

Selected Findings: Child/Adolescent Wellness Assessment
Second Pilot Study Child/Adolescent Wellness Assessment

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The Child Wellness Assessments (CAWA)

The value of behavioral healthcare treatment is characterized in terms of the beneficial change consumers/patients experience as a result of receiving care. As a consequence there is a growing demand to objectively monitor change through assessment; and, an increased emphasis given to the primacy of the consumer/patient perspective in monitoring their outcomes. Assessment approaches range from lengthy, multi-scale diagnostic instrumentation to brief measurement of global health and psychological status. While the lengthy instruments provide more precision in clinical application, such as diagnostic support, they are far too burdensome for consumers/patients to routinely complete during the course of their treatment.

The *Child-Adolescent Wellness Assessment* (CAWA) is purposefully designed to be brief, offering respondents (older adolescents, and parents and/or caregivers of children) an opportunity to provide feedback on their general emotional and psychological status. Items included in the CAWA were intentionally developed and selected to capture broad areas (e.g., anxiety, depression, sleep, role function, etc.) in order to detect changes in global levels of emotional distress. Though the item content of the CAWA reflects characteristics of major psychiatric disorders, it is not meant to be used as a substitute for more lengthy and comprehensive diagnostic self-report measures or clinician rating scales. In summary, the CAWA measures are meant to be used as a barometer that is indicative of general improvement, stability, and in some cases increasing distress.

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Sample Demographics – Descriptive Statistics

The following tables provide descriptive information on the clinical sample used in the psychometric analysis of the UBH *Child/Adolescent Wellness Assessment (CAWA)*. Data were provided on 34,694 children/adolescents, not all of whom completed the CAWA. The baseline CAWA survey was clinician administered sometime at the beginning of treatment. An examination of the data in terms of completeness yielded a sample of 27,594 child records for individuals younger than 18 years. The baseline assessment was conducted for the most part during the first or second session (76%). Approximately 24% of the respondents completed the assessment during the third session of treatment or later.

Respondent Age	Baseline	Follow-UP
Five years and younger	5.8%	3.9%
6 – 10 years	30.2%	34.5%
11 – 15 years	39.0%	37.6%
16 years and older	25.0%	24.1%

There were fewer responses.

Respondent Gender	Baseline	Follow-UP
Female	47%	46%
Male	53%	54%

Females are more likely to respond to AWA Follow-up requests.

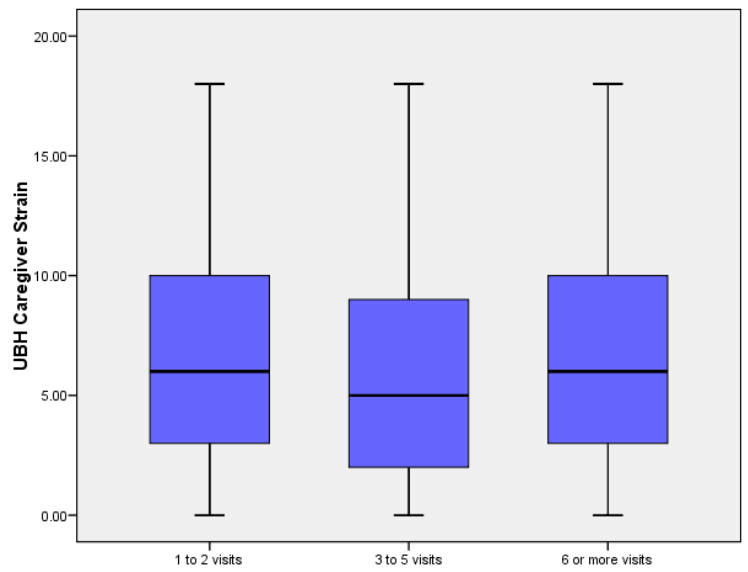
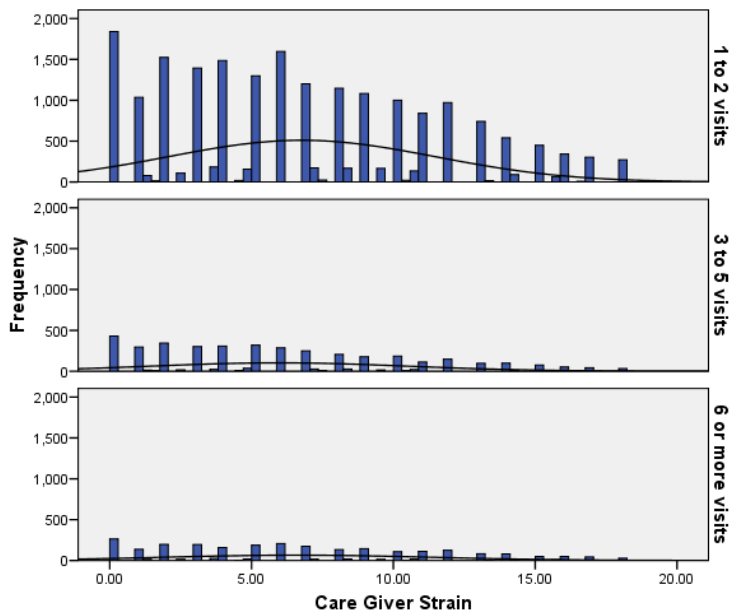
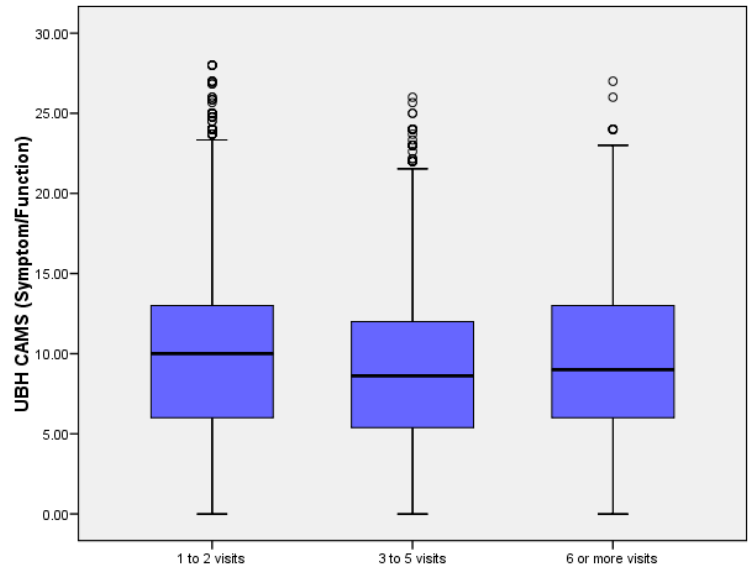
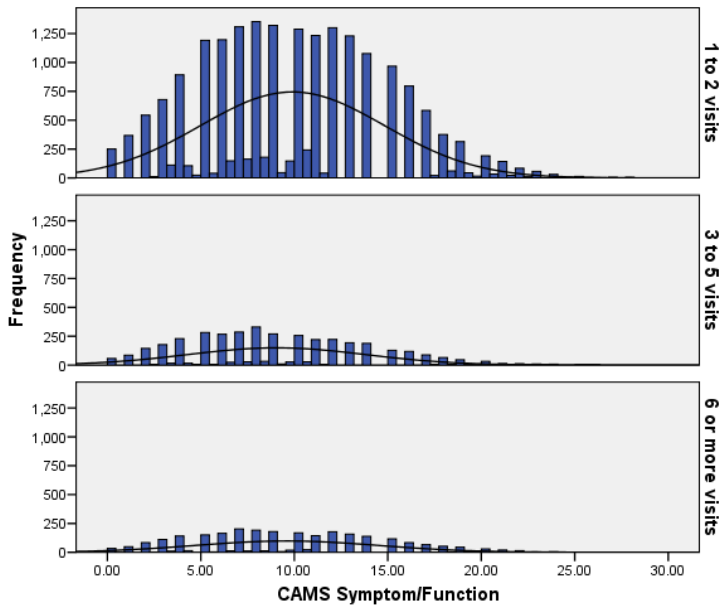
Session Completing Baseline Assessment

	Sample	Mean (CAMS)	SD (CAMS)	Skewness	Kurtosis
1 st - 2 nd session	75.6% (N = 20,866)	9.90*	4.94	.286	-.365
3 rd to 5 th session	14.6% (N = 4,033)	9.05*	4.80	.447	-.183
Other	9.8% (N = 2695)	9.60	4.93	.331	-.390
		Mean (CSQ)	SD (CSQ)	Skewness	Kurtosis
1 st - 2 nd session	75.6% (N = 20,866)	6.76	4.71	.419	-.715
3 rd to 5 th session	14.6% (N = 4,033)	5.96	4.53	.617	-4.38
Other	9.8% (N = 2695)	6.61	4.74	.450	-.707

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Person Completing Child Assessment			
	Freq.	Mean (CAMS)	SD (CAMS)
Mother	71%	9.97	6.92
Father	15%	8.91	6.18
Step-parent	2%	10.59	7.56
Other relative	2%	10.69	7.30
Child-reported	9%	8.98	4.89
Other	2%	10.15	7.49
		$F(1, 5) = 51.3, p < .000$	$F(1, 5) = 102.9, p < .000$

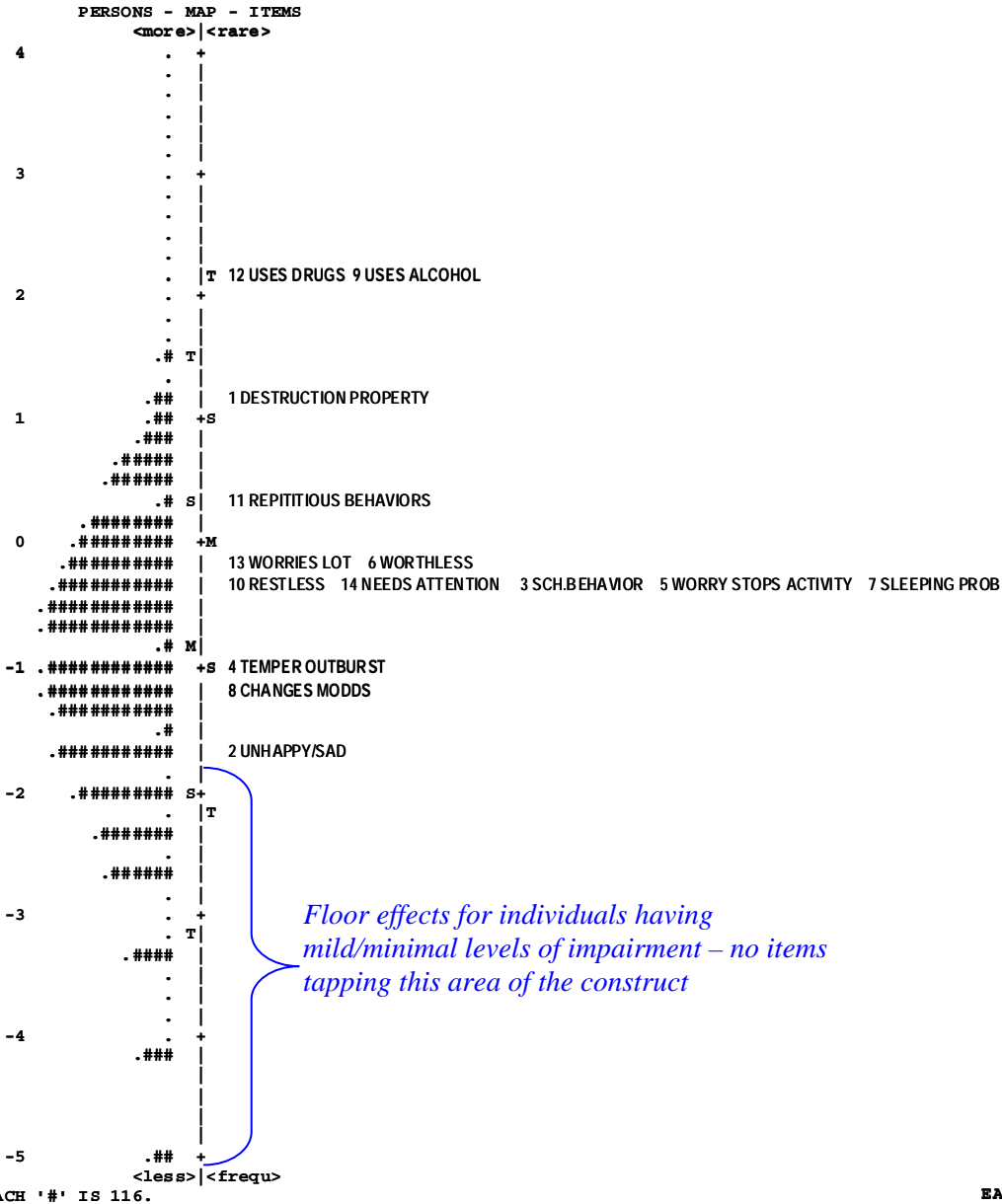
*The initial clinical sample (reported March 2007) yielded a mean of 11.58 (N=225). The score range for this 14 item scale is 0 to 28. Approximately 27% of the sample had scores of less than seven indicating that a substantial proportion of the *baseline* clinical sample completed the *Child Adolescent Wellness Assessment* completed at the first or second session had mild or minimal behavioral health problems. Individuals reporting on children and adolescents with scores of less than seven responded that these youth were sometimes sad, sometimes moody, and sometimes worried.



