

Factor Structure and Psychometric Properties of the Children's Scale for Hostility and Aggression: Reactive/Proactive (C-SHARP)

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Abstract

Although the problem of aggression in children with developmental disabilities is pervasive, there are currently no scales adequate for its measurement. This study explored the factor structure and psychometric characteristics of the Children's Scale for Hostility and Aggression, Reactive/Proactive (C-SHARP). The C-SHARP comprises 58 items with two Likert scales: (a) the Problem Scale, where frequency and severity are rated, and (b) the Provocation Scale, where the degree of proactivity or reactivity is evaluated. The ratings of 365 children with developmental disability (mean age, 12.5 years; 60.5% male) were subjected to exploratory factor analysis. The most appropriate factor structure, judged by face validity and measures of fit and reliability, left 48 items on five factors: (I) **Verbal Aggression**, (II) **Bullying**, (III) **Covert Aggression**, (IV) **Hostility**, and (V) **Physical Aggression**. The fit of the model was adequate (RMSEA = 0.071), and the internal consistency of the subscales was high (average $\alpha = 0.87$). The validity of the C-SHARP was explored using demographic, diagnostic, and medication variables. Several validation groups differed in expected ways on C-SHARP subscales scores, supporting the convergent and divergent validity of the instrument. Interrater reliability was extremely high on the Problem Scale (ICCs ranged from 0.67 for Hostility, to 0.91 for Bullying); although interrater reliability was considerably lower for the Provocation Scale. Overall, the C-

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SHARP appears to have good reliability and validity, and has promise as a useful tool in the assessment of children with developmental disabilities.

Introduction and Method

Aggression is a common and often devastating condition of human existence. Because its impact is so great, it comes as no surprise that there is a wealth of literature discussing the etiology, prognosis, and treatment of aggression. There are several scales that measure aggression in typically-developing populations. However, it is not appropriate simply to use a scale designed for this group when assessing children with developmental delays (DD), as we have no assurance that the structures of these instruments are valid or appropriate. Although the problem of aggression and behavioral disturbance is consistently shown to be more common in DD populations than in the general population (e.g., Einfeld & Aman, 1995; Hill & Bruininks, 1984; Stark, Menolascino, Albarelli, & Gray, 1988), there are relatively few instruments appropriate for DD individuals (Aman, 1991). Aggression is commonly addressed with serious pharmacological and behavioral treatments, so a scale that can adequately measure it is imperative. With the creation of the C-SHARP, we hope to fill this void.

Aggression is a heterogeneous construct, and there is reason to believe that types of aggression have varying responses to treatment. Reactive (“hot”) aggression is characterized by hostile attributions (i.e., the tendency to assume, erroneously or otherwise, that others intend to hurt the subject) and subsequent impulsive retaliatory behavior. Proactive (“cold”) aggression, however, is associated with the *learned* connections between desired consequences and aggressive behavior. Both subtypes are consistently seen in children (e.g. Dodge & Coie, 1987; Hinshaw & Lee, 2003; Pulkkinen, 1996). The delineation is important because optimal outcome is probably best achieved by matching the subtype of aggression to a treatment which addresses

the specific type of behavior found in each (Dodge, 1991; Kempes et al. 2005; Kingsbury, Lambert, & Hendrickse, 1997; Smithmyer, Hubbard, & Simons, 2000). To this end, the C-SHARP was developed to measure the extent to which the child's behavior is reactive or proactive.

This project was approved by the Ohio State University Institutional Review Board on April 4, 2007. The initial item pool for the C-SHARP was 58 items on two Likert scales, the Problem Scale (type of aggression) and the Provocation Scale (intended to tap proactive and reactive aggression). The Problem Scale items are scored on a scale from 0 ("Doesn't Happen") to 4 ("Severe/Frequent"), and the Provocation Scale items ranged from -2 ("Provoked") through 0 (neutral) to +2 ("Not Provoked"). Packets containing a C-SHARP and a demographic questionnaire were sent to 1,225 parents/guardians of children who received special education services from the State of Iowa. Some individuals, randomly selected, were asked to have a second parent/guardian complete a survey for interrater reliability. All were offered \$5.00 in return for participation.

