

SUMMARY OF ECSII DEVELOPMENT AND PSYCHOMETRIC DATA

Background:

In the late 1990s, the AACAP Work Group on Systems of Care developed and tested the Child and Adolescent Level of Care System (CALOCUS); the empirically tested AACAP version is now called the Child and Adolescent Service Intensity Instrument (CASII). The CASII instrument is a tool to determine the appropriate level of care placement for a child or adolescent. It takes into consideration child development and the importance of the parents and the community in supporting the child. Use of the CASII began in 2000. Since then, Work Group members have trained over 1500 clinicians around the country on the instrument. The AACAP Department of Clinical Practice works with state agencies to arrange trainings and Work Group members continue to train clinicians around the country

It soon became apparent that the states were seeing younger and younger children with mental health needs. The Work Group began to get requests for an instrument for the early childhood population (ages 0-5, not covered by the CASII). In 2003, the work group began developing the Early Childhood Service Intensity Instrument (ECSII) and received funding from McNeil Pharmaceuticals for its development and testing.

Development of the ECSII:

The following is a description of steps in the development and testing of the ECSII from 2003-2009.

- 1) Infancy experts were consulted on the design of the ECSII, including Neil Boris, M.D. and Bob Harmon, M.D., in the early stage of instrument development around conceptual issues. Dr. Harmon provided substantial and very wise guidance during multiple meetings of the Work Group, and the ECSII is dedicated to Dr. Harmon for his profound guidance and support.
- 2) The ECSII added several features not present in the CASII, including a domain for Child-Caregiver Relationships, a Services Profile section that can be used in services planning, Tables listing ascending levels of service intensity in 7 different service types, and a services planning worksheet.
- 3) Initial trainings were done in Arizona (to obtain early feedback on the tool) and in Oregon, where inter-rater reliability data was collected.
- 4) The psychometric study was designed by Dr. Winters with statistical and methodological consultation from Bentson McFarland, M.D., Ph.D. The studies included inter-rater reliability, construct validity, empirically-based scoring algorithm development, and concurrent validity.
- 5) The ECSII subgroup (five members of the full Work Group) developed 20 standardized clinical vignettes. These were then scored by individually by all 11 Work Group members, and consensus scores were arrived at, which were the basis of the “gold

standard” scores. The vignettes were the basis of trainings, criterion validity testing, development of the scoring algorithm, and data on concurrent validity.

- 6) As a part of development of an empirically-based scoring algorithm, we asked a number of infancy experts to rate the standardized clinical vignettes according to their service needs. These experts included: Charlie Zeanah, M.D., Marty Drell, M.D., Tom Anders, M.D., David Pruitt, M.D., Hellen Egger, M.D., Jean Thomas, M.D., and Brain Stafford, M.D.
- 7) Subsequently, a focus group of local Washington, DC early infancy clinicians was convened for to develop service need ratings on the standardized vignettes. (Note that the latter ratings were not ECSII scores, but were intensity of service needs based on ECSII Tables of ascending intensity of services in 7 service categories).
- 8) Clinicians from Nevada provided data for the concurrent validity component of the psychometric study. They provided electronic data on 205 cases comparing the ECSII with the CBCL (for children 18 months and older) or Infant Characteristics Questionnaire (children under 18 months), and the Parenting Stress Index.

SUMMARY OF PSYCHOMETRIC DATA:

Inter-rater Reliability

To test inter-rater reliability, an Oregon group of early childhood clinicians was trained for 1 ½ days on the ECSII. Fifty-two clinicians from four service areas (mental health, child welfare, primary health nursing, early education) scored 15 standardized vignettes after the ECSII training. The group composition is described below:

System (agency category)	(#)	(%)
– Mental Health	38	(73)
– Early education	7	(13.5)
– Child welfare/soc. service	6	(11.5)
– Public health nursing	1	(2)
Education		
– Bachelors degree	3	(5.8)
– Nursing	2	(3.8)
– Masters degree	44	(84.6)
– Doctoral degree	3	(5.8)