CAWA Wellness Items

Baseline: Session 1 or 2

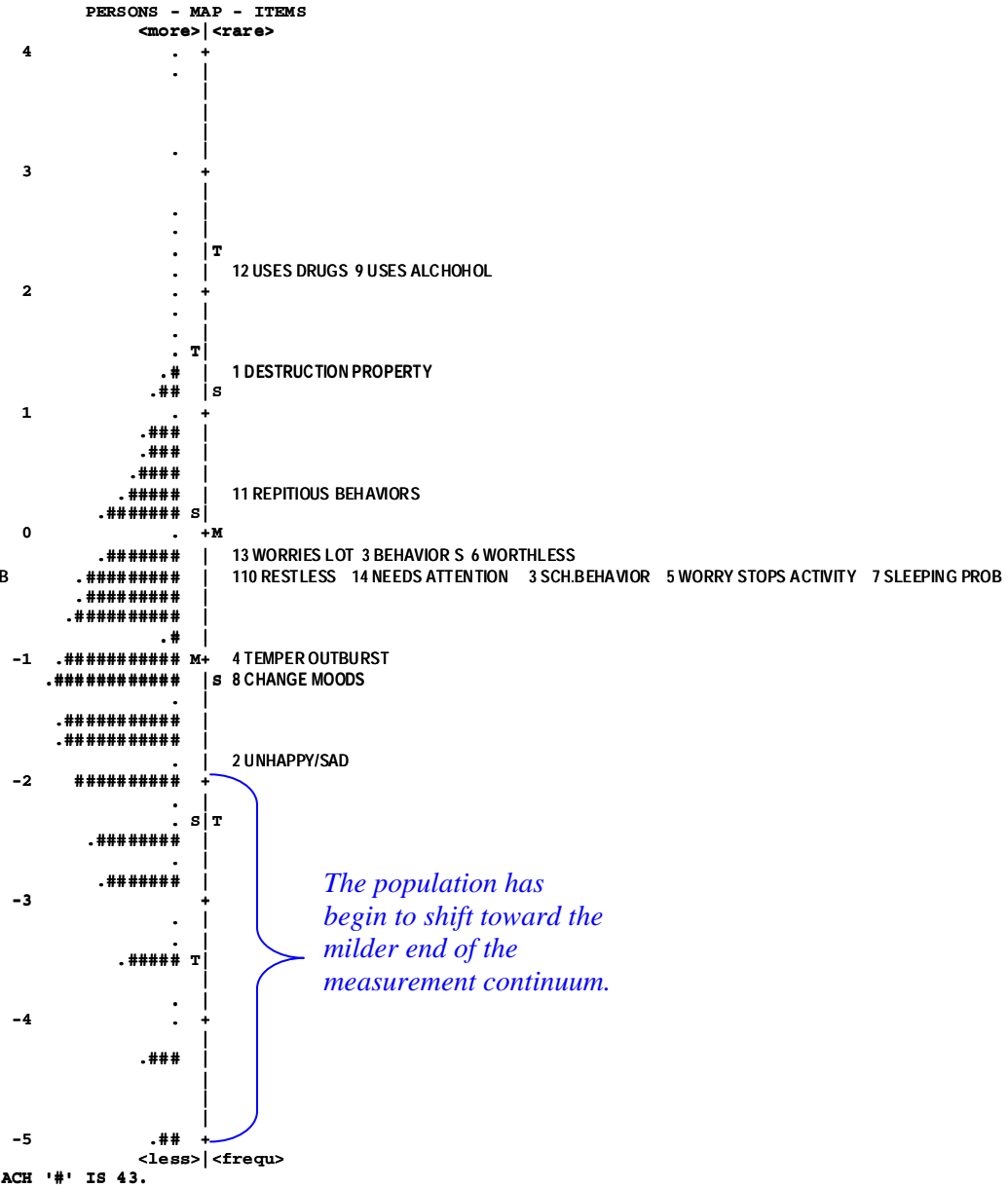
14 ITEMS MEASURED: 20 781 PERSONS 14 ITEMS 42 CATS



Floor effects for individuals having mild/minimal levels of impairment – no items tapping this area of the construct

Baseline: Session 3 or later

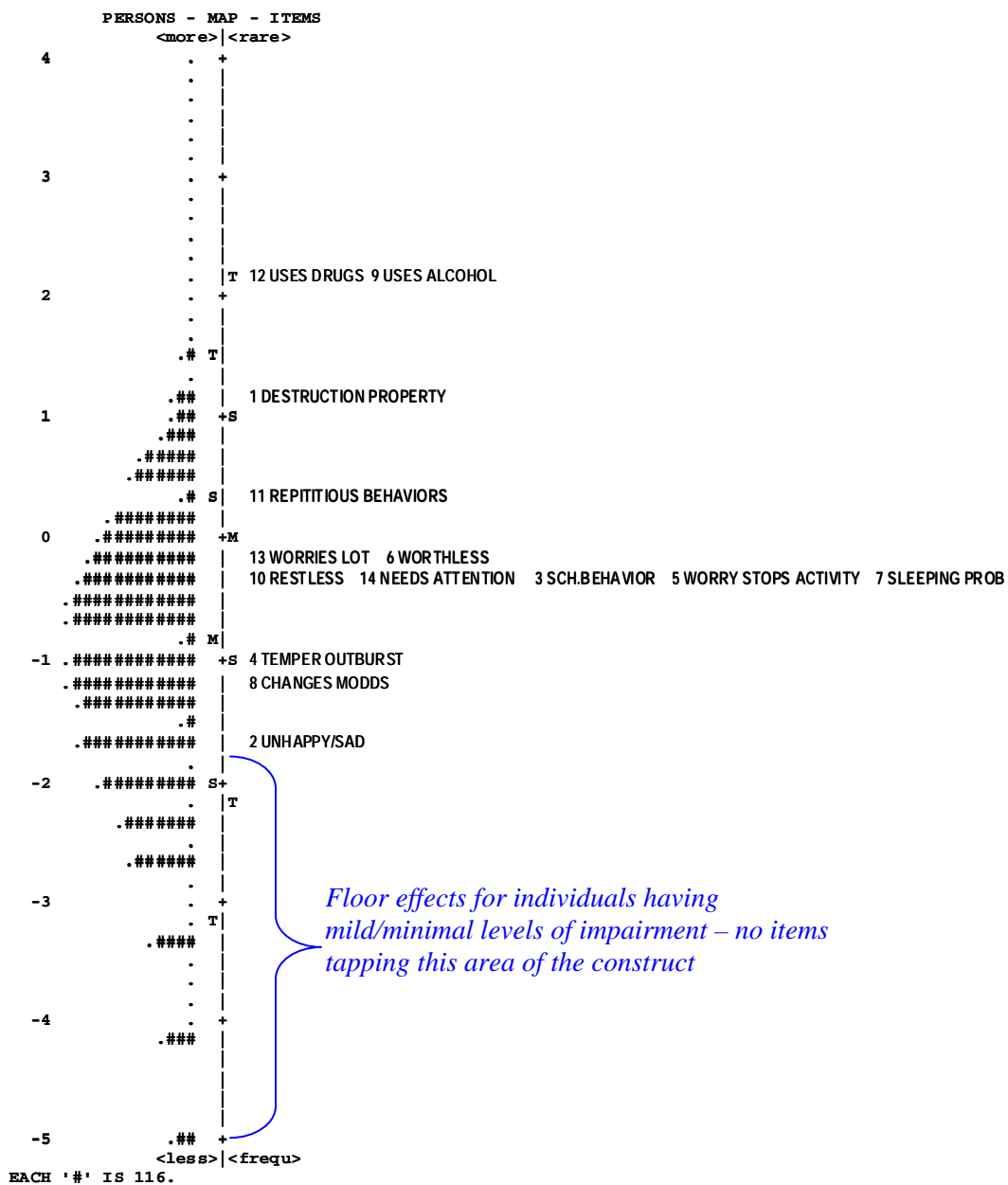
14 ITEMS MEASURED: 20 781 PERSONS 14 ITEMS 42 CATS



The population has begin to shift toward the milder end of the measurement continuum.

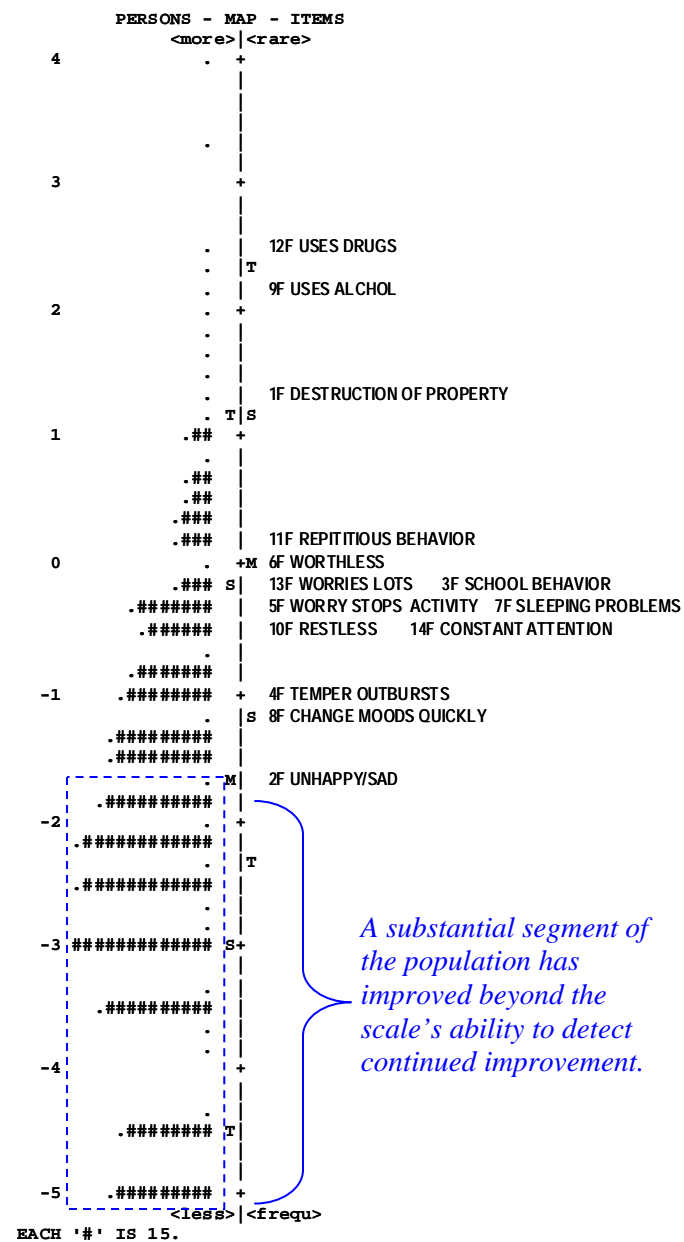
Baseline: Session 1 or 2

14 ITEMS MEASURED: 20 781 PERSONS 14 ITEMS 42 CATS



Follow-Up

14 ITEMS MEASURED: 20 781 PERSONS 14 ITEMS 42 CATS



**TABLE 10.1 E: INPUT:20,781 PERSONS (SESSION 1-2) -- 15 ITEMS MEASURED: 60 CATS [PERSON: REAL SEP: 2.57 REL: .87]
ITEM STATISTICS: MISFIT ORDER**

ENTRY NUMBER	TOTAL SCORE	COUNT	MEASURE	MODEL		INFIT		OUTFIT		PTBSE CORR.	EXACT OBS%	MATCH EXP%	ESTIM DISCR	P-VALUE	ITEM	G
				S.E.	MNSQ	ZSTD	MNSQ	ZSTD								
12	1850	20358	2.10	.02	1.10	3.7	1.73	9.9	A .17	91.5	92.0	.94	.09	12 USES DRUGS	0	
9	2194	20394	2.16	.02	1.12	5.1	1.72	9.9	B .15	89.7	90.3	.91	.11	9 USES ALCHOL	0	
7	16513	20486	-.34	.01	1.15	9.9	1.19	9.9	C .36	52.6	55.7	.73	.81	7 SLEEPING PROBLEMS	0	
3	15609	20384	-.26	.01	1.07	8.0	1.10	8.5	D .41	53.5	55.6	.87	.77	3 BEHAVIOR SCHOOL PROBLEMS	0	
10	16818	20481	-.40	.01	1.05	5.8	1.07	6.5	E .43	53.1	54.1	.90	.82	10 RESTLESS	0	
5	16449	20294	-.32	.01	1.06	6.2	1.06	5.9	F .41	56.7	58.3	.90	.81	5 WORRY PRVENTED ACTIVITIES	0	
13	15034	20267	-.16	.01	1.00	-.5	.98	-2.3	G .45	58.0	57.5	1.02	.74	13 WORRIES ABOUT EVERYTHING	0	
11	10665	19964	.31	.01	.99	-1.3	.99	-.6	g .44	62.5	61.6	1.02	.53	11 REPITITIOUS BEHAVIORS	0	
1	7035	20324	1.23	.01	.97	-3.2	.91	-5.1	f .41	72.2	71.4	1.05	.35	1 DESTRUCTION OF PROPERTY	0	
2	24532	20561	-1.70	.01	.96	-4.2	.95	-4.8	e .45	68.9	67.9	1.05	1.19	2 UNHAPPY SAD	0	
6	15357	20068	-.18	.01	.96	-5.0	.93	-6.9	d .48	60.2	59.2	1.08	.77	6 FEELS WORTHLESS	0	
4	21538	20558	-.99	.01	.92	-9.3	.91	-9.7	c .51	60.1	57.4	1.14	1.05	4 TEMPER OUTBURSTS	0	
14	16177	20388	-.31	.01	.91	-9.9	.91	-9.1	b .51	58.3	55.5	1.16	.79	14 NEEDS CONSTANT ATTENTION	0	
8	22353	20516	-1.12	.01	.84	-9.9	.83	-9.9	a .56	63.5	58.2	1.27	1.09	8 CHANGE MOODS QUICKLY	0	
MEAN	14437.4	20360	.00	.01	1.01	-.3	1.09	.2		64.4	63.9					
S.D.	6611.5	167.5	1.08	.00	.08	6.6	.27	7.7		12.0	12.1					

