, that the measures did not distinguish among the sets of behaviors well. One exception was the PSA-10 Child Management and Supervision scale, which was the only PSA-10 scale associated with HOME Organization; another was PSA-10 Enriched Environment, which was not linked to HOME Responsivity or Involvement, but was linked to HOME Acceptance, Learning, and Variety.

Two-factor model. The two PSA-10 scales were associated with all the HOME scales except HOME Organization. Thus, the two scales measured parenting in ways similar to the HOME overall, but were not effective at distinguishing among the different types of behavior the HOME purports to capture in the different scales.

Table 8
Bivariate Correlations Between the PSA-10 and HOME Scales

	Original Parenting Skills Assessment Scales						*Two-Factor Parenting Skills Assessment Scales*	
HOME scales	*Communi-cation with Child*	*Nurturing*	*Child Manage-ment and Supervision*	*Enriched Environment*	*Parent-Child Activities*	*Total PSA*	*Parental Warmth*	*Cognitive Growth Fostering*
Responsivity	.54**	.62**	.55**	.39	.58**	.59**	.55**	.59**
Acceptance	.48*	.58**	.48*	.57**	.53**	.57**	.57**	.57**
Organization	.30	.33	.47*	.28	.39	.35	.28	.35
Learning Materials	.48*	.59**	.40	.51**	.50*	.56**	.57**	.56**
Involvement	.59**	.65**	.38	.37	.57**	.58**	.55**	.58**
Variety	.56**	.55**	.43*	.49*	.55**	.60**	.60**	.60**
Total HOME	.68**	.75**	.61**	.57**	.70**	.73**	.70**	.73**

*$p < .05$; **$p < .01$. $N = 25$. PSA = Parenting Skills Assessment. HOME = Home Observation for Measurement of the Environment.

CARE

The CARE (Barratt, Roach, & Van Egeren, 2000) is designed to measure parental contingent responsiveness, restriction, and stimulation through 12 items using a 1-point to 5-point scale. Table 9 displays correlations between the original five scales and the revised two scales compared to the CARE scales.

Five-factor model. Correlations among the five original PSA-10 scales and the CARE scales indicate a moderate degree of overlap. PSA-10 Nurturing, Enriched Environment, Parent-Child Activities, and the Total PSA-10 score were significantly related to all CARE scales. PSA-10 Communication with Child was linked only to CARE Lack of Restriction, and PSA-10 Child Management and Supervision was not associated with any CARE scales. The lack of distinctive and expected associations suggests that the PLAY tends to measure general parenting behaviors but to be less effective at distinguishing among types of parenting behaviors. However, some differential patterns were evident.

Two-factor model. The two PSA-10 scales were associated with all the CARE scales. This again indicates that the PSA-10 measured somewhat similar parenting behaviors overall as the CARE, but did not track different kinds of parent behaviors well.

Table 9
Bivariate Correlations Between the PSA-10 and CARE Scales

	Original Parenting Skills Assessment Scales						*Two-Factor Parenting Skills Assessment Scales*	
CARE scales	*Communi-cation with Child*	*Nurturing*	*Child Manage-ment and Supervision*	*Enriched Environ-ment*	*Parent-Child Activities*	*Total PSA*	*Parental Warmth*	*Cognitive Growth Fostering*
Responsiveness	.41	.60**	.37	.43*	.58**	.58**	.54**	.56**
Didactic Involvement	.40	.56**	.36	.69**	.68**	.68**	.59**	.69**
Lack of Restriction	.46*	.51*	.34	.48*	.53*	.53*	.47*	.54*

*$p < .05$; **$p < .01$. $N = 22$. PSA = Parenting Skills Assessment. CARE = The Caregiving Assessment.

ORCE

A modification of the ORCE (NICHD Early Child Care Research Network, 1996) was used to assess relations between the frequency of specific behaviors and the PSA-10 scales. For the ORCE, observers marked the frequency of behaviors over three 10-minute intervals during the home visit. The ORCE was designed to measure caregiver behavior in child care settings; we selected five items that would be expected during parent-child interaction as well. Table 10 presents correlations between the PSA-10 and the ORCE.

Five-factor model. The observed frequency of behaviors as measured by the ORCE was not significantly related to any of the PLAY scales. In part, this may due to the small sample size (N = 21). To get a preliminary sense of patterns of relations between the measures, we look at correlations above .30. Using this criteria, PSA-10 Communication with Child tended to be related to a greater number of times that the parent responded to vocalizations; PSA-10 Nurturing tended to be related to the number of time a parent asked a question or praised the child, and PSA-10 Enriched Environment tended to be related to the number of times the parent taught the child .PSA Child Management and Supervision and Parent-Child Activities were not linked to ORCE scales; however, the ORCE scales did not particularly capture the behaviors inherent in these two PSA-10 scales.

Two-factor model. Using the same criteria, PSA-10 Parental Warmth was associated with the number of times the parent responded to the child's vocalizations, and both PSA-10 scales were linked to the number of times the parent taught the child.

