ASSESSMENT CHECKLIST FOR ADOLESCENTS – SHORT FORM [ACA – SF, 37 items]

Development and Psychometric Properties

Selection of short-form items and factor analyses

1. Removed self-esteem items
2. Removed 'other items'
3. Removed suicide discourse items
4. This left 66 items

Principal components factor analyses were performed on 66, 40, and 37 items. First, analyses were performed on 66 retained items, using 5, 6 and 7 factor oblique (promax) rotations. Items that loaded strongest on the various factors were then retained for a smaller pool with a view to retaining between 5 and 8 items per scale.

A final 37-item analysis produced a stable 6-factor model, closely replicating the factor structure of the long-form ACA. The short-form 'social instability' factor has a stronger emphasis on attachment-related social difficulties, and less emphasis on behavioural dysregulation, than the equivalent long-form factor, and hence the label for the short-term scale does not refer to behavioural dysregulation. The model accounted for 57% of the score variance. This exceeds that of most published checklists for children, as well as that of the ACA long-form 7-factor model (51%). The reason such a large proportion of the variance is accounted for by this short-form model is that it only contains the highest loading items from the long-form version.

Short-form clinical scales and psychometric properties

The internal reliability of the short-form total score (37 items) was alpha= 0.91 (n=230), while the internal reliability of the six scales ranged from 0.73 to 0.87. Inter-scale correlations are listed in Table 1, and the structure and psychometric properties of the six short-form clinical scales (factor loadings, item-rest correlations, item prevalence, and internal reliability) are listed in Table 2.

Table 1 Correlation matrix of ACA 37-item short-form scales (n=230)

	Total Short-form	Non-reciprocal	Social Instability	ED / DSC	Dissoc. / Trauma	Food Maintenance
Non-reciprocal	.61					
Social Instability	.80	.33				
ED / DSC	.74	.35	.47			
Dissoc. / Trauma sym.	.67	.30	.32	.55		
Food Maintenance	.69	.30	.44	.37	.44	
Sexual Behaviour	.57	.18	.43	.28	.42	.36

Table 2. ACA short-form clinical scale psychometric properties

		Loading [a]	Item-rest [b]	Prevalence (%) [c]	Internal reliability (Cronbach's alpha)
I.	**Non-reciprocal** (6 items)				.79
15	does not show affection	.81	.58	31	
30	hides feelings	.69	.57	47	
44	refuses to talk	.60	.45	20	
46	resists being comforted when hurt	.70	.54	26	
50	seems alone in the world (not connected to people or places)	.61	.54	25	
69	withdrawn	.73	.56	23	
II.	**Social instability** (8 items)				.84
9	craves affection	.50	.54	38	
32	impulsive (acts rashly, without thinking)	.51	.58	57	
41	precocious (talks or behaves like an adult)	.82	.60	29	
42	prefers to be with adults, rather than peers	.88	.62	25	
43	prefers to mix with older youths	.78	.54	33	
45	relates to strangers as if they were family	.52	.62	26	
60	too friendly with strangers	.62	.58	42	
64	tries too hard to please other young people	.53	.55	33	
III.	**Emotional dysregulation / distorted social cognition** (7 items)				.82
48	says friends are against him/her	.60	.55	23	
53	startles easily ('jumpy')	.49	.48	17	
73	can't get scary thoughts or images out of his/her head (not due to watching a scary movie)	.76	.54	10	
81	extreme reaction to losing a friend, or being excluded	.75	.62	11	
90	intense reaction to criticism	.57	.60	34	
93	says his/her life is not worth living	.79	.64	9	
105	uncontrollable rage	.57	.65	23	
IV.	**Dissociation / trauma symptoms** (6 items)				.73
71	appears dazed, 'spaced out' (like in a trance)	.49	.49	20	
74	can't tell if an experience is real or a dream	.62	.58	10	
82	feels like things, people or events aren't real	.53	.59	4	
85	has panic attacks	.60	.46	11	
86	has periods of amnesia (e.g. has no memory of what has happened in the last hour)	.52	.51	10	
87	hits head, head-banging	.60	.39	7	
V.	**Food maintenance** (5 items)				.87
19	eats secretly (e.g. in the middle of the night)	.84	.73	20	
20	eats too much	.77	.72	30	
28	gorges food	.64	.67	23	
31	hides or stores food	.83	.65	13	
54	steals food	.85	.73	15	
VI.	**Sexual behaviour** (5 items)				.84
83	forces or pressures other youth or children into sexual acts	.79	.67	3	
89	inappropriately shows genitals to others (in person, or through video or photo)	.76	.62	3	
95	seems overly preoccupied with sex (e.g. crude sexual talk, inappropriate sexual comments)	.68	.61	9	
96	sexual behaviour not appropriate for age	.75	.70	7	
104	tries to involve others in sexual behaviour	.92	.75	3	