**TABLE 10.1 E: INPUT: 2,291 PERSONS (SESSION 3 plus) -- 15 ITEMS MEASURED: 60 CATS [PERSON: REAL SEP: 2.57 REL: .87]
ITEM STATISTICS: MISFIT ORDER**

ENTRY NUMBER	TOTAL SCORE	COUNT	MEASURE	MODEL		INFIT		OUTFIT		PTBSE CORR.	EXACT OBS%	MATCH EXP%	ESTIM DISCR	P-VALUE	ITEM	G
				S.E.	MNSQ	ZSTD	MNSQ	ZSTD								
12	496	6610	2.19	.04	1.16	3.0	1.81	6.8	A .14	92.8	93.4	.91	.08	12 USES DRUGS	0	
9	592	6628	2.21	.04	1.16	3.6	1.60	6.1	B .15	90.7	91.6	.90	.09	9 USES ALCHOL	0	
7	5121	6644	-.40	.02	1.14	8.6	1.18	9.1	C .39	55.6	59.2	.76	.77	7 SLEEPING PROBLEMS	0	
10	5108	6647	-.42	.02	1.05	3.4	1.05	2.7	D .45	57.0	57.9	.91	.77	10 RESTLESS	0	
3	4264	6565	-.10	.02	1.03	2.0	1.05	2.3	E .46	57.6	59.0	.94	.65	3 BEHAVIOR SCHOOL PROBLEMS	0	
11	3298	6577	.34	.02	1.05	2.5	1.04	1.4	F .43	63.7	63.8	.96	.50	11 REPITITIOUS BEHAVIORS	0	
5	5126	6628	-.38	.02	1.00	-.1	1.00	-.1	G .47	60.2	60.0	1.00	.77	5 WORRY PRVENTED ACTIVITIES	0	
13	4702	6635	-.23	.02	.97	-1.9	.96	-2.3	g .50	61.2	59.7	1.05	.71	13 WORRIES ABOUT EVERYTHING	0	
1	2046	6623	1.33	.03	.97	-1.7	.93	-2.2	f .42	74.9	74.4	1.04	.31	1 DESTRUCTION OF PROPERTY	0	
2	7723	6670	-1.88	.03	.95	-3.1	.94	-3.3	e .48	73.1	71.7	1.06	1.16	2 UNHAPPY SAD	0	
4	6435	6642	-.97	.02	.94	-3.8	.93	-4.1	d .52	62.7	60.9	1.09	.97	4 TEMPER OUTBURSTS	0	
6	4811	6608	-.22	.02	.93	-4.2	.91	-5.1	c .51	62.7	61.4	1.10	.73	6 FEELS WORTHLESS	0	
14	4912	6640	-.32	.02	.93	-4.4	.92	-4.5	b .52	61.6	58.5	1.12	.74	14 NEEDS CONSTANT ATTENTION	0	
8	6830	6657	-1.16	.02	.88	-7.9	.87	-8.3	a .55	65.0	61.5	1.18	1.03	8 CHANGE MOODS QUICKLY	0	
MEAN	4390.3	6626.7	.00	.03	1.01	-.3	1.08	-.1		67.1	66.6					
S.D.	2064.6	27.9	1.14	.01	.09	4.2	.27	4.9		11.3	11.5					

**TABLE 10.1 E: INPUT: 71,505 PERSONS (FOLLOW-UP) -- 15 ITEMS MEASURED: 60 CATS [PERSON: REAL SEP: 2.57 REL: .87]
ITEM STATISTICS: MISFIT ORDER**

ENTRY NUMBER	TOTAL SCORE	COUNT	MEASURE	MODEL		INFIT		OUTFIT		PTBSE CORR.	EXACT OBS%	MATCH EXP%	ESTIM DISCR	P-VALUE	ITEM	G
				S.E.	MNSQ	ZSTD	MNSQ	ZSTD								
9	116	2268	2.23	.09	1.27	2.4	2.93	6.3	A .14	94.7	95.3	.86	.05	9F USES ALCHOL	0	
12	99	2266	2.42	.10	1.17	1.5	2.56	5.3	B .16	95.5	95.8	.89	.04	12F USES DRUGS	0	
7	1297	2273	-.38	.04	1.18	5.8	1.26	6.1	C .46	60.2	64.8	.75	.57	7F SLEEPING PROBLEMS	0	
10	1409	2269	-.57	.04	1.08	2.8	1.13	3.4	D .52	62.3	63.0	.88	.62	10F RESTLESS	0	
3	1154	2260	-.21	.04	1.05	1.7	1.07	1.5	E .52	65.6	66.1	.93	.51	3F BEHAVIOR SCHOOL PROBLEMS	0	
11	886	2244	.18	.04	.96	-1.1	1.05	-.9	F .54	72.8	70.7	1.03	.39	11F REPITITIOUS BEHAVIORS	0	
5	1306	2264	-.39	.04	1.03	1.0	1.04	1.1	G .54	64.3	64.9	.95	.58	5F WORRY PRVENTED ACTIVITIES	0	
4	1798	2272	-1.07	.04	1.01	.4	.99	-.3	g .55	63.3	63.4	.99	.79	4F TEMPER OUTBURSTS	0	
2	2163	2268	-1.69	.05	.96	-1.3	.95	-1.5	f .55	74.5	73.9	1.04	.95	2F UNHAPPY SAD	0	
6	1169	2248	-.01	.04	.94	-1.9	.90	-2.7	e .56	69.6	67.8	1.08	.52	6F FEELS WORTHLESS	0	
1	494	2271	1.32	.05	.94	-1.5	.76	-3.1	d .49	82.2	80.9	1.08	.22	1F DESTRUCTION OF PROPERTY	0	
13	1091	2252	-.13	.04	.93	-2.4	.89	-2.3	c .58	69.4	66.6	1.10	.48	13F WORRIES ABOUT EVERYTHING	0	
8	1874	2270	-1.21	.04	.89	-3.9	.88	-4.4	b .62	67.1	63.4	1.16	.83	8F CHANGE MOODS QUICKLY	0	
14	1342	2264	-.49	.04	.83	-6.1	.78	-5.9	a .64	69.3	64.0	1.24	.59	14F NEEDS CONSTANT ATTENTION	0	
MEAN	1157.0	2263.5	.00	.05	1.02	-.2	1.23	.3		72.2	71.5					
S.D.	585.4	8.9	1.16	.02	.12	2.9	.64	3.8		10.8	10.9					

INFIT – OUTFIT statistics should range between .7 and 1.3. Estimates below .7 indicate dependencies; while estimates above 1.3 indicate noise.

INFIT is an information-weighted fit statistic, which is more sensitive to unexpected behavior affecting responses to items near the person's measure level.

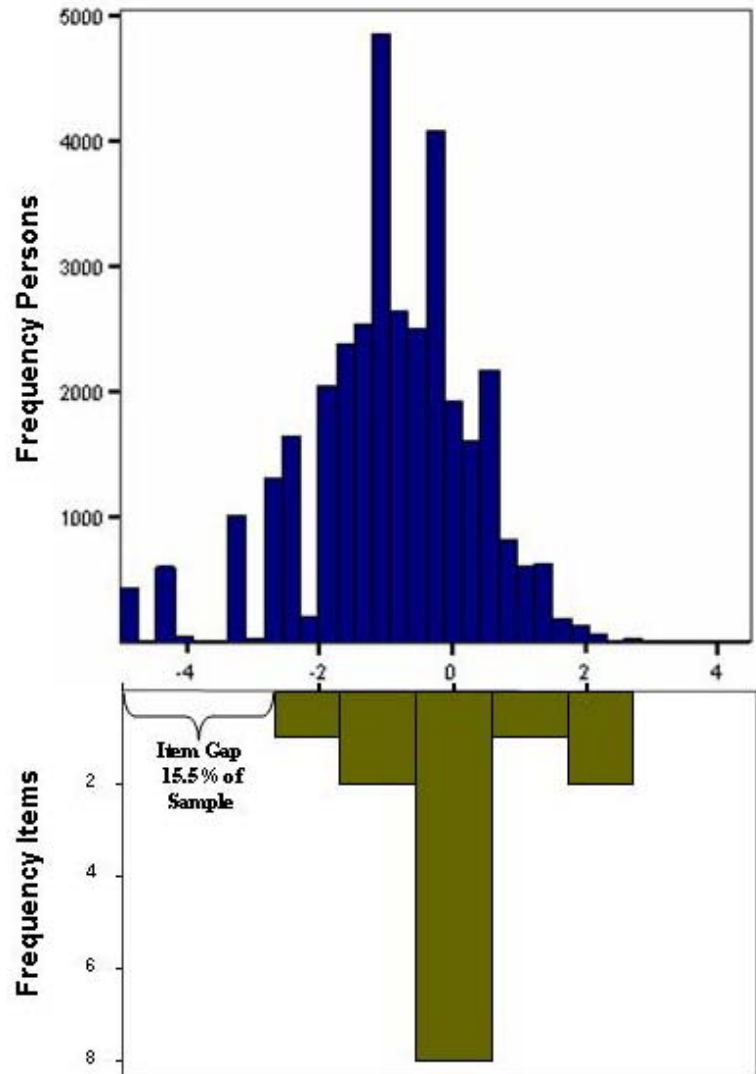
OUTFIT is an outlier-sensitive fit statistic, more sensitive to unexpected behavior by persons on items far from the person's measure level.

MNSQ is the mean-square infit statistic with expectation 1. Values substantially below 1 indicate dependency in the data; values substantially above 1 indicate noise.

The item order is not significantly different between respondents (parent, relative, child self-report) completing the *CAMS Symptom/Function Scale* during session one and two, and respondents completing the assessment on the third session or later during the treatment period. Item order does not differ substantively between baseline and the follow-up assessment, administered via mail. The Child Wellness Assessment, CAMS Scale measurement model is stable and invariant across time.

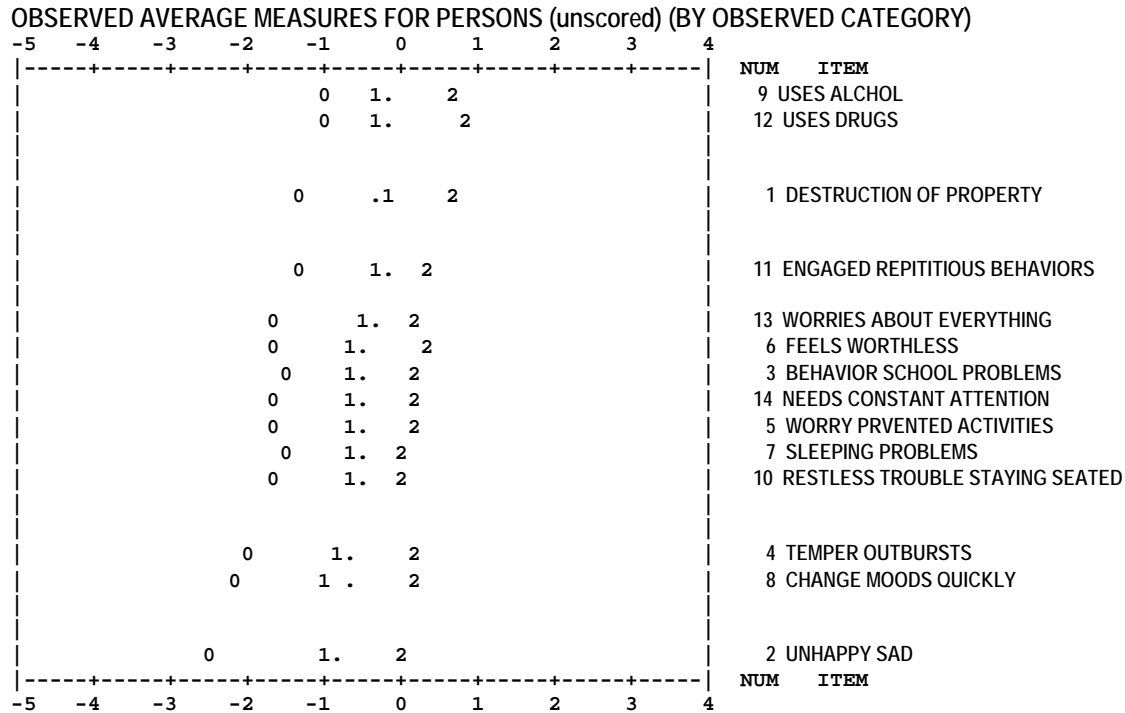
Two items reflected item misfit – *Use of drugs* and *Use of alcohol*. Estimates indicate noise, a lack of precision. The estimates at baseline, although greater the accepted ranges, do not exceed the ranges to the point of measurement degradation. However, the misfit estimates for these two items at follow-up are increased indicating more substantive deviation from the measurement model. The content, illicit substance use by youth is not a pervasive problem. Parent respondents are reported by the literature not to have accurate perceptions of youth engagement in illicit substances.