Table 10
Bivariate Correlations Between the PSA-10 and ORCE Scales

	Original Parenting Skills Assessment Scales						*Two-Factor Parenting Skills Assessment Scales*	
	Communi-cation with Child	*Nurturing*	*Child Manage-ment and Supervision*	*Enriched Environ-ment*	*Parent-Child Activities*	*Total PSA*	*Parental Warmth*	*Cognitive Growth Fostering*
Responds to Vocalizations	**.363**	.267	.047	.196	.128	.251	**.350**	.251
Asks Question	.206	**.343**	-.011	.118	.195	.217	.224	.217
Praise	.180	**.300**	.071	.150	.279	.225	.155	.225
Teaches	.286	.218	.232	**.328**	.271	**.322**	**.349**	**.322**
Positive Talk	-.210	-.020	-.159	-.034	-.096	-.087	-.079	-.087

N = 21. PSA = Parenting Skills Assessment. ORCE = Observational Record of the Caregiving Environment. Boldface indicates correlations of at least .30.

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Appendix A. Evaluation Tools Identified and Discarded by Allegan County ISD Staff

Adult-Adolescent Parenting Inventory (AAPI) (Bavoleck, 1984). Measures parents' attitudes toward physical punishment and nurturing. Contact Family Development Resources, Park City, UT.

Adult Play Scale (Howes and Stewart, 1987). Measures adult involvement in parent-child interactions.

Child Rearing Practices Report (Block, 1982) Measures nurturance/restrictiveness in parents' attitudes and practices. Contact Annette U. Rickel, Wayne State University.

Concepts of Development Questionnaire and Vignettes (CODQ & CODR, 1982). Developed by David Sameroff, University of Michigan, to measure parents' attitudes toward child rearing and child development.

Family Adaptability and Cohesion Scales (FACES, 1982; rev. 1985). Measures family cohesion and adaptability. Contact Family Social Science, University of Minnesota.

HOME; measures quantity and quality of stimulation and support available to a child in the home environment. Bradley, R.H. and Caldwell, B.M. (1984). The HOME inventory and family demographics. *Developmental Psychology, 20*, 315-320.

Knowledge of Infant Development Inventory (KIDI, 1984). Developed by Dr. David MacPhee, Colorado State University, to measures parents' knowledge of child development.

Maternal Social Support Index (1988); measures mother's perceived support both from in- and outside the family. Contact Western Carolina Center Foundation, Marganton, NC

Nursing Child Assessment Satellite Training (NCAST) Cognitive Growth Fostering Subscale (1978); measures materinal interaction that fosters cognitive growth, interaction between parent and child. Contact Nursing Child Assessment Satellite Training, University of Washington.

Parenting Skills Assessment and Interview. Family Development Resources, Park City, Utah, to measure changes in parenting practices using pictures of parenting situations which parents respond to and then an interviewer analyzes the responses.

Parenting Stress Index (PSI; 1983, rev. 1990); identifies stressors experienced by parents that are related to dysfunctional parenting. Contact PAR, Odessa, FL.

Rosenberg Self-Esteem Scale (1979); measures self-esteem of parents. Contact Dr. Morris Rosenberg, University of Maryland.

Appendix B. PSA-10

Communication with child				
Words and tone directed to child are positive, with praise and encouragement.	1 •Negative words and tone used often–discouragements outnumber encouragements. •Name calling, gruff tone, focus on negative. • Interaction undermined with sarcasm, insincerity, or criticism.	2 • Tone and words mostly neutral–neither positive nor negative. •Praise of child rarely evident.	3 • Positive tone sometimes. • Praise happens sometimes, but parent's genuineness, skill at timing or delivery may need improvement.	4 • Consistently positive words with warmth, enthusiasm, & calm tone. •Many positive comments, encouraging during new tasks, genuine praise effectively delivered.
Communication between parent and child is responsive and reciprocal (conversational).	1 •Consistently unresponsive to child's attempts to communicate, or responds negatively or inappropriately to child's attempts. •Two-way communication not attempted.	2 • Responds to few of child's basic communication attempts. •Ineffective in attempts at two-way communication.	3 •Responsive to some but not all of child's attempts to communicate. • Two-way communication happens, though could be expanded.	4 • Consistently responsive: focuses on child's interest, attempts to understand child, waits for child to respond. •Response conveys message that what child has to say is important. Empowers child by appropriate responding. • Two-way conversation happens consistently.
Parent stimulates appropriate vocabulary development.	1 • Language to child mostly concrete & functional (giving directives). •Doesn't attempt to correct child's language, or corrects negatively (e.g. belittling). •Consistently models inappropriate language with child (eg adult language) with no consideration for child's level of comprehension or for social appropriateness.	2 • Very basic use of words, to name some objects. • Infrequently attempts to correct language, or uses largely ineffective techniques. •Minimal attention to gearing language to child's developmental level.	3 •Sometimes uses child's interests, activities, and utterances to add descriptive words that expand vocabulary. •Sometimes corrects appropriately (e.g. by modeling). •Sometimes chooses words that are socially appropriate but may be somewhat inappropriate for child's developmental level (e.g. baby talk).	4 • Consistently uses child's interests, activities, and utterances to expand vocabulary by adding information, explanations, talk of the future, etc. • Corrects language errors effectively (e.g. by modeling correct pronunciation or syntax). •Uses words that are socially appropriate and at or just beyond comprehension level of child to encourage growth.
Parent facilitates reading/ literacy activities with child. Range of time spent/week: (Only score if you have asked/observed when, how often, what is read, how reading is done.)	1 • Rarely or never	2 • Infrequently, but less than once per week. •Great discrepancy between parent report & observed behavior.	3 • At least once per week but less than daily, or only briefly each day.	4 • Reading activities happen at least once per day with child for at least 15-20 minutes total each day. •Observation of parent and child reading behavior supports parent's report.
Language directed to child is frequent and ongoing and varied –e.g. incorporates extended vocabulary, rhyming, singing and/or playing language games with child in daily activities	1 • Language is very infrequent and limited in scope.	2 • little language occurs–is not frequent and is limited in scope–usually needs-based.	3 • Parent speaks with child regularly, but misses some opportunities to talk about things, sing & play language games, or expand language beyond here-and-now, including ideas, past events, etc.	4 • Parent frequently uses extensive vocabulary when with child to talk about events, the environment, past & future events, ideas, etc. •Incorporates playful rhyming, singing, or language games regularly.
				Subtotal /20%