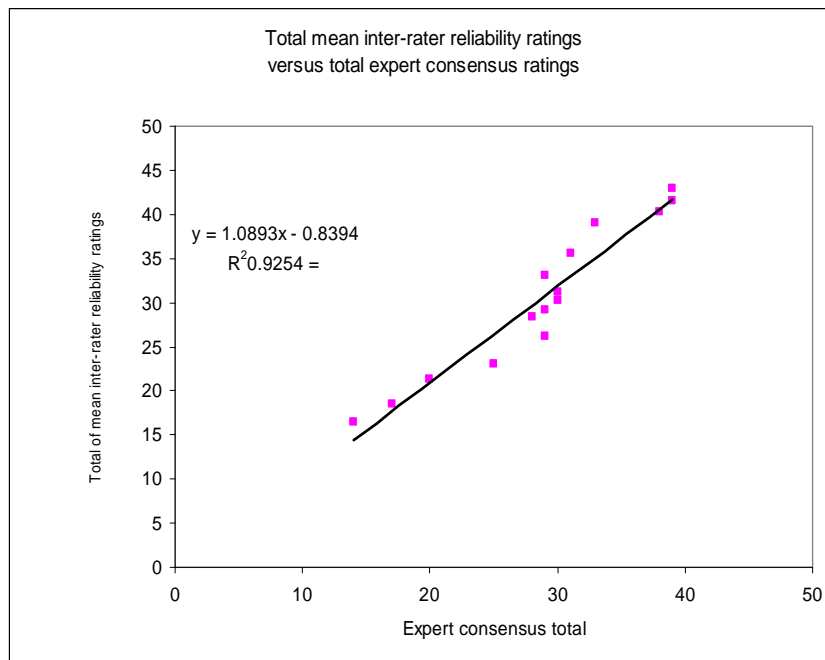
The 52 Oregon clinicians’ ECSII scores on the standardized vignettes were analyzed for intra-class correlations, yielding the following data:

ECSII Domain	Intra-class correlation
I. Safety	0.829
II. Child-caregiver relationships	0.763
III. Caregiving Environment	
a. Environmental supports	0.777
b. Environmental stressors	0.763
IV. Functioning	0.675

V.	Impact of problems	0.709
VI.	Services Profile	
	a. Service involvement	0.595
	b. Service fit	0.696
	c. Service effectiveness	0.442

Criterion-Based Construct Validity

Construct validity was established by meeting a predicted criterion. Scores of the Oregon inter-rater reliability sample (52 clinicians, described above) on 15 standardized vignettes were correlated with the “gold standard” ECSII scores on the same vignettes. This yielded an intra-class correlation coefficient of .9254. (See graph below.)



Concurrent Validity

This part of the study was done with early childhood clinicians in the state of Nevada. Early childhood mental health clinicians scored the ECSII on 205 actual new cases of children ages 0-5. The following charts indicate the age, gender, and ethnicities of the sample.

Age of child	Frequency	Percent
Under 18 months	20	10%
18 through 23 months	10	5%
Two years	14	7%
Three years	72	35%
Four years	52	25%

Five years	39	19%
Total no.	207	100%
Gender / Ethnicity	Frequency (%)	
Male	63.9	
Female	36.1	
Caucasian	43.9	
Hispanic or Latino	14.1	
Asian/Pacific Islander	2.4	
African-American	24.4	
Mixed	15.1	

The children's living situations are depicted in the table below:

Child's Living Situation	%
Birth or adoptive parents	37.1
Informally established extended family care	9.8
Foster care (relative placement)	17.6
Regular foster care (non-family)	30.2
Therapeutic foster care	5.4

Along with scoring the ECSII, the Nevada clinicians administered the following questionnaires on all the cases: Achenbach Child Behavior Checklist (CBCL) for children 18 months and older, (or the Infant Characteristics Questionnaire for children under 18 months), and the Parenting Stress Index (PSI).

The following table shows correlation coefficients of the ECSII Domains (I-V) with the CBCL Internalizing, Externalizing and Total Problem Scores. Note that the number of children under 18 months was not adequate for the statistical analysis, therefore the Infant Characteristics Questionnaire data is not included below.

Correlation Coefficients: ECSII Domains with CBCL

ECSII Domains	CBCL Int.	CBCL Ext.	CBCL Total
Deg Safety	.183*	.238**	.241**
Child CG Relationships	.151*	.333**	.259**
CG Env't / Strengths	-.062	.104	.043
CGf Env't/ Stressors	.154*	.176*	.227**
Funct/ Devel Status	.416**	.456**	.489**
Impact	.335**	.360**	.392**
Total ECSII Score	.266**	.392**	.388**
ECSII SI Level	.227**	.354**	.347**

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

The next table shows the correlation coefficients of the ECSII subscales I-V with the subscales of Parenting Stress Index. (Highest correlations are in bold).