The person item maps illustrate a lack of items at the mild end of the assessed construct (CAMS wellness/distress). As noted with the adult measure,(AWA), this phenomenon is characteristic of many if not most all behavioral healthcare assessment instruments, as mild items are notoriously difficult to write. The advantage of the using the Rasch measurement model is that the lack of change at some sections of the continuum can be identified as a measurement artifact as opposed to a lack of effective treatment. It is likely that individuals still continue to make progress as they improve towards the mild/moderate and mild end of the wellness construct, however, the *Child/Adolescent Wellness Assessment* is not sensitive to change/improvement at the milder end of the construct. Approximately 15.5% of the child/adolescent sample coming into treatment (sessions one and two) have score profiles indicating minimal if any distress using the *UBH Wellness Assessment*.



Response Scale Adequacy: Wellness

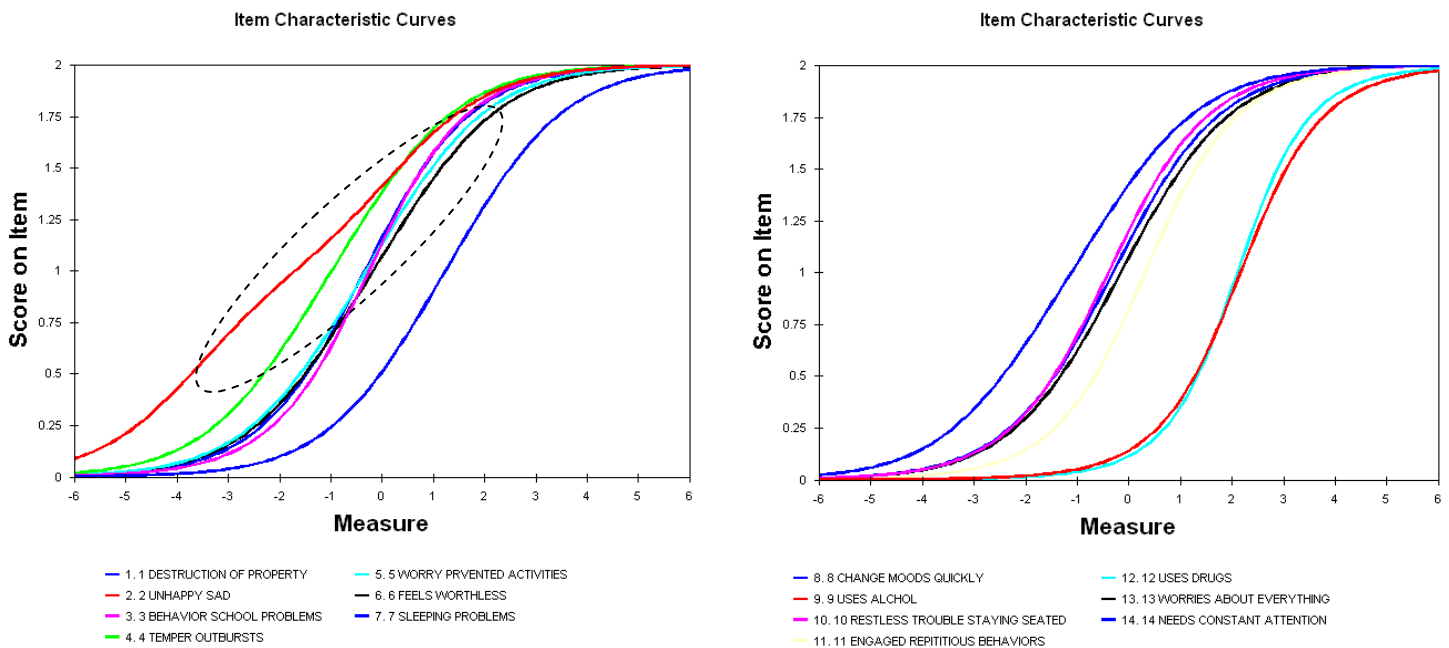
The UBH Child Adolescent Wellness Assessment uses a three-point Likert scale, ranging from 0 to 2. The scale functions within accepted parameters, as is indicated in the graphic below. This graphic arrays the Likert scale responses as interval (logit) data. The graphic illustrates that the response options for the most part are equally spaced. The trouble sleeping item has the most restricted logit range (-1.5 to 0) compared to the item asking about sadness (logit range -2.5 to 0).



“.” Indicates mean score.

Dimensionality: Wellness Assessment

The Rasch model requires unidimensionality, however as stated in the adult psychometric analyses section, unidimensionality is never perfect – it is always approximate. The most important question is whether deviation from unidimensionality is substantive enough to warrant the construct of two or more measures from the item set, each dimension represented by separate measure. To test dimensionality, the item characteristic curves (ICCs) were initially examined. The Rasch IPL model requires parallel ICCs, indicating that the items contribute additively to the overall assessment of the measured trait, emotional/psychological distress (*Wellness Assessment*). Two items (*unhappiness and school behavior problems*) are characterized by slightly crossed ICCs indicating that these items change, in this case minimally, in terms of difficulty relative to the placement of persons on the attribute level. For example, individuals with higher levels of impairment, these items become easier to endorse and contribute less in the response profile of a child/adolescent who is experiencing severe impairment and distress.



In addition to examining the ICCs, a principal components analysis (PCA) was conducted using residuals, as opposed to original observations (responses). As a first step, the first component (dimension) is removed, leaving secondary components to be examined in terms of whether the components are substantive enough to necessitate separating the items into separate measures.

In the case of the *Child/Adolescent Wellness Assessment* (14 wellness items), the Rasch dimension explains 41% of the variance in the data. While the accepted *rule of thumb* is that a variance estimate of 60% or greater explained by the measure is considered good, it is important to remember that unidimensionality also depends on the size of the second dimension (contrast). In the case of the *CAWA*, the largest secondary dimension (first contrast of the residual data) explains 10.1% of the variance. The eigenvalue for this contrast is 2.5, indicating that it has the strength of approximately two to three items, which is the smallest number of items that would be considered appropriate in terms of a separate dimension. Eigenvalues for the remaining contrasts are 1.6, 1.6, and 1.0. Given that random data can have eigenvalues of size 1.4, there is little to be gained in examining

contrasts beyond the first contrast of the residual data. Most unexplained variance is hypothesized to be the random noise predicted by the Rasch model, rather than a degradation of the unidimensionality of the Rasch measurement model. The items and their respective loadings are presented in following Table.

Rasch Principal Component Analysis (Residuals)

Contrast	Loading	Measure	INFIT	OUTFIT	Item
			MNSQ	MNSQ	
1	.61	-.32	1.06	1.06	5. Worry prevented activity
1	.61	-.16	1.00	.98	13. Worried about everything
1	.52	-.18	.96	.93	6. Feels worthless
1	.48	-1.70	.96	.95	2. Unhappy/sad
1	.34	-.34	1.19	1.19	7. Sleeping problems
1	.05	2.16	1.72	1.72	9. Uses alcohol
1	.02	2.10	1.73	1.73	12. Uses drugs
<hr/>					
1	-.54	-.40	1.05	1.07	10. Restless, trouble staying seated
1	-.46	1.23	.97	.91	1. Destruction property
1	-.42	-.26	1.07	1.10	3. School behavior problems
1	-.42	-.99	.92	.91	4. Temper outbursts
1	-.39	-.31	.01	.91	14. Needs constant attention
1	-.31	.31	.88	.99	11. Engaged in repetitious behaviors
1	-.06	-1.12	.84	.83	8. Changes moods quickly

INFIT – OUTFIT statistics should range between .7 and 1.3. Estimates below .7 indicate dependencies; while estimates above 1.3 indicate noise.

INFIT is an information-weighted fit statistic, which is more sensitive to unexpected behavior affecting responses to items near the person's measure level.

OUTFIT is an outlier-sensitive fit statistic, more sensitive to unexpected behavior by persons on items far from the person's measure level.

MNSQ is the mean-square infit statistic with expectation 1. Values substantially below 1 indicate dependency in the data; values substantially above 1 indicate noise.

To further test the dimensionality of the *Wellness Assessment*, two separate scales were constructed based on the positive and negative loading on the first residual contrast. The correlation between these two scales using raw data is estimated at 0.380 ($p = .01$). The two separate sets of items are significantly associated. A latent (error-disattenuated) correlation was estimated. This correlation approximates the correlation divided by the square root of the product of the reliabilities of the two sets of items in the first contrast, and is an indication of the strength of association between the two residual contrasts. Reliability estimates for the two items sets are .715 (positive loading items) and .790 (negative loading items) If this estimate approaches 1.0, the items sets are essentially telling the same statistical scenario. In the case of these data the latent (error-disattenuated) correlation is estimated at $.52.[C/\sqrt{(\alpha_1 * \alpha_2)} = .380/\sqrt{.715 * .790} = .380/.737 = .515]$, indicating a moderate association. A factor analysis using Principal Axis Factoring (PAF) and Promax rotation was conducted. This analysis yielded three distinct factors. Factor one is characteristic of symptomatology; factor 2 of function/behavior, and factor three of illicit substance use (alcohol and/or drugs).

Structure Matrix^a

	Factor		
	1	2	3
CAMS DESTRUCTION OF PROPERTY		.498	
CAMS UNHAPPY SAD	.577		
CAMS BEHAVIOR SCHOOL PROBLEMS		.531	
CAMS TEMPER OUTBURSTS		.516	
CAMS WORRY PRVENTED ACTIVITIES	.707		
CAMS FEELS WORTHLESS	.615		
CAMS SLEEPING PROBLEMS	.433		
CAMS CHANGE MOODS QUICKLY	.427		
CAMS USES ALCHOL			.786
CAMS RESTLESS TROUBLE STAYING SEATED		.706	
CAMS ENGAGED REPITITIOUS BEHAVIORS		.574	
CAMS USES DRUGS			.786
CAMS WORRIES ABOUT EVERYTHING	.758		
CAMS NEEDS CONSTANT ATTENTION		.647	

^aExtraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.
Pattern matrix elements are analogous to standardized regression coefficients.

Elements of the pattern matrix indicate the importance of that variable to the factor with the influence of the other variables partialled out.

From a practical stand point, in examining the content of the two sets of items, one should consider whether individuals high on one set of items would be treated differently than individuals high on the other two sets of items with regard to accessing treatment services, or demonstrating improvement resulting from receiving treatment services. In the case of the UBH *Child/Adolescent Wellness Assessment*, it could be argued that the 14 items reflect a substantively cohesive profile of emotional and psychological distress, and the use of a summed score across the items is an empirically supported and parsimonious approach. The two items assess use child/adolescent use of alcohol and other drugs present the most deviation from the unidimensional model, and could be treated as a separate index scale, especially since the treatment approach for youth with co-morbid substance abuse can be different.

Reliability

Scale Reliability Total Sample:	0.80 (14 items, more precise estimate)
Measurement Model Reliability:	0.81
Cronbach Alpha (Classical Test Theory):	0.80*
Person Separation Index:	2.01

Rasch estimates of reliability incorporate item misfit estimates which are ignored by Cronbach Alpha estimates. As a result Cronbach Alpha is an overestimate of proportion of measurement variance that is true variance. Separation is the number of statistically different performance strata that the test can identify in the sample. In this sample, there are about two measurably different levels of performance, mild versus moderate/severe problems. Reliability (Cronbach alpha) would increase to .82 if the item asking about drug use was not included in the scale.

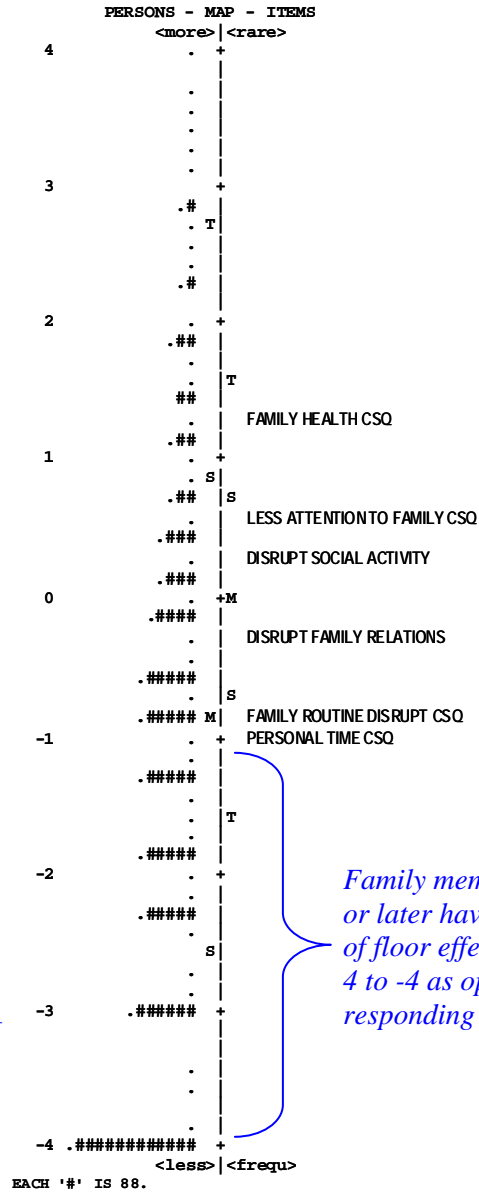
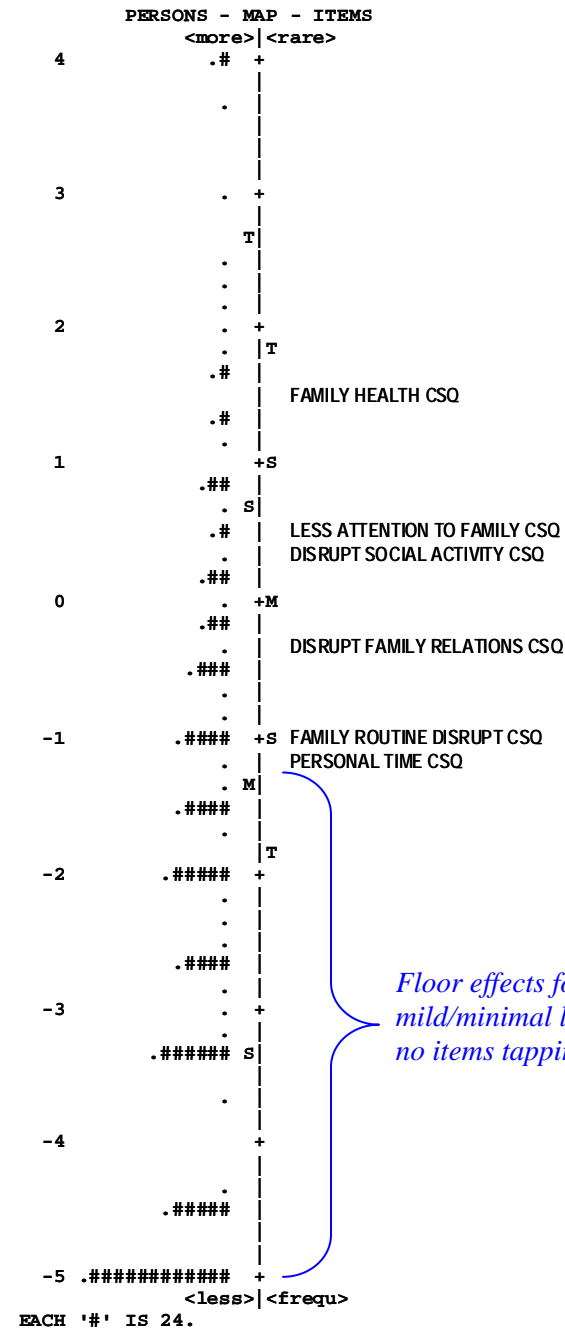
CAWA Caregiver Strain Items