Child management and supervision				
Parent expresses realistic, age appropriate expectations of behaviors of infants and toddlers.	1 • Has no idea what to expect, or extremely unrealistic expectations with rigidity. •Parent's expressions of behavioral expectations consistently unrelated to child's developmental readiness to behave in expected manner (too low or too high) so it impedes development or forces too rapid development in one or more domains.	2 •Parent demonstrates limited knowledge of what to expect, though doesn't make harsh or rigid demands. •Level of expectations don't encouraging further development, though don't actively impede development.	3 •Language, activities, interactions, demands or requests of child sometimes appropriate to age, development of child. • Generally appropriate developmental expectations. Shows some skill in determining when or how to introduce learning activities such as self-feeding or getting dressed.	4 •Language, activities, interactions, demands or requests of child consistently appropriate to age, development of child. •Parent consistently expresses behavioral expectations appropriate to child's age (e.g. when to expect child to "behave," control impulses, control behavior, learn particular skills, etc).
Child management plan consistently applied for the purpose of teaching child self control.	1 •Expectations unclear. •No consistency in expectations: not developmentally appropriate, always changing, follow-through inconsistent, use of random or ineffective techniques. • No attempt to teach positive alternative behaviors. Punishment applied to stop immediate behavior, based on mood of parent. •Child not held responsible for behavior– does not connect child's behavior to consequences. Consequences unrelated to the occasion.. • Parent is excessively over-controlling, or no sense of parental control.	2 •No sense of plan. Expectations sometimes unclear. Rules sometimes not developmentally appropriate, sometimes change; follow-through sometimes inconsistent, using random and varied techniques. • Parent not effective at teaching positive alternative behaviors. Minimally effective at punishing to reduce negative behaviors. •Child infrequently held responsible for behavior–parent rarely connects child's behavior to natural consequences that fit the occasion. Consequences often unrelated to behavior.	3 •Expectations somewhat clear. •Rules sometimes consistent & developmentally appropriate. Follow-through sometimes occurs. • Parent sometimes teaches positive alternative behaviors as well as using teaching techniques to reduce negative behaviors. •Child sometimes held responsible for behavior (parent sometimes connects child's behavior to natural consequences that fit the occasion).	4 •Strong sense that parents have thoughtfully developed a behavioral plan. •Behavioral expectations consistently communicated clearly to child. •Developmentally appropriate rules consistently the same, consistently enforced using effective techniques. • Parent consistently teaches positive alternative behaviors as well as using teaching techniques to reduce negative behaviors. •Child consistently held responsible for behavior–parent connects child's behavior to natural consequences that fit the occasion.
Parent follows child management plan that's essentially non-physical (does not rely on infliction of physical pain to control behavior).	1 •Physical punishment named by parent as a main form of discipline used (or planning to use). •Parent observed slapping hands, spanking, etc. without concern for PE's presence. •If non-physical child management rarely used, when physical punishment is used it is harsh (e.g. using implement, kicking, and/or leaving marks or bruises).	2 • Parent names mild physical punishment as a regular type of discipline they use (or plan to use), or responds physically when frustrated, though can name and use non- physical discipline regularly as well. When physical discipline is used it is not harsh or excessive.	3 •Parent says she/he would rather not use mild physical punishment, and can name other types of discipline, though admits to using or planning to use mild physical punishment rarely in response to a particular behavior.	4 • Physical punishment not used (parent says they plan never to use physical punishment). • Alternatives such as redirection, distraction, time-out, etc. used consistently and effectively.
Uses positive words and tone in child management.	1 • Harsh words and tone consistently used. •Does not separate child/behavior. Usually uses put downs, name-calling rather than addressing behavior ("You're bad").	2 • Tone shows frustration, but not overly harsh. •Child's dignity not considered by parent, though parent's words & tone not overtly damaging to child.	3 • Parent is sometimes kind and understanding when enforcing behavioral expectations. •Sometimes separates child/behavior, maintains child's dignity.	4 • Parent is kind and understanding yet firm when enforcing behavioral expectations. •Clearly separates child/behavior. Child's dignity maintained.
Provides for adequate supervision of child at home and in the care of others	1 • Child is sometimes left unsupervised (e.g. parent sleeping when baby is awake). • Parent leaves child with unqualified caregivers, doesn't investigate child care quality. Quality of care doubtful.	2 • Provisions for quality child care, and attentiveness to child's safety while in parent's care are minimal, though no obvious threat present. •Quality of care not harmful, but not developmentally stimulating.	3 • Child's safety while in parent's care receives some attention. •Some attention to quality of care when left in the care of another.	4 • Parent consistently aware of child's whereabouts and activities, available to intervene and protect if necessary. • When left in the care of another, parent pays close attention to selecting quality caregiver who attends to all areas of child's emotional, developmental & health needs.
Subtotal /20	1: Not Evident	2: Emerging	3: Practicing	4: Mastery