[a] Factor loading
[b] Item-rest correlation (correlation of the item score and the sum of all other items in the scale)
[c] Item prevalence = percentage of the CICS sample (n=230) with item score of 1 or 2

Clinical ranges

Clinical and borderline ranges for the ACA-SF total score were identified using a similar procedure to that used to determine clinical ranges for the ACA total score. Relationships between ACA-SF total score distributions and categorical measures of clinical status were examined for the CICS baseline cohort (n = 347), with a view to identifying clinically significant scores. The clinical indicators were: CBCL total problems scores in the clinical range; CBCL total problems scores in the borderline plus clinical ranges; and any CBCL sub-scale score in the clinical range. Sensitivity and specificity were plotted for each criterion in Receiver Operating Characteristics (ROC) analyses. Optimal cut-points for each analysis were identified by balancing two objectives: 1. that the cut-point

maximizes the number of young people correctly identified; and 2. that the cut-point has roughly equal sensitivity and specificity. The results of these analyses (listed in Table 3) suggest there are no substantive gender differences in clinically significant scores, meaning the same clinical cut-points can be applied to both genders. Two cut-points were selected to identify young people with clinically significant mental health problems. First, ACA-SF total scores of 12 and above constitute a clinical range that is highly predictive of psychiatric impairment. Second, ACA-SF scores in the range of 9 to 11 constitute a borderline clinical range, indicating a moderate likelihood of psychiatric impairment. Although neither cut-point incurred an unreasonable compromise between specificity and sensitivity, the clinical range is highly specific (resulting in few false positives), and the borderline plus clinical range is highly sensitive (few false negatives). For example, for predicting CBCL total problems scores in the clinical range, the sensitivity and specificity of the ACA-SF clinical cut-point (score=12) were 82% and 92% respectively, while the sensitivity and specificity of the borderline cut-point (score=8) were 93% and 76%.

Table 3 Receiver Operating Characteristics (ROC) of ACC Short-Form versus Long-Form total clinical scores as screen for clinical status

CBCL clinical range	Short-Form total score (37 items)				Long-Form total score (87 items)			
	Optimal score	% Correct [a]	AUC [b]	95% C.I. [c]	Optimal Score	% Correct	AUC	95% C.I.
Boys (n=176)								
Total problems clinical range [d]	13	88%	.94	.91 - .98	26	90%	.95	.91 - .98
Total problems borderline [e]	10	85%	.94	.91 - .98	19	90%	.96	.93 - .99
Any scale in clinical range [f]	13	90%	.96	.93 - .99	18	91%	.97	.94 - .99
Girls (n=171)								
Total problems clinical range [d]	10	88%	.95	.91 - .99	23-26	89%	.96	.93 - .99
Total problems borderline [e]	8-9	85%	.93	.89 - .98	14-18	87%	.95	.91 - .98
Any scale in clinical range [f]	9	84%	.92	.86 - .97	12-14	85%	.93	.89 - .98

[a] Percent of scores that correctly classify criteria

[b] Area under the curve (AUC)

[c] 95% confidence interval of AUC

[d] CBCL total problems score in the clinical range (yes, n = 167; no, n = 180)

[e] CBCL total problems score in the borderline + clinical range (yes, n = 195; no, n = 152)

[f] Any CBCL scale score (broadband or sub-scale) in the clinical range (yes, n = 191; no, n = 156)