Baseline: Session 1 or 2 (N=20,866)

Baseline: Session 3 or later (N=6,728)

6 ITEMS MEASURED: 20 781 PERSONS 6 ITEMS 24 CATS

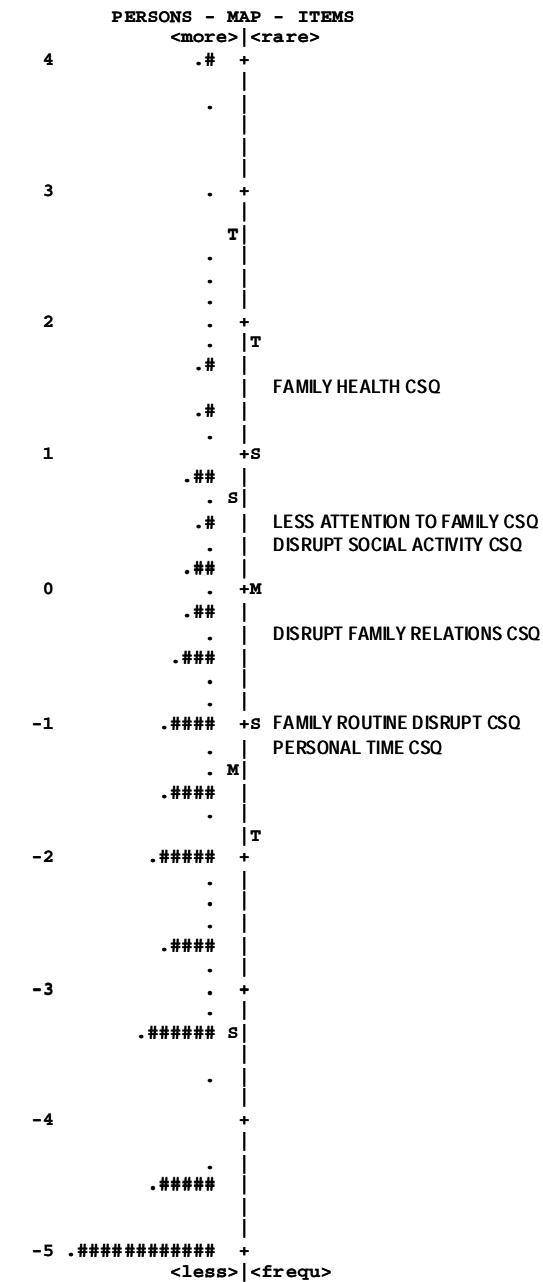
6 ITEMS MEASURED: 20 781 PERSONS 6 ITEMS 24 CATS



Family members responding at session three or later have a different distribution in terms of floor effects. The logit score range is from 4 to -4 as opposed to 4 to -5 for those responding at sessions one or two.

Baseline: Session 1 or 2 (N=20,866)

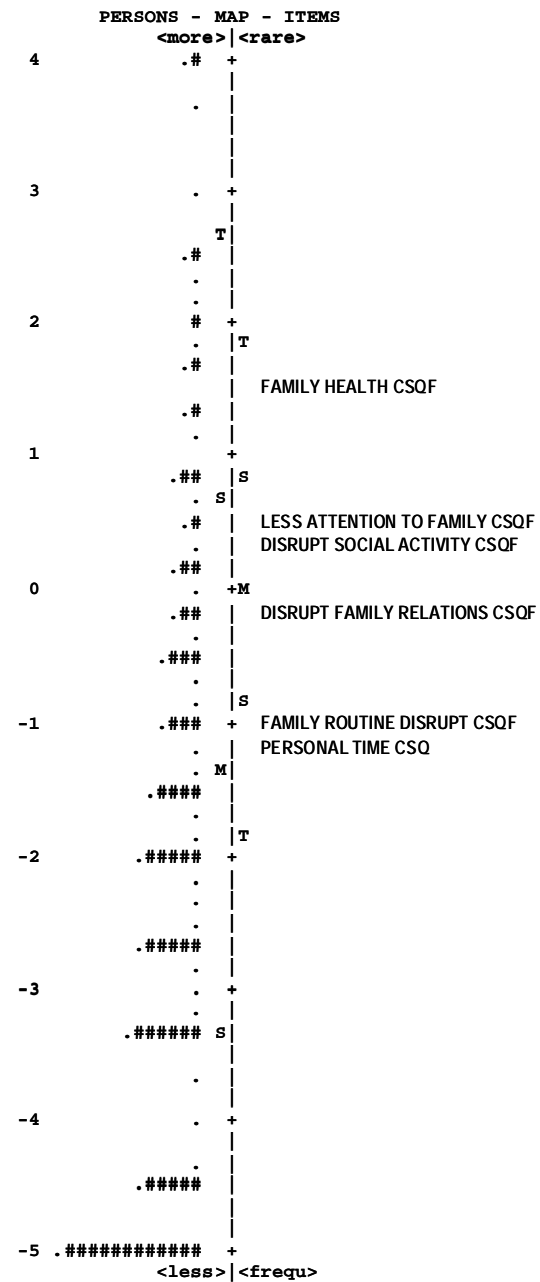
6 ITEMS MEASURED: 20 781 PERSONS 6 ITEMS 24 CATS



EACH '#' IS 24.

Follow-up: (N=2,303)

6 ITEMS MEASURED: 2289 PERSONS 6 ITEMS 24 CATS



EACH '#' IS 35.

**TABLE 10.1 E: INPUT: 2,291 PERSONS (SESSION 1 or 2) -- 6 ITEMS MEASURED: 24 CATS [PERSON: REAL SEP: 1.95 REL: .79]
ITEM STATISTICS: MISFIT ORDER**

ENTRY NUMBER	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ ZSTD	OUTFIT MNSQ ZSTD	PTBSE CORR.	EXACT OBS%	MATCH EXP%	ESTIM DISCR	P-VALUE	ITEM	G
3	628	1535	1.55	.06	1.49 8.2	2.01 6.8	A .58	68.8	74.4	.58	.41	FAMILY HEALTH CSQ	0
4	1010	1535	.56	.05	1.18 4.0	1.24 4.2	B .69	63.5	65.7	.77	.66	LESS ATTENTION TO FAMILY	CSQ 0
5	1372	1540	-.29	.05	.93 -1.7	.97 -.7	C .77	61.9	60.7	1.05	.89	DISRUPT FAMILY RELATIONS	0
1	1743	1544	-1.15	.05	.89 -2.9	.88 -3.0	c .78	66.3	61.9	1.11	1.13	PERSONAL TIME CSQ	0
6	1072	1493	.28	.05	.87 -3.2	.83 -3.2	b .78	69.0	62.5	1.16	.72	DISRUPT SOCIAL ACTIVITY	0
2	1684	1548	-.95	.05	.71 -8.2	.71 -8.2	a .82	68.9	59.6	1.35	1.09	FAMILY ROUTINE DISRUPT CSQ	0
MEAN	1251.5	1532.5	.00	.05	1.01 -.6	1.11 -.7		66.4	64.1				
S.D.	392.1	18.3	.92	.00	.26 5.3	.43 5.0		2.8	5.0				

**TABLE 10.1 E: INPUT: 2,291 PERSONS (SESSION 3 Plus) -- 6 ITEMS MEASURED: 24 CATS [PERSON: REAL SEP: 1.90 REL: .78]
ITEM STATISTICS: MISFIT ORDER**

ENTRY NUMBER	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ ZSTD	OUTFIT MNSQ ZSTD	PTBSE CORR.	EXACT OBS%	MATCH EXP%	ESTIM DISCR	P-VALUE	ITEM	G
3	3825	6541	1.22	.02	1.54 9.9	2.09 9.9	A .51	62.4	67.7	.52	.58	FAMILY HEALTH CSQ	0
4	5507	6579	.61	.02	1.03 1.6	1.06 2.4	B .68	62.1	60.9	.95	.84	LESS ATTENTION TO FAMILY	CSQ 0
5	7554	6588	-.32	.02	.96 -2.4	.96 -2.3	C .72	60.7	56.6	1.05	1.15	DISRUPT FAMILY RELATIONS	0
1	9057	6582	-.99	.02	.92 -4.6	.92 -4.7	c .73	62.2	58.2	1.09	1.38	PERSONAL TIME CSQ	0
6	5824	6293	.30	.02	.84 -8.5	.84 -7.6	b .75	64.7	58.3	1.19	.93	DISRUPT SOCIAL ACTIVITY	0
2	8758	6595	-.81	.02	.78 -9.9	.76 -9.9	a .77	64.8	56.5	1.29	1.33	FAMILY ROUTINE DISRUPT CSQ	0
MEAN	6754.2	6529.7	.00	.02	1.01 -2.3	1.10 -2.0		62.8	59.7				
S.D.	1869.0	107.2	.79	.00	.25 6.7	.45 6.6		1.5	3.9				

**TABLE 10.1 E: INPUT: 2,291 PERSONS (FOLLOW UP) -- 6 ITEMS MEASURED: 24 CATS [PERSON: REAL SEP: 1.97 REL: .79]
ITEM STATISTICS: MISFIT ORDER**

ENTRY NUMBER	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ ZSTD	OUTFIT MNSQ ZSTD	PTBSE CORR.	EXACT OBS%	MATCH EXP%	ESTIM DISCR	P-VALUE	ITEM	G
3	950	2255	1.52	.05	1.56 9.9	2.12 8.8	A .56	67.4	73.9	.52	.42	FAMILY HEALTH CSQF	0
4	1528	2260	.56	.04	1.15 4.1	1.24 4.9	B .70	64.1	65.5	.80	.68	LESS ATTENTION TO FAMILY	CSQF 0
5	2030	2269	-.24	.04	.93 -2.1	.97 -.9	C .78	63.0	60.6	1.05	.89	DISRUPT FAMILY RELATIONS	CSQF 0
1	2618	2275	-1.17	.04	.88 -3.8	.87 -3.9	c .79	66.9	62.1	1.12	1.15	PERSONAL TIME CSQ	0
6	1607	2186	.28	.04	.84 -4.8	.81 -4.4	b .79	69.5	62.6	1.19	.74	DISRUPT SOCIAL ACTIVITY	CSQF 0
2	2509	2279	-.95	.04	.73 -9.4	.72 -9.6	a .82	68.8	59.8	1.34	1.10	FAMILY ROUTINE DISRUPT	CSQF 0
MEAN	1873.7	2254.0	.00	.04	1.02 -1.0	1.12 -.9		66.6	64.1				
S.D.	581.1	31.5	.92	.00	.28 6.3	.48 6.1		2.4	4.8				

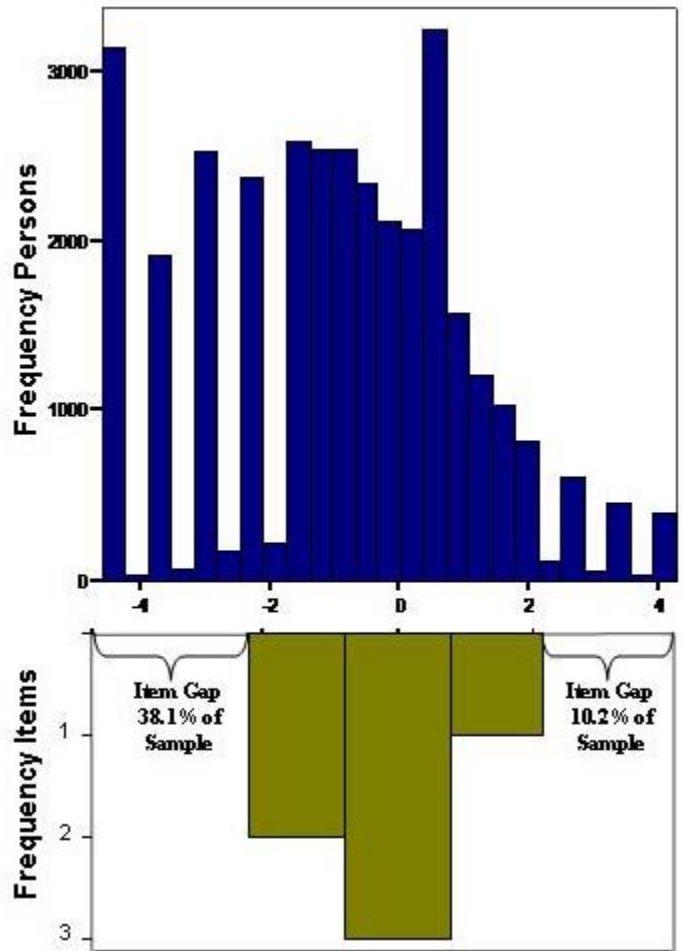
INFIT – OUTFIT statistics should range between .7 and 1.3. Estimates below .7 indicate dependencies; while estimates above 1.3 indicate noise.