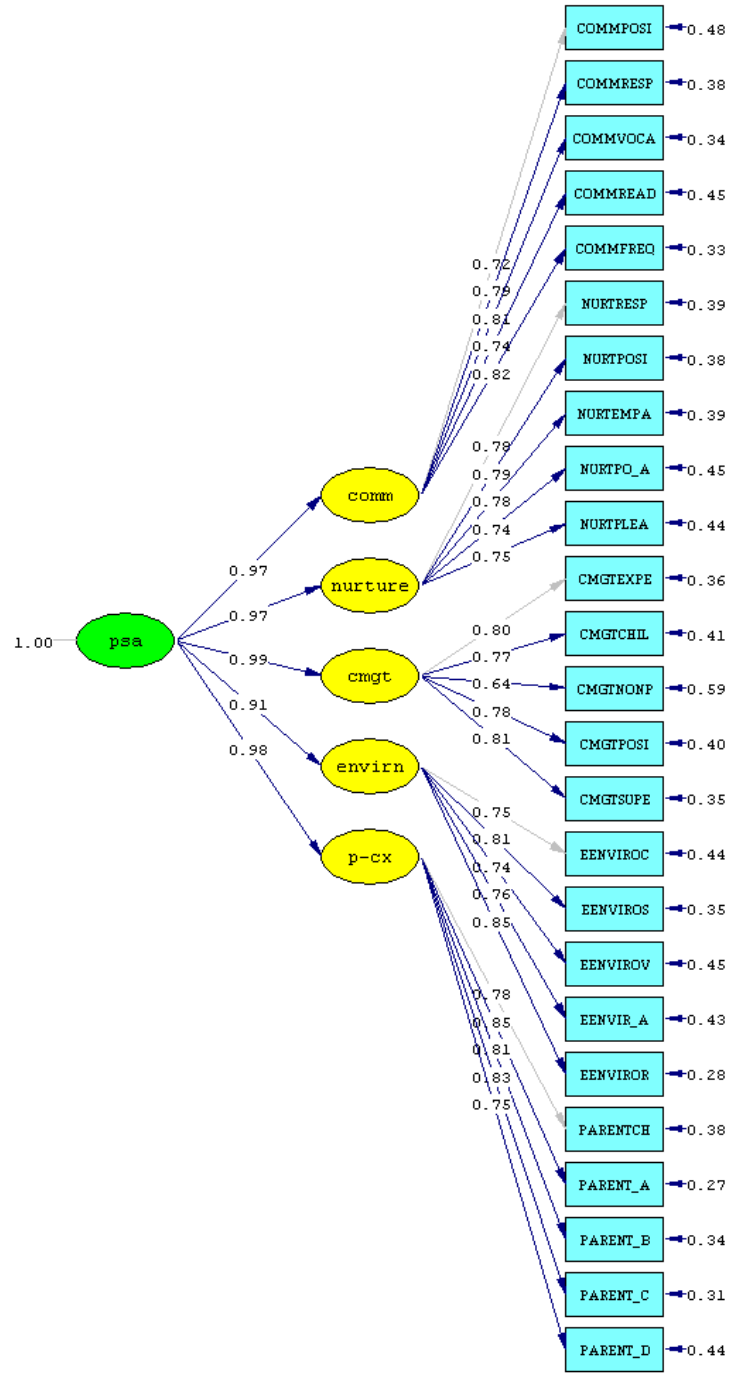
Parent/child activities (play)				
Interactive, positive, enjoyable participation between parent and child.	1 •Playful interaction between parent and child very rare. • Parent does not attend to or participate with child in activity. •Words, tone, and action not positive. •Parent or child or both show discomfort or avoidance of activities.	2 • Parent minimally involved in activities with child. Parent may play alongside child, or observe and comment from a distance. •Words, tone, action most often neutral. •Parent or child or both show neutral enjoyment of activity.	3 • Parent & child engage in some play activities. • Words, tone, action generally positive. •Some mutual eye contact, conversation, touch, etc. maintained. • some balance of parent/child involvement in activities evident. •Parent and child usually enjoy interaction.	4 • Parent & child consistently engage in activities. •Words, tone, and action are consistently positive. • Mutual eye contact, conversation, touch, etc. maintained. •Optimal balance of parent/child involvement in activities. •Parent and child both show enjoyment in interaction.
Parent uses appropriate methods of teaching child new skills.	1 • Parent rarely plays with child, or activities are negative–forced or highly demanding •Excessively inappropriate in choice of activities, does not follow child's lead. •Does not allow for experimentation and exploration, or give verbal cues and encouragement to teach child. May be consistently over-directive and/or critical while attempting to teach.	2 •Child's choice of play activity, or developmental appropriateness of activity often not considered by parent. •Parent may attempt to use ineffective methods to teach (e.g. gives unclear directions or models without effectively getting child's attention or engaging child). Doesn't inhibit exploration but doesn't use the opportunity to teach.	3 • Parent sometimes chooses activities which can be reasonably accomplished, yet challenge child to learn new skills. •Balance in parent/child initiation and direction of activity sometimes happens. •Sometimes allows experimentation and exploration while providing support through positive encouragement, verbal directions, modeling, and feedback to engage child and teach new skills.	4 • Parent consistently chooses & participates in activities which can be accomplished, yet challenge child to learn new skills. •Consistent balance in parent/child initiation and direction of activity. •Consistently allows experimentation, exploration. Provides support through encouragement, clear verbal directions, modeling, and feedback to effectively teach new skills–only when child is attentive.
Expands on child's activities to encourage development	1 • Parent makes no attempt to encourage development through play.	2 • Parent ineffective in attempts at using play and interactive activities to expand child's language, social-emotional, motor and cognitive skills	3 • Parent shows some ability to encourage growth in child's language, social-emotional, motor and cognitive skills through play/activities.	4 • Parent skillful at recognizing teachable moments in activities and consistently uses them to foster growth in all areas of development through explanation, or helping the child interact with activities in novel ways that address multiple areas of development.
Activities with parent and child happen regularly and address all school readiness domains.	1 • Parent often inhibits activity opportunities, or inappropriately forces activities. •Does not play with child, or participates in a negative manner. •Child is not exposed to varied activities that stimulate school-readiness skills.	2 • Parent allows play but does not plan for, facilitate, or participate in stimulating play or activities. •Activities that address various domains not purposefully provided.	3 • Parent sometimes provides activity opportunities and participates appropriately. •Varied activities are sometimes provided that stimulate school-readiness skills.. •The child's need for repetition is sometimes recognized and fostered.	4 • Parent frequently provides activity opportunities and participates appropriately. •Varied activities are provided regularly that stimulate cognitive, social, behavioral and other school-readiness skills. •Child's need for repetition is recognized and fostered.
Parent monitors and limits television watching	1 • Television is on continuously, used as "babysitter" by parent. Content of programming often inappropriate for child (e.g. sexual, violent).	2 • Television on most of the time, but child has some play activities besides television watching. •Content usually not overly sexual or violent (e.g. cartoons or videos), but not educational.	3 • Parent sometimes monitors and limits time & quality of TV watching. •Sometimes involved in television watching and responsive to child's reaction to content of program.	4 • Parent carefully monitors both time & quality of TV watching. •Is sensitive, involved, & responsive to child's reaction to TV watching. •Discusses content of what's watched, uses it as learning experience.
Subtotal _____/20	1: Not Evident	2: Emerging	3: Practicing	4: Mastery