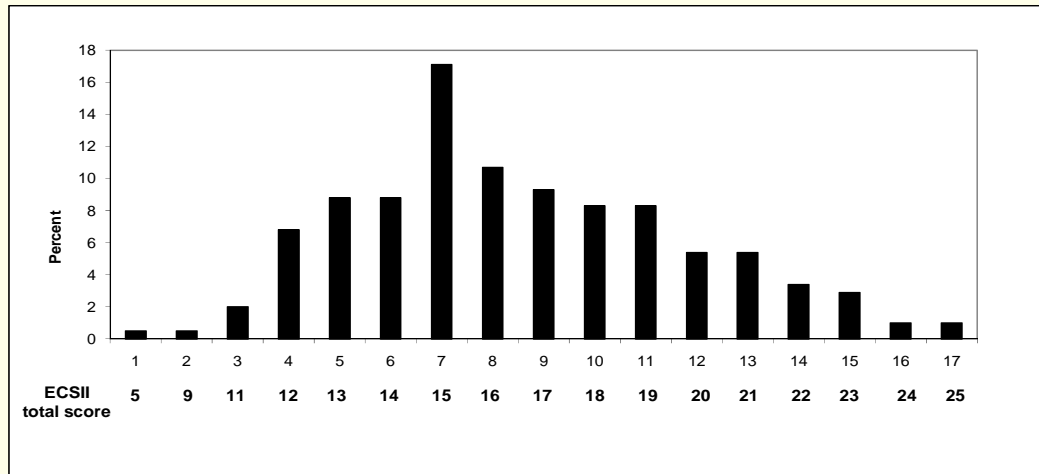
**Correlation Coefficients:
ECSII Domains with Parenting Stress Index (PSI)**

PSI	Safety	Ch- CG Rela.	CE strengths	CE stressors	Func /dev	Impact	Total Score	SI Level
Total Stress	0.23	0.38	0.17	0.16	0.41	0.39	0.39	.364**
Parent distress	0.24	0.31	0.21	0.27	0.22	0.15	0.32	.317**
Dysfunct interact	0.22	0.29	0.12	0.15	0.36	0.33	0.34	.307**
Difficult child	0.12	0.30	0.09	-0.00	0.39	0.42	0.29	.255**

Distribution of ECSII Total Scores in the Nevada sample:

The following bar graph shows the frequency of children scoring at specific ECSII Service Intensity Levels. For example, 3% of children scored at SI Levels 0-1. Level 2 scores were given to 54.7% of children. Levels 3-5 occurred in 46.5% of children with the majority of those (39.1%) on Level 3. Only 3.2% of children scored at levels 4 and 5.

Nevada data: Distribution of Total Scores



SI Level	0	I	II	III	IV	V
Total score	5-8	9-12	13-17	18-22	23-26	27-30

Level 0= Health Maintenance; Level 1= Minimal SI (beginning care); Level 2=Low SI; Level 3= Moderate SI; Level 4= High SI; Level 5 = Maximal SI.

Summary:

The ECSII has excellent inter-rater reliability, with correlation coefficients on Domains I-V (those used to derive the Service Intensity score) from 0.676-0.829. Reliability scores on the Services Profile subscale are somewhat lower, as expected because vignettes had limited information about the services the children were receiving.

The data also demonstrate excellent criterion validity with a correlation of 0.93.

Concurrent validity data obtained from correlations of the ECSII with the Achenbach CBCL and the Parenting Stress Index (PSI) show statistically significant correlations in directions that would be predicted. For example, the ECSII Domains of Functional/Developmental Status and Impact of Child’s Problems showed the strongest correlations with all CBCL scales. This would be expected since these are the ECSII Domains relating most strongly to the child’s problems, which is what the CBCL measures.

On the PSI, the Total Parenting Stress score correlates significantly with the ECSII Domains Child-Caregiver Relationships, Functional/Developmental Status, and Impact of the Child’s Problems; it also correlates with the ECSII Total Score and assigned SI Level, but not as highly with Safety or Caregiving Environment. There are also significant

correlations between the child's perceived difficulty on the PSI and the ECSII domains of Child-Caregiver Relationships, Functional/Developmental Status, and Impact of the Child's Problems, and others as shown in the table.