Results and Discussion

A response rate of 365 out of 1,225 (30%) was obtained. A response rate of 30% is somewhat disappointing, and it raises some questions about the representativeness of the sample, which could have negative implications for the norms. However, postal surveys are increasingly more difficult to conduct in these times when parents seem to be exceptionally busy; at the same time, aggression in one's child is a sensitive topic, and it is possible that we reached the upper limits for a reasonable response rate given this fact.

Over half (60.5%) of the sample was male, and most were white (89.6%). Children ranged in age from 3 years to 21 years (mean, 12.53 years; SD = 3.70). The majority of reporters

(89%) were biological parents, and most raters were female (91.5%). Demographic data for participants and raters are presented in Table 1.

Exploratory factor analysis (EFA) was performed. The goal of EFA is to model the intercorrelations between variables as the result of latent constructs. Maximum Wishart Likelihood was used to extract the factors, as the procedure provides a measure of fit (specifically the Root Mean Square Error of Approximation, RMSEA; Brown & Cudeck, 1992). Solutions with 3, 4, 5, 6, and 7 oblique factors and Crawford-Ferguson (CF) varimax rotation were extracted and compared to determine which solution had the best combination of face validity and fit. A five-factor solution with an RMSEA of 0.071 (CI 0.068, 0.074), most satisfactorily fulfilled these requirements. The RMSEA of 0.071 is on the high end of “acceptable,” which many researchers consider to span from 0.05 to 0.08 (Brown & Cudeck, 1992). Items were adopted onto a subscale if the loading reached a threshold of 0.32 (Tabachnick & Fidell, 2001). Equamax rotation of the five-factors resulted in a solution with higher face validity.

Ultimately, 48 items were retained on 5 subscales (see Table 2): (I) **Verbal Aggression** (n = 12 items retained), (II) **Bullying** (n = 12), (III) **Covert Aggression** (n = 11), (IV) **Hostility** (n = 9), and (V) **Physical Aggression** (n = 9). The factors had low-to-moderate correlations with each other, ranging from 0.14 to 0.47 (see Table 3). This speaks to the construct validity of the subscales; they are related to one another, but measure different aspects of aggression.

The face validity of the factor structure was supported by data from external validators. It is well-documented in the literature that children with a diagnosis of conduct disorder or oppositional-defiant disorder (termed “disruptive behavior disorders” or DBD), autism, or attention-deficit hyperactivity disorder (ADHD) exhibit much higher rates of aggressive behavior

than children without these diagnoses (e.g., American Psychiatric Association, 2000; Barkley, 2003; Matson & Nebel-Schwalm, 2007; Lecavalier, 2006). Children with a disruptive behavior disorder significantly outscored other children on all subscales of the C-SHARP; the disruptive behavior disorder group had an average Total Score nearly 3.5 times that of the other children. Children with ADHD also had uniformly higher scores across all subscales, and children with autism had significantly higher scores on (a) Bullying, (b) Hostility, and (c) Physical Aggression. Please see Table 4 for *t*-scores, means, and *p*-values associated with these comparisons.

From prior research in many other laboratories, we know that children with Down syndrome display fewer behavioral problems than control groups with other cognitive disabilities (Chapman & Hesketh, 2000). Therefore, the validity of the scale was supported by the significantly lower scores of children with DS (Table 4). It is also important to note that several variables expected to be *unrelated* to aggression, such as race, were not significantly correlated with C-SHARP scores (Table 4). Overall, both convergent and discriminant validity of the C-SHARP were supported by the data.

While the Problem Scale of the C-SHARP was designed to describe the *form* of aggression a child is displaying, the Provocation Scale was meant to provide clinicians with insight into the *function* of aggressive behavior. We found that the most effective way of manipulating the Provocation Scale score was to use a Quotient of reactive ratings and proactive ratings. This ratio allows the score to represent both proactive and reactive behavior, as it is not expected that a child will engage *exclusively* in one or the other. Raters were not as consistent in using the Provocation Scale as the Problem Scale. As a result, the *t*-tests between diagnostic groups were difficult to interpret (*t*-tests from the relevant diagnostic groups are presented in Table 5). The Provocation Scale shows promise for use in this population. However, there are

some future comparisons that we want to carry out to assess its potential contribution to assessing aggression.