Nurturing				
Parent reads and responds appropriately to child's cues	1 • Parent consistently does not understand or does not respond appropriately to child's verbal and/or nonverbal cues & communication of wants and needs.	2 • Parent responds to only potent (very obvious) signals given by child to meet child's basic needs.	3 • Parent cares for basic needs of child and sometimes understands and responds appropriately to child's subtle cues that signal wants and needs, though misses some cues.	4 • Parent consistently understands and responds appropriately to child's subtle verbal and/or nonverbal signals indicating hunger, need for attention, need for rest, etc.
Positive interaction is apparent.	1 • Parent's demeanor is clearly and consistently flat, negative, tense, or otherwise uncomfortable when interacting with child. • Parent and/or child consistently show discomfort (avoidance) with interaction. • Physical and eye contact between parent and/or child avoided and/or is rough or uncomfortable.	2 • Neutral demeanor usually displayed toward child when interacting. •Parent and/or child appear neutral in enjoyment of interaction. •Physical and eye contact not avoided, but not sought.	3 • Parent's demeanor is sometimes gentle, caring, & loving when talking, playing, interacting with child. •Parent and child sometimes appear to enjoy interacting together. • Positive physical and/or eye contact is sometimes a part of parent/child interaction.	4 • Parent's demeanor is clearly and consistently gentle, caring, & loving when talking, playing, interacting with child. • Parent and child consistently appear to enjoy interacting. •Positive, appropriate physical and/or eye contact is consistently a part of all parent/child interaction and clearly enjoyed by both.
Parent displays empathy--identifies with and cares about feelings of child	1 • Parent denies, distorts, or does not recognize or acknowledge child's feelings. Child's discomfort may be described in terms of parent's irritation or inconvenience. •Demonstrates lack of caring about how child is feeling. •Does not helps child cope with feelings. Interferes with child's coping; or expects child to cope with feelings alone (e.g."There's nothing to cry about." "Get away from me if you're going to cry.").	2 • Parent rarely alters their behavior in response to child's distress, but does not deny or distort feelings of child. Lacks skill in helping child cope with feelings, though does not actively interfere with child's coping.	3 • Parent sometimes alters their behavior in response to child's distress. Sometimes helps child cope with distress by stopping the episode, soothing, diverting child's attention.	4 • Parent consistently alters their behavior in response to child's distress. Helps child cope with distress, for example by stopping the episode, soothing the child, diverting the child's attention.
Parent describes child in positive terms, sees behavior as normal, responds positively to praise of child offered by visitor	1 • Consistently negative in describing or talking about child. •Does not accept praise of visitor–contradicts visitor, or does not acknowledge praise. •Has unrealistic expectations of behavior–interprets behavior as child being "bad" or "good".	2 •Neutral in describing or talking about child. •Unresponsive to praise of visitor. •Doesn't appear to understand connection between behavior and development.	3 • Sometimes positive in describing or talking about child. •Sometimes accepts praise of visitor. •Sometimes expresses understanding that negative behavior is often related to development.	4 • Always positive in describing or talking about child. •Enthusiastically accepts praise of visitor. •Expresses understanding that negative behavior is often related to development.
Feeding times are pleasant for both parent and child, child is nourished appropriately.	1 • Meals not eaten together--or mealtimes tense and unpleasant. • Baby not held for feedings or included in family meal times. •Eye contact, smiles, verbal interaction during meals do not happen. •Nutrition is inadequate.	2 • Meals not a time for social interaction, though not tense or unpleasant. • Baby held for feedings, or fed by parent, but neutral interaction usually occurs during feeding. •Eye contact, verbal interaction during meals not pleasant or unpleasant. •Nutrition adequate for survival, but not always well-balanced and nutritious.	3 • Meals eaten together sometimes. • Baby held for feedings or included in family meal times & positive interaction sometimes occurs during mealtimes. •Eye contact, smiles, verbal interaction during meals happen at times. •Nutrition is usually adequate.	4 • Meals eaten together routinely. • Baby always held for feedings or included in family meal times. •Eye contact, smiles, verbal interaction during meals happen consistently. •Well-planned meals and snacks with healthy, balanced nutritional value.
Subtotal /20	1: Not Evident	2: Emerging	3: Practicing	4: Mastery