INFIT is an information-weighted fit statistic, which is more sensitive to unexpected behavior affecting responses to items near the person's measure level.

OUTFIT is an outlier-sensitive fit statistic, more sensitive to unexpected behavior by persons on items far from the person's measure level.

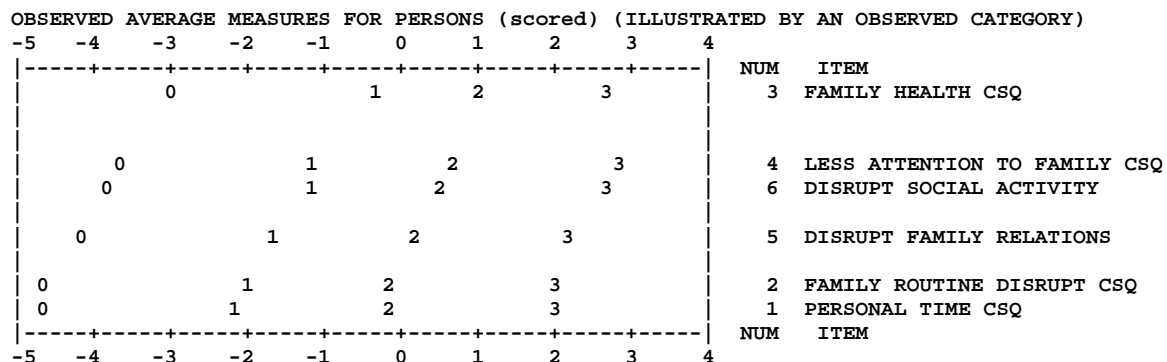
MNSQ is the mean-square infit statistic with expectation 1. Values substantially below 1 indicate dependency in the data; values substantially above 1 indicate noise.

The person item maps illustrate a lack of items at both the mild and severe end of the assessed construct, *Caregiver Strain* (CSQ). As noted previously, this phenomenon is characteristic of many if not most all behavioral healthcare assessment instrumentation. As previously stated, the advantage of the using the Rasch measurement model is that the lack of change at some sections of the continuum can be identified as a measurement artifact as opposed to a lack of effective treatment. It is important to note that respondents are representative of receiving care for their child through commercial health plans, and may have additional resources to ameliorate the stress and strain of caring for a child with behavioral healthcare concerns. Approximately 38.1% of the caregivers responding in this sample indicate that they do not experience strain or stress as assessed by the CSQ measure. In addition, another 10.2% of the sample endorses every CSQ item positively indicating that they may in fact experience stress and strain to a greater degree than is measured by the CSQ. The sizable sample proportions for which there are no sensitive CSQ items suggest that this measure may be marginally informative. The CSQ has been used to a greater extent with populations receiving care through public sector service systems. These caregivers frequently share that they have employment and other resources limitations that are characterized as stressors which exacerbate the parental/caregiver difficulties in caring for a child with behavioral health concerns. In summary, the CSQ may be of greater utility for Medicaid beneficiaries.



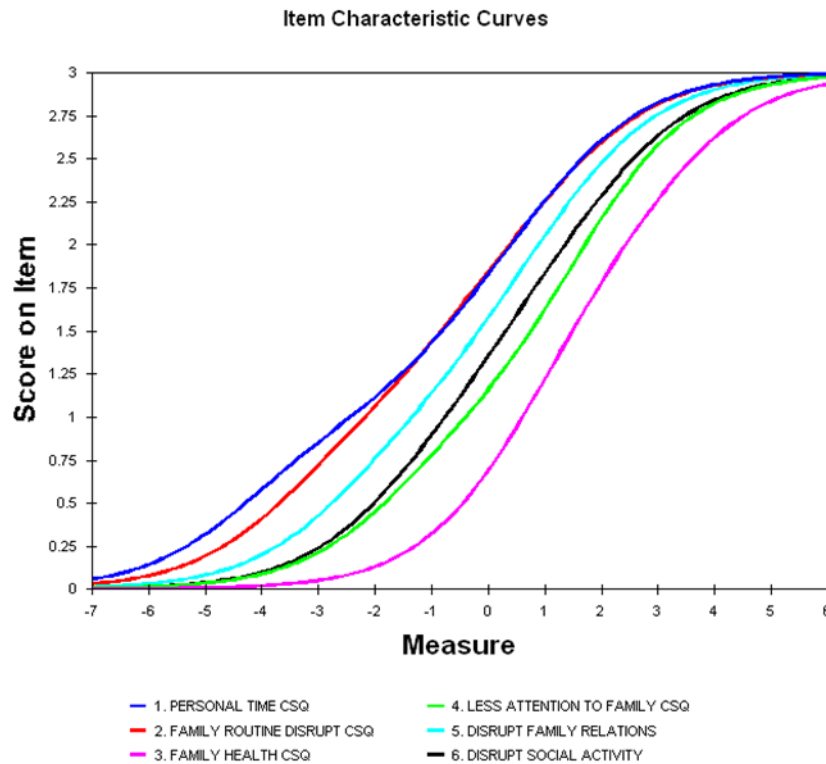
Response Scale Adequacy: Caregiver Strain

The UBH Child Adolescent Wellness Assessment, *Caregiver Strain Scale*, uses a four-point Likert scale, ranging from 0 to 3, 0 indicating not distress or experience of strain. The scale functions within accepted parameters, as is indicated in the graphic below. This graphic arrays the Likert scale responses as interval (logit) data. The graphic illustrates that the response options for the most part are equally spaced.



Dimensionality: Caregiver Strain

The ICCs for the Caregiver Strain Questionnaire were examined, and met the criterion of parallel curves for the most part. The ICC for the item pertaining to an *interruption of personal time* did intersect the item asking about *disruption of family routine*, but only minimally.



In the case of the *Child/Adolescent Wellness Assessment*, Caregiver Strain Questionnaire, the Rasch dimension explains 60% of the variance in the data. The accepted *rule of thumb* is that a variance estimate of 60% or greater explained by the measure is considered good. In the case of the *Caregiver Strain Questionnaire*, the largest secondary dimension (first contrast of the residual data) explains 10.1% of the variance. The eigenvalue for this contrast is 2.5, indicating that it has the strength of approximately two to three items, which is the smallest number of items that would be considered appropriate in terms of a separate dimension. Eigenvalues for the remaining contrasts are 1.7, 1.3, 1.1, and 0.8. Given that random data can have eigenvalues of size 1.4, there is little to be gained in examining contrasts beyond the first contrast of the residual data. Moreover, given that this is an existing Questionnaire, and users are instructed to use a sum across the items, there is little reason to explore a subscale structure. In addition, most unexplained variance is hypothesized to be the random noise predicted by the Rasch model, rather than degradation of the unidimensionality of the measurement model.

Reliability

Scale Reliability Total Sample:	0.77 (6 items, more precise estimate)
Measurement Model Reliability:	0.82
Cronbach Alpha (Classical Test Theory):	0.86
Person Separation Index:	2.10

Rasch estimates of reliability incorporate item misfit estimates which are ignored by Cronbach Alpha estimates. As a result Cronbach Alpha is an overestimate of proportion of measurement variance that is true variance. Separation is the number of statistically different performance strata that the test can identify in the sample. In this sample, there are about two measurably distinct levels of performance, mild versus moderate/severe problems.

Clinical Cutoff: CAWA Wellness and caregiver Strain Items

Approach

Clinical Cutoff Score: As stated in the adult section of this report, cutoff scores should balance both sensitivity (correctly identifying the proportion of individuals identified with clinical need who have high *UBH Child/Adolescent Wellness Assessment* scores within the clinical range) and specificity (correctly identifying the proportion of individuals without clinical distress, community sample – individuals with no indicated mental health problems) who have *UBH Child/Adolescent Wellness Assessment* scores within the nonclinical range). Most methods of calculating clinical cutoff scores incorporate scores from a nonclinical community sample. The method proposed by Jacobsen and Truax (1991), used in estimating adult cutoff scores is used for the child/adolescent samples. The formula used is as follows:

$$Cutoff = \frac{(SD_{clinical})(Mean_{nonclinical}) + (SD_{nonclinical})(Mean_{clinical})}{SD_{clinical} + SD_{nonclinical}}$$

Data used to estimate a *UBH Wellness Assessment* clinical cutoff for children consisted of two samples. The clinical sample included individuals completing the *UBH Child/Adolescent Wellness Assessment* survey on their *first* or *second* visit. The community sample consisted of caregivers or adolescents (self-report) reporting that they had not received any psychotherapy services with a six month period prior to completing the survey, and were not taking psychotropic (e.g., anti-depressant) medication within the past 12 months.

Two community samples were used. In initial psychometric studies, health plan employees and/or affiliates were samples as part of a community sample of parent/family respondent for children and adolescents. Some of the respondents identified themselves as behavioral healthcare clinicians. Respondents also identified that some youth were currently taking medications prescribed for behavioral health care disorders. These respondents were deleted from the original community sample (N=138). An additional 217 respondents were gathered using a snowball technique (soliciting parent group, asking staff colleagues at three universities, etc., and asking them to complete the CAWA and also to identify other parents/caregivers meeting participation criteria, who would be willing to complete the CAWA). These samples were combined as mean differences were not significant ($t(353) = -.277, p = .782$). The clinical cutoff estimate using the Jacobsen & Truax algorithm was 6.99. Receiver Operator Curve (ROC) analyses was conducted using the combined community sample (N=355) and the second clinical sample (N=20,482).

The means and standard deviations for each of the samples is provided below.

	Community A (N=217) Mean / SD	Community B (N=138) Mean / SD	Clinical (N=20,482) Mean / SD
Wellness	4.70 / 3.83	4.82 / 3.76	9.92 / 4.95
Caregiver Strain	3.07 / 3.09	3.13 / 3.77	6.76 / 4.71

CAWA Wellness Items

Clinical Cutoff Score:

Jacobsen and Truax (1991) formula

Child/Adolescent Wellness Assessment (UBH AWA): 6.90

Scale Reliability Total Sample: 0.81 (12 items)

Measurement Model Reliability: 0.82

Cronbach Alpha (Classical Test Theory): 0.81

Receiver Operator Curve Analysis: Estimating Sensitivity and Specificity

AUC .797

Std. Error: .012

p .000

Upper Bound: .818

Lower Bound: .772

Estimates indicate an acceptable fit in terms of separating clinical and community samples.