Reliability was high for the Problem Scale. Item-total correlations were moderate-to-high, and internal consistency (Cronbach's alpha) was high (see Table 6). Interrater reliability (measured by intraclass correlation, ICC) was exceptionally high for the Problem Scale (range *ICC* 0.67-0.91), although it was lower for the Provocation Scale (range *ICC* -0.28 – 0.57; Table 7). This was expected, both because the presence of a Provocation rating is dependent upon the Problem Scale rating, and because intent is inherently more difficult to assess than the behavior itself. These results indicate that that the C-SHARP is likely a reliable measure of aggression.

In order to use the C-SHARP, one needs some sense of what is “typical” or “normal” for this population. At this stage, the closest we have to that are the data from Iowa. At the same time, the modest response rate poses some question as to whether these data are truly representative of Iowan children with I/DD and, therefore, readers should be cautious in employing norms generated from this study. Norms for the Iowa sample only ($n = 344$; the remainder of the sample was collected in Ohio) are presented by gender and age in Table 8.

As with any new scale, further research needs to be done to confirm the factor structure and to corroborate the reliability and validity data. To this end, a confirmatory factor analysis using a large group of children with DD should be considered. The possible uses for the C-SHARP include both clinical and research applications so that the utility of the scale should be explored in both contexts. The C-SHARP appears to be a useful scale for measuring aggression in children with DD, and may well prove to be useful in determining the proactivity or reactivity of the child's behavior. This scale will help to fill a deficit in our ability to assess and treat DD populations, which are traditionally underserved.

Works Cited

- Aman, M. (1991). Assessing psychopathology and behavior problems in persons with mental retardation: A review of the available instruments (DHHS Publication No. [ADM] 91-1712). Rockville, MD: U.S. Department of Health and Human Services.
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision. Washington, DC: American Psychiatric Association.
- Barkley, R. (2003). Attention-Deficit/Hyperactivity Disorder. In E. Mash and R. Barkley (Eds.). *Child Psychopathology, Second Edition* (pp. 75-143). New York: The Guilford Press.
- Browne, M., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods and Research*, 21, 230-258.
- Chapman, R, and Hesketh, L. (2000). Behavioral phenotype of individuals with Down syndrome. *Mental Retardation and Developmental Disabilities Research Reviews*, 6, 84-95.
- Dodge, K.A. (1991). The structure and function of reactive and proactive aggression. In D. Pepler and K. Rubin (Eds.), *The development and treatment of childhood aggression*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Dodge, K.A. & Coie, J.D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, 53(6), 1146-1158.
- Einfeld, S.L., & Aman, M.G. (1995). Issues in the taxonomy of psychopathology in children and adolescents with mental retardation. *Journal of Autism and Developmental Disorders*, 25, 143-167.
- Hill, B. & Bruininks, R. (1984). Maladaptive behavior of mentally retarded individuals in residential facilities. *American Journal of Mental Deficiency*, 88, 380-387.
- Hinshaw, S.P., & Lee, S.S. (2003). Conduct and oppositional defiant disorders. In *Child psychopathology*. Mash, E.J., & Barkley, R.A., (Eds). Guilford Press, New York, NY, US.
- Kempes, M., Matthys, W., de Vries, H., & van Engeland, H. (2005). Reactive and proactive aggression in children: A review of theory, findings and the relevance for child and adolescent psychiatry. *European Child & Adolescent Psychiatry*, 14(1), 11-19.
- Kingsbury, S.J., Lambert, M.T., & Hendrickse, W. (1997). A two-factor model of aggression. *Psychiatry: Interpersonal and Biological Processes*, 60(3), 224-232.

- Lecavalier, Luc. (2006). Behavioral and emotional problems in young people with pervasive developmental disorders: Relative prevalence, effects of subject characteristics, and empirical classification. *Journal of Autism and Developmental Disabilities*, 36(8), 1101-1114.
- Matson, J.L, Barrett, R.P., & Helsel, W.J. (1988). Depression in mentally retarded children. *Research in Developmental Disabilities*, 9, 39-46.
- Pulkkinen, L. (1996). Proactive and reactive aggression in early adolescence as precursors to anti- and prosocial behavior in young adults. *Aggressive Behavior*, 22(4