Enriched environment				
Environment is conducive to learning through play	1 ▪ Minimal availability of materials and/or access mostly denied. ▪ Strict restriction of materials that might be messy. ▪ No sense of child having own space in the home due to chaos or rigidity in keeping things neat.	2 ▪ Toys may be available, but no sense of purposefulness or planning in providing play materials. ▪ Access to materials neither facilitated nor limited by parent's action.	3 ▪ Materials for different domains present and access allowed some of the time. ▪ Access sometimes limited by parent's preferences–e.g. concern for messiness or overprotective about safety issues. ▪ Some sense of child's presence in home with space allowed for toys and equipment.	4 ▪ Materials purposefully made available in all domains with adequate time and access allowed. ▪ Parent allows learning through variety of play, including messy play. ▪ Clear sense of child's presence in the home–space allowed for child toys and equipment.
Parent provides space for exploration	1 ▪ Child is confined to small area or in a swing, car seat, playpen, walker, etc much of the time. Very limited opportunities for movement and exploration.	2 ▪ Parent takes little action to insure adequate space and opportunities for exploration, though does not actively restrict exploration.	3 ▪ Child allowed to explore, space adequate. Parent shows some skill in providing well balanced environment and encouraging creative interaction with environment.	4 ▪ Child is consistently encouraged to interact with environment in a way that enhances growth and development. ▪ Environment planned to provide good balance of space/objects that allow creative interaction between child and environment.
Child is exposed to a variety of environments	1 ▪ Exposure to varied environments very restricted. ▪ Within the home child scenery limited (e.g. sits in front of tv, or in baby swing that stays in one place). ▪ Or go out often but for parent's needs/fun. May go to inappropriate places, or show no regard for baby's needs for rest, routine.	2 ▪ Limited exposure to out-of-home environments to meet adult or family needs (e.g. shopping) without evidence of a plan for child's stimulation. ▪ Little variety in where they go, though not to places that are inappropriate for children, and not interfering with child's needs for rest, etc.	3 ▪ Get out of the home with some regularity and to a few educational environments.	4 ▪ Planning apparent for exposing children to variety of stimulating environments including social events (playgroups, family gatherings), cultural, (library, musical or dramatic events) and other environments that help children learn about the world (park, zoo, nature walks, etc.)
Environment is safe	1 ▪ Unsafe conditions obviously present consistently (e.g. plugs exposed, breakable items in child's reach, small objects in reach, etc.); parent shows no concern. Major safety issues have not been dealt with (car seat, lead etc). No steps taken to baby-proof. ▪ Parent is not aware of child's safety in all environments.	2 ▪ Parent takes little purposeful action to child-proof home, though no obvious serious safety hazards observed.	3 ▪ Mostly safe, clean, parent is concerned. Major safety issues have been dealt with (car seat, dangerous materials removed, etc). Some steps taken to baby-proof, but some less- threatening conditions may be present (e.g. house cleaning issues). ▪ Parent sometimes displays awareness of child's safety in most environments.	4 ▪ Very safe, clean. Conscious planning for safety evident. All major and minor safety issues have been dealt with: Have safe car seat, no lead concerns, have taken conscious and thorough steps to baby-proof. ▪ Parent consistently displays awareness of child's safety in all environments. I.
Routines and rituals are present in daily activities	1 ▪ Lifestyle is consistently chaotic and irregular. Parent can name no regular routine or ritual. Sleeping, eating patterns so irregular as to indicate potential health/ development concerns. ▪ No quiet time allowed, ▪ Routines are excessively rigid.	2 ▪ Few routines present, though child is adequately rested and fed.	3 ▪ Some healthy routines present. ▪ May be some irregularity, lack of quiet time, or some rigidity in routines.	4 ▪ Routines and rituals are comfortable, natural, & practiced throughout the day (bedtime, nap time, meals, cultural practices). Routines are planned to address the child's emotional, educational, and health needs. ▪ Routines include quiet time.
Subtotal /20	1: Not Evident	2: Emerging	3: Practicing	4: Mastery