Recommended Cutoff Score = 6.2 (total sample)

— Sensitivity = \sim .727

— Specificity = \sim .718

Age 6-10 years*

Cutoff Score = 6.6

— Sensitivity = \sim .745

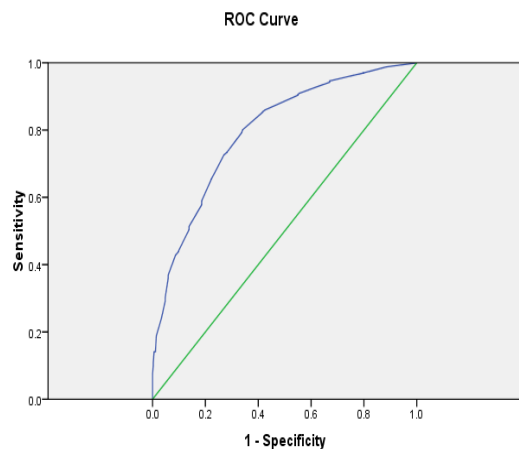
— Specificity = \sim .566

Age 11-15 years*

Cutoff Score = 5.78

— Sensitivity = \sim .769

— Specificity = \sim .757



***No parent/caregiver reports for age group 16-18**

Coordinates of the Curve

Test Result Variable(s): CAWA 12 ITEMS W/OUT ALCOHOL/DRUG ITEMS

Positive if Greater Than or Equal To ^a	Sensitivity	Specificity
-1.0000	1.000	0.000
.5000	.987	0.115
1.0455	.970	0.197
1.1455	.969	0.203
1.2667	.969	0.203
1.6667	.969	0.203
2.0909	.944	0.330
2.2909	.941	0.330
2.5333	.940	0.330
2.8333	.940	0.330
3.1364	.905	0.445
3.4364	.901	0.451
3.8000	.900	0.451
4.1818	.854	0.583
4.5818	.849	0.592
4.9000	.848	0.592
5.1667	.794	0.659
5.3939	.794	0.659
5.7273	.788	0.662
6.2727	.727	0.718
6.6061	.719	0.730
6.8333	.719	0.730
7.1000	.654	0.772
7.4182	.652	0.772
7.8182	.645	0.777
8.2000	.577	0.820
8.5636	.575	0.820
8.8636	.566	0.820
9.1667	.500	0.868
9.4667	.499	0.868
9.7091	.497	0.868
9.9091	.490	0.868
10.3333	.426	0.918
10.7333	.426	0.918
10.8545	.424	0.918
10.9545	.415	0.924
11.5000	.353	0.946
12.5000	.287	0.958
13.0455	.235	0.966
13.1455	.228	0.966
13.2667	.226	0.966
13.6667	.225	0.966
14.0909	.180	0.986
14.2909	.174	0.986
14.5333	.172	0.986
14.8333	.171	0.986
15.1364	.132	0.989
15.4364	.127	0.989
15.8000	.126	0.994
16.1818	.095	0.997

Coordinates of the Curve

Test Result Variable(s): CAWA 12 ITEMS W/OUT ALCOHOL/DRUG ITEMS

Positive if Greater Than or Equal To ^a	Sensitivity	Specificity
16.5818	.091	0.997
16.9000	.090	0.997
17.1667	.066	1.000
17.3939	.065	1.000
17.7273	.062	1.000
18.2727	.043	1.000
18.6061	.041	1.000
18.8333	.041	1.000
19.1000	.026	1.000
19.4182	.026	1.000
19.8182	.024	1.000
20.2000	.015	1.000
20.5636	.015	1.000
20.8636	.014	1.000
21.1667	.008	1.000
21.4667	.008	1.000
21.7091	.008	1.000
21.9091	.007	1.000
22.3333	.004	1.000
22.7333	.004	1.000
22.8545	.003	1.000
22.9545	.003	1.000
23.5000	.001	1.000
25.0000	.000	1.000

		Child Health	# Medical Visits (past 6 months)	# Days missed work	Work days cutback	# Days child's routine interrupted	Interruption personal time	Disruption family routine	Less attention to other family members	Disruption of family relations	Disruption social activities
No Problems	Mean	.56	1.29	.44	.71	.92	.65	.64	.32	.56	.36
	SD	.738	.986	2.624	2.968	1.633	.761	.791	.619	.807	.661
Mild	Mean	.75	1.40	.60	1.15	1.71	1.17	1.14	.62	.99	.72
	SD	.817	.997	2.888	3.404	1.978	.857	.897	.779	.924	.838
Moderate	Mean	.90	1.48	.78	1.74	2.46	1.58	1.58	.93	1.34	1.10
	SD	.871	1.023	2.772	4.444	2.129	.879	.919	.903	.981	.926
Severe	Mean	1.11	1.63	1.52	3.42	3.71	2.18	2.19	1.43	1.88	1.71
	SD	.946	1.078	4.106	6.286	2.230	.842	.857	1.026	.996	.998
Total	Mean	.85	1.46	.86	1.82	2.33	1.45	1.44	.86	1.24	1.01
	SD	.878	1.032	3.205	4.664	2.278	1.010	1.038	.952	1.052	1.007

Clinical Cutoff Score:

Jacobsen and Truax (1991) formula

Child/Adolescent Wellness Assessment (UBH CAWA): 6.99

Scale Reliability Total Sample: 0.80 (14 items, more precise estimate)

Measurement Model Reliability: 0.81

Cronbach Alpha (Classical Test Theory): 0.80

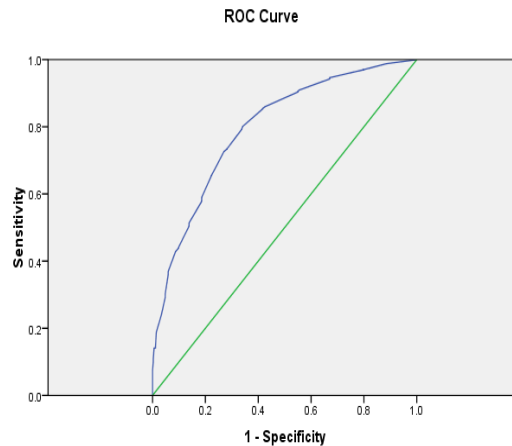
Receiver Operator Curve Analysis: Estimating Sensitivity and Specificity

AUC .797
 Std. Error: .012
 p .000

Estimates indicate an acceptable fit in terms of separating clinical and community samples.

Cutoff Score = 7

- Sensitivity = ~.727
- Specificity = ~.730



Child/Adolescent Wellness (cutoff score = 6.99)			
Test result	Clinical Sample	Community Sample	Totals
At or above Clinical Cutoff	14,952 (true-positives – 73%)	96 (false-positives – 27%)	15,048
Below Clinical Cutoff	5,530 (false-negatives – 27%)	259 (true-negatives – 73%)	5,789
Totals	20,482	355	20,837

Coordinates of the Curve		
Test Result Variable(s):UBH ADULT WELLNESS BASELINE SCORE		
Positive if Greater Than or Equal To^a	Sensitivity	Specificity
-1.00	1.000	0.000
0.50	0.988	0.115
1.04	0.971	0.197
1.12	0.970	0.203
1.22	0.970	0.203
1.64	0.970	0.203
2.08	0.946	0.330
2.24	0.943	0.330
2.44	0.942	0.330
2.77	0.942	0.330
3.12	0.909	0.445
3.37	0.905	0.451
3.66	0.904	0.451
3.91	0.903	0.451

Coordinates of the Curve

Test Result Variable(s):UBH ADULT WELLNESS BASELINE SCORE		
Positive if Greater Than or Equal To^a	Sensitivity	Specificity
4.15	0.860	0.575
4.49	0.855	0.583
4.83	0.853	0.583
5.05	0.801	0.659
5.24	0.800	0.659
5.61	0.795	0.662
5.92	0.793	0.662
6.18	0.734	0.718
6.41	0.734	0.718
6.73	0.727	0.730
7.27	0.663	0.772
7.59	0.655	0.777
7.82	0.654	0.777
8.08	0.590	0.814
8.39	0.588	0.814
8.76	0.579	0.814
8.95	0.578	0.814
9.17	0.514	0.862
9.51	0.511	0.862
9.85	0.504	0.862
10.09	0.441	0.901
10.34	0.441	0.901
10.63	0.439	0.901
10.88	0.429	0.913
11.23	0.369	0.941
11.56	0.368	0.941
11.76	0.366	0.941
11.92	0.359	0.941
12.36	0.302	0.952
12.78	0.301	0.952
12.88	0.300	0.952
12.96	0.292	0.952
13.50	0.241	0.966
14.50	0.188	0.986
15.04	0.148	0.989
15.12	0.142	0.989
15.22	0.141	0.994
15.64	0.140	0.994
16.08	0.108	0.997
16.24	0.103	0.997
16.44	0.101	0.997
16.77	0.101	0.997
17.12	0.075	1.000
17.37	0.072	1.000
17.66	0.071	1.000
17.91	0.071	1.000
18.15	0.052	1.000
18.49	0.049	1.000
18.83	0.049	1.000
19.05	0.034	1.000
19.24	0.034	1.000
19.61	0.031	1.000

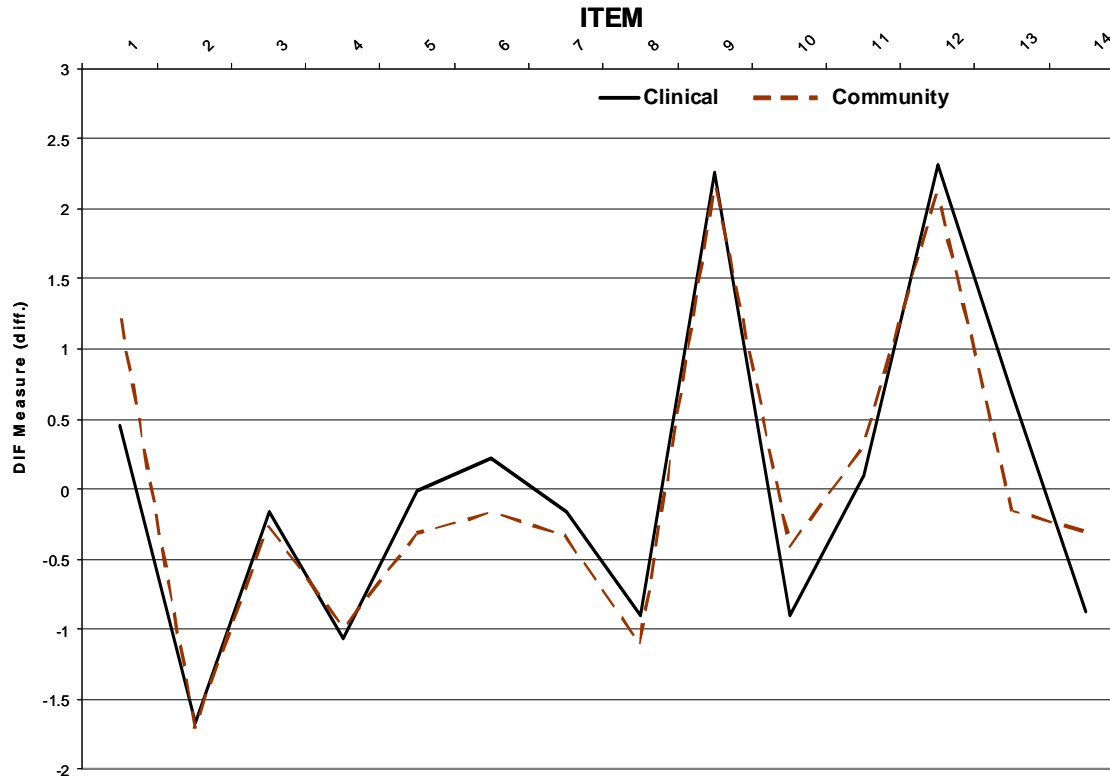
Coordinates of the Curve

Test Result Variable(s):UBH ADULT WELLNESS BASELINE SCORE		
Positive if Greater Than or Equal To^a	Sensitivity	Specificity
19.92	0.031	1.000
20.18	0.021	1.000
20.41	0.021	1.000
20.73	0.019	1.000
21.27	0.012	1.000
21.59	0.011	1.000
21.82	0.011	1.000
22.08	0.008	1.000
22.39	0.007	1.000
22.76	0.006	1.000
22.95	0.006	1.000
23.17	0.004	1.000
23.51	0.003	1.000
23.85	0.003	1.000
24.09	0.002	1.000
24.34	0.002	1.000
24.63	0.002	1.000
24.88	0.002	1.000
25.33	0.001	1.000
25.76	0.001	1.000
25.92	0.001	1.000
26.42	0.001	1.000
26.88	0.001	1.000
26.96	0.001	1.000
27.50	0.000	1.000
29.00	0.000	1.000

The test result variable(s): WELLNESS UBH CHILD BASELINE SCORE has at least one tie between the positive actual state group and the negative actual state group.

a. The smallest cutoff value is the minimum observed test value minus 1, and the largest cutoff value is the maximum observed test value plus 1. All the other cutoff values are the averages of two consecutive ordered observed test values.

PERSON DIF plot (DIF=CLINICAL - COMMUNITY)



1. Destroyed property
2. Was unhappy/sad
3. Behavior caused problems at school
4. Temper outbursts
5. Worry prevented doing things
6. Felt worthless
7. Trouble sleeping
8. Changed moods quickly
9. Used alcohol
10. Was restless
11. Repetitious behavior
12. Used drugs
13. Worried about most everything
14. Needed constant attention

Caregivers from both clinical and community samples note that sometimes their children experience unhappiness, school problems, temper outbursts, and sleeping problems. Destruction of property by the child, excessive worry, abrupt changes of mood, child perceptions of worthlessness, restlessness, and the need for constant attention appear to differentiate typical problems experienced by caregivers, from those problems needing clinical attention.

Person	Classes	χ^2	df	p	Item Name
2	2	36.8128	1	.0000	1 DESTRUCTION OF PROPERTY
2	2	.1579	1	.6911	2 UNHAPPY SAD
2	2	.5728	1	.4491	3 BEHAVIOR SCHOOL PROBLEMS
2	2	.4501	1	.5023	4 TEMPER OUTBURSTS
2	2	6.8969	1	.0086	5 WORRY PRVENTED ACTIVITIES
2	2	10.4197	1	.0012	6 FEELS WORTHLESS
2	2	2.3867	1	.1224	7 SLEEPING PROBLEMS
2	2	4.3054	1	.0380	8 CHANGE MOODS QUICKLY
2	2	.0982	1	.7540	9 USES ALCHOL*
2	2	25.5392	1	.0000	10 RESTLESS TROUBLE STAYING SEATED
2	2	3.0597	1	.0803	11 ENGAGED REPITITIOUS BEHAVIORS
2	2	.2925	1	.5886	12 USES DRUGS*
2	2	37.5601	1	.0000	13 WORRIES ABOUT EVERYTHING
2	2	31.0036	1	.0000	14 NEEDS CONSTANT ATTENTION

* Items minimally endorsed by both clinical and community sample caregivers.

Differential item function (DIF) indicates that one group of respondents is scoring differently (better/worse) than another group of respondents on an item (after adjusting for the overall scores of the respondents). DIF analysis indicated that 7 of the 14 Wellness Assessment items functioned differentially for the clinical versus community respondents.

DIF estimates are presented in the tables below for age groups and for female and male respondents. For the most part, caregivers found it easier to report distress for male children. DIF from age groups appears to be related to developmental stage. For example, it is the most difficult to endorse alcohol and/or drug use for young children, and easier to endorse school behavior problems for children between the ages of 6 and 15. Lower measure scores indicate ease of endorsement.

ITEM	Measure Score	
	Female	Male
1 DESTRUCTION OF PROPERTY	1.66	0.92
2 UNHAPPY SAD	-2.05	-1.41
3 BEHAVIOR SCHOOL PROBLEMS	0.09	-0.54
4 TEMPER OUTBURSTS	-0.86	-1.11
5 WORRY PRVENTED ACTIVITIES	-0.51	-0.16
6 FEELS WORTHLESS	-0.38	0.00
7 SLEEPING PROBLEMS	-0.55	-0.16
8 CHANGE MOODS QUICKLY	-1.31	-0.95
9 USES ALCHOL	2.00	2.30
10 RESTLESS TROUBLE STAYING SEATED	-0.03	-0.71
11 ENGAGED REPITITIOUS BEHAVIORS	0.53	0.15
12 USES DRUGS	2.07	2.12
13 WORRIES ABOUT EVERYTHING	-0.47	0.11
14 NEEDS CONSTANT ATTENTION	-0.25	-0.36

ITEM	Measure Score			
	5 years younger	6 thru 10	11 thru 15	16 thru 17
1 DESTRUCTION OF PROPERTY	0.49	1.09	1.26	1.62
2 UNHAPPY SAD	-0.82	-1.32	-1.90	-2.12
3 BEHAVIOR SCHOOL PROBLEMS	-0.51	-0.37	-0.28	-0.01
4 TEMPER OUTBURSTS	-1.79	-1.16	-0.93	-0.68
5 WORRY PRVENTED ACTIVITIES	0.60	-0.29	-0.44	-0.42
6 FEELS WORTHLESS	1.41	0.08	-0.40	-0.5
7 SLEEPING PROBLEMS	-0.21	-0.01	-0.38	-0.74
8 CHANGE MOODS QUICKLY	-1.24	-0.97	-1.17	-1.19
9 USES ALCHOL	3.59	3.70	2.57	0.99
10 RESTLESS TROUBLE STAYING SEATED	-1.24	-0.93	-0.16	0.21
11 ENGAGED REPITITIOUS BEHAVIORS	-0.13	0.17	0.37	0.57
12 USES DRUGS	3.63	3.52	2.46	1.06
13 WORRIES ABOUT EVERYTHING	0.92	-0.04	-0.31	-0.35
14 NEEDS CONSTANT ATTENTION	-1.31	-0.78	-0.17	0.44

CAWA Caregiver Strain Items

Clinical Cutoff Score:

Jacobsen and Truax (1991) formula

Child/Adolescent Wellness Assessment (UBH CAWA): 6.99

Scale Reliability Total Sample: 0.77 (6 items, more precise estimate)
Measurement Model Reliability: 0.82
Cronbach Alpha (Classical Test Theory): 0.86

Receiver Operator Curve Analysis: Estimating Sensitivity and Specificity

AUC .741
 Std. Error: .014
p .000

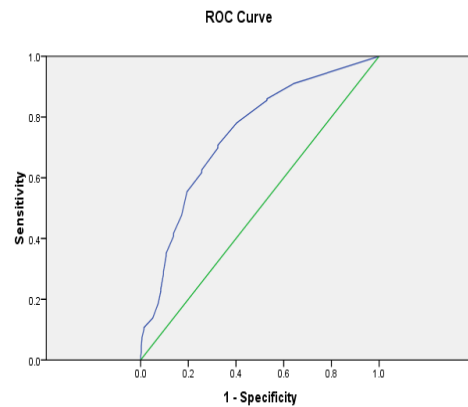
Estimates indicate an acceptable fit in terms of separating clinical and community samples.

Cutoff Score = 4.7

- Sensitivity = ~.625
- Specificity = ~.744

Alternative Cutoff Score = 3.30

- Sensitivity = ~.707
- Specificity = ~.676



Caregiver Strain (cutoff score = 4.70)

Test result	Clinical Sample	Community Sample	Totals
At or above Clinical Cutoff	12,903 (true-positives – 63%)	131 (false-positives – 37%)	13,034
Below Clinical Cutoff	7,579 (false-negatives – 37%)	224 (true-negatives – 63%)	7,803
Totals	20,482	355	20,837

Caregiver Strain (alternative cutoff score = 3.30)

Test result	Clinical Sample	Community Sample	Totals
At or above Clinical Cutoff	14,542 (true-positives – 71%)	102 (false-positives – 29%)	14,644
Below Clinical Cutoff	5,940 (false-negatives – 29%)	253 (true-negatives – 71%)	6,193
Totals	20,482	355	20,837

Coordinates of the Curve

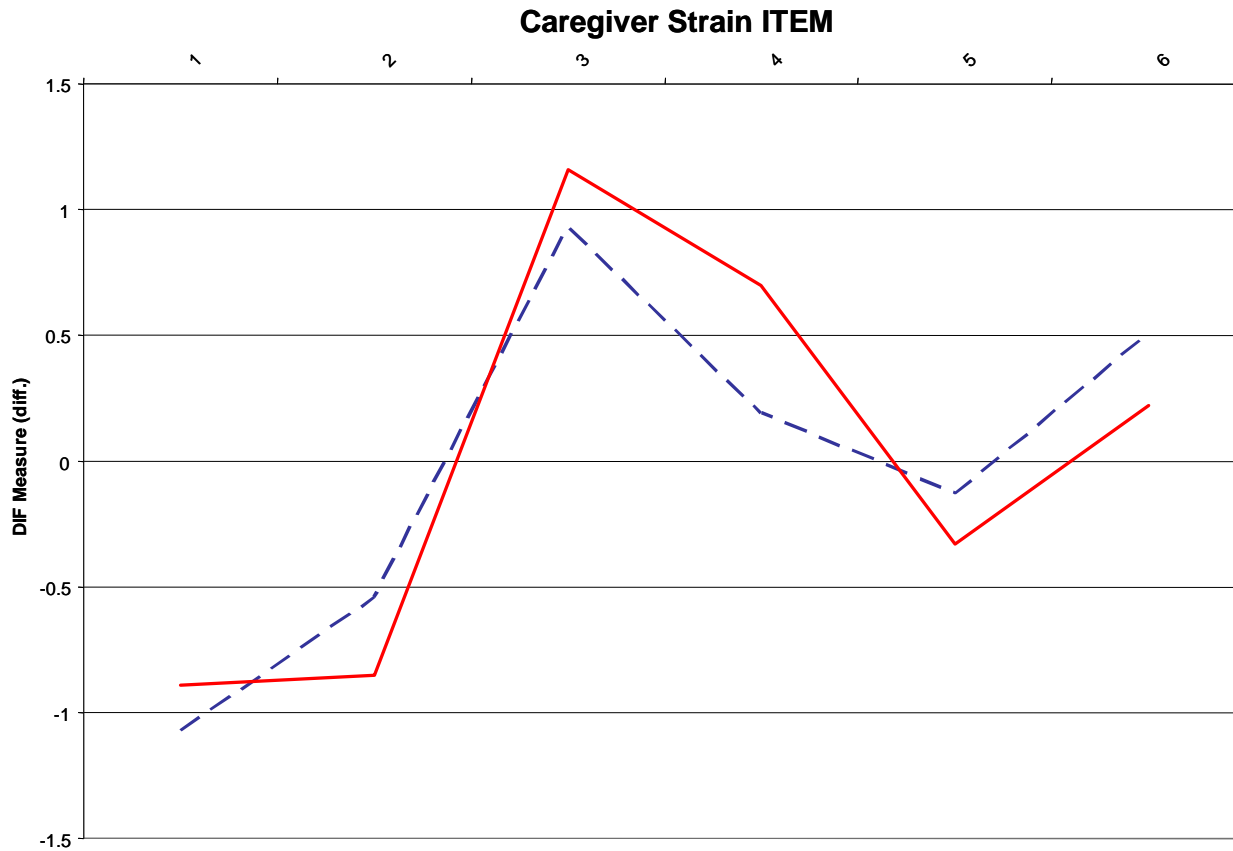
Test Result Variable(s):CGSTRAIN UBH CHILD WELLNESS BASELINE SCORE

Positive if Greater Than or Equal To ^a	Sensitivity	Specificity
-1.0000	1.000	0.000
.5000	.910	0.358
1.1000	.860	0.470
1.3500	.856	0.470
1.7500	.855	0.470
2.2000	.781	0.597
2.7000	.775	0.603
3.3000	.707	0.676
3.8000	.698	0.676
4.2500	.626	0.744
4.6500	.625	0.744
4.9000	.617	0.744
5.5000	.554	0.806
6.5000	.476	0.828
7.1000	.417	0.862
7.3500	.409	0.862
7.7500	.408	0.862
8.2000	.352	0.893
8.7000	.344	0.893
9.3000	.291	0.904
9.8000	.283	0.904
10.2500	.234	0.915
10.6500	.233	0.915
10.9000	.226	0.915
11.5000	.185	0.927
12.5000	.138	0.949
13.1000	.107	0.986
13.3500	.102	0.986
13.7500	.101	0.986
14.2000	.075	0.994
14.7000	.070	0.994
15.3000	.048	0.997
15.8000	.045	0.997
16.2500	.028	0.997
16.6500	.028	0.997
16.9000	.026	0.997
17.5000	.013	1.000
19.0000	.000	1.000

The test result variable(s): CGSTRAIN UBH CHILD WELLNESS BASELINE SCORE has at least one tie between the positive actual state group and the negative actual state group.

a. The smallest cutoff value is the minimum observed test value minus 1, and the largest cutoff value is the maximum observed test value plus 1. All the other cutoff values are the averages of two consecutive ordered observed test values.

PERSON DIF plot (DIF=CLINICAL - COMMUNITY SAMPLES)



1. Interruption personal time
2. Disruption of family routine
3. Family members - health consequences
4. Less attention given other family members
5. Disruption of family relationships
6. Disruption of social activities

Caregiver Strain scale items asking about the disruption of family routines, the attention given to other family members, and the disruption of social activities differentiate clinical and community samples. Items asking about personal time, family member health, and the disruption of family relationships were endorsed in a similar manner by both clinical and community samples.

Person	Classes	χ^2	df	p	Item Name
	2	2.7057	1	.1000	1 PERSONAL TIME
	2	8.6827	1	.0032	2 FAMILY ROUTINE DISRUPT
	2	3.2044	1	.0734	3 FAMILY HEALTH
	2	19.9351	1	.0000	4 LESS ATTENTION TO FAMILY
	2	3.2339	1	.0721	5 DISRUPT FAMILY RELATIONS
	2	5.8385	1	.0157	6 DISRUPT SOCIAL ACTIVITY

As noted previously, differential item function (DIF) indicates that one group of respondents is scoring differently (better/worse) than another group of respondents on an item (after adjusting for the overall scores of the respondents). DIF analysis indicated that 3 of the 6 Caregiver Strain Questionnaire items functioned differentially for the clinical versus community respondents.

DIF estimates are presented in the tables below for age groups and for female and male respondents. Lower measure scores indicate ease of endorsement.

ITEM	Measure Score	
	Female	Male
1 PERSONAL TIME CSQ	-0.81	-0.97
2 FAMILY ROUTINE DISRUPT CSQ	-0.76	-0.94
3 FAMILY HEALTH CSQ	1.07	1.24
4 LESS ATTENTION TO FAMILY CSQ	0.67	0.74
5 DISRUPT FAMILY RELATIONS	-0.42	-0.26
6 DISRUPT SOCIAL ACTIVITY	0.26	0.18

ITEM	Measure Score			
	5 years younger	6 thru 10	11 thru 15	16 thru 17
1 PERSONAL TIME CSQ	-1.25	-1.1	-0.79	-0.68
2 FAMILY ROUTINE DISRUPT CSQ	-1.01	-1.05	-0.79	-0.66
3 FAMILY HEALTH CSQ	1.43	1.33	1.12	0.96
4 LESS ATTENTION TO FAMILY CSQ	0.55	0.68	0.72	0.75
5 DISRUPT FAMILY RELATIONS	0.20	-0.04	-0.49	-0.63
6 DISRUPT SOCIAL ACTIVITY	0.07	0.18	0.24	0.29

The UBH Child/Adolescent Wellness Assessment (CAWA) asks how child/adolescent distress affects caregiver presence at work (days missed/cut backed due to child’s problem), the number of medical visits the child/adolescent had, and the extent to which the child’s routine was interrupted by his/her distress. The following table provides the correlations among these variables.

Correlations				
	UBH CHILD WELLNESS CAMS SCORE	CAREGIVER STRAIN QUESTIONNAIRE SCORE	NUMBER OF MEDICAL VISITS PAST 6 MONTHS	DAYS WORK CUT BACK DUE TO CHILD'S PROBLEM
UBH CHILD WELLNESS BASELINE SCORE	1.000			
UBH CHILD WELLNESS BASELINE SCORE	.627**	1.000		
NUMBER OF MEDICAL VISITS PAST 6 MONTHS	.123**	.100**	1.000	
DAYS WORK CUT BACK DUE TO CHILD'S PROBLEM	.236**	.288**	.102**	1.000
# DAYS CHILD'S ROUTINE INTERRUPTED BY PROBLEMS	.454**	.552**	.111**	.265**

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