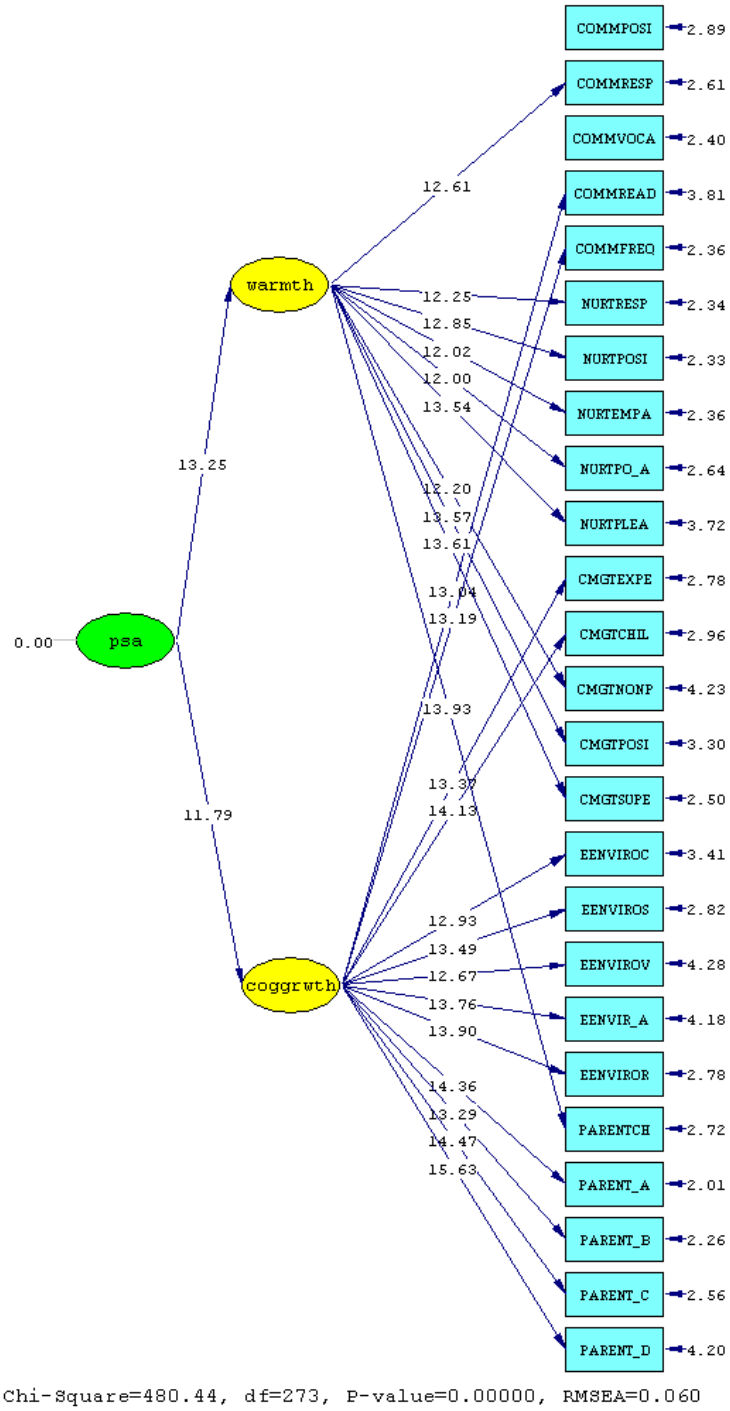
TOTAL SCORE	_____/100

Appendix C. Five-Factor Model



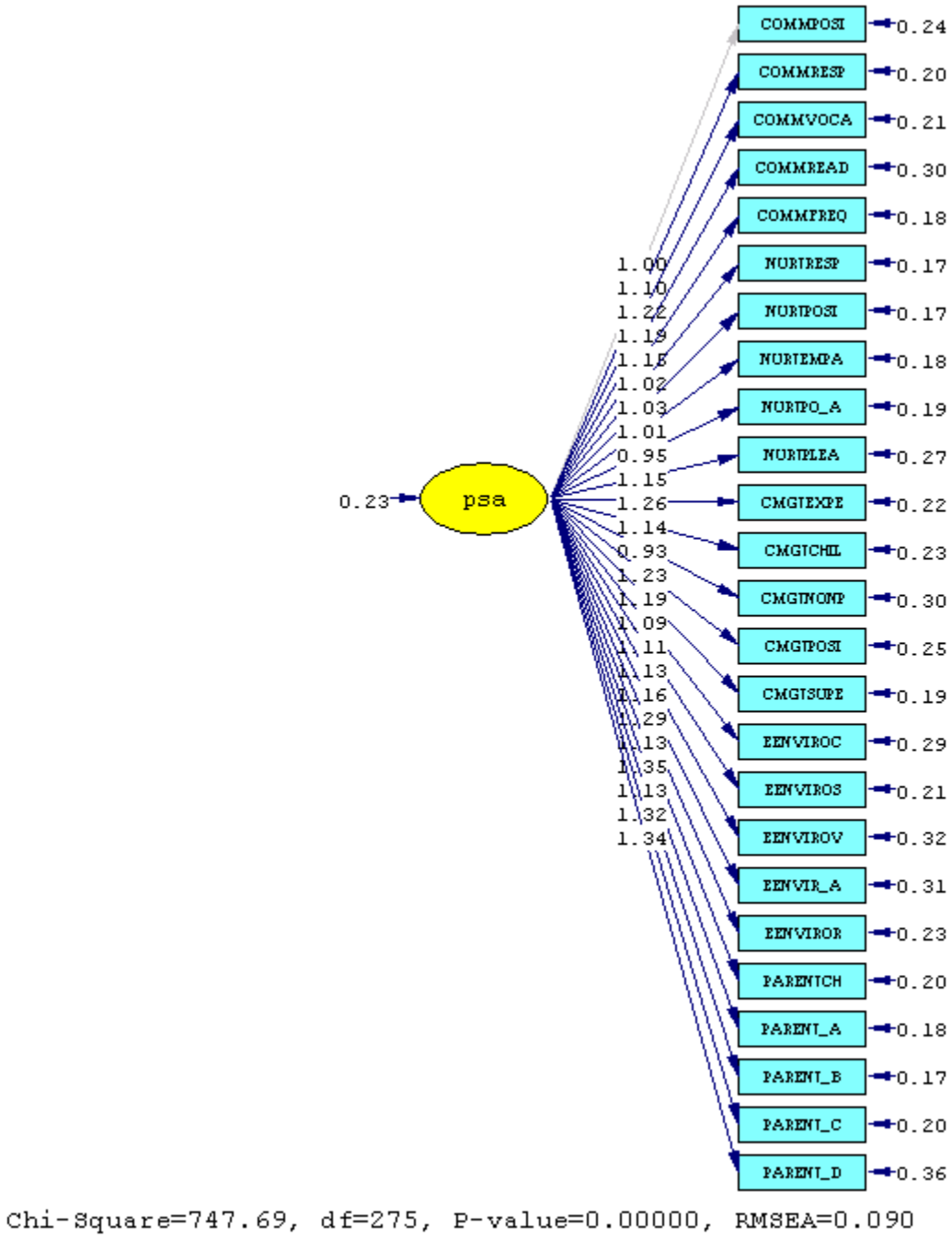
Chi-Square=604.89, df=270, P-value=0.00000, RMSEA=0.076

Appendix D. Two-Factor Model



Chi-Square=480.44, df=273, P-value=0.00000, RMSEA=0.060

Appendix E. One-Factor Model



Chi-Square=747.69, df=275, P-value=0.00000, RMSEA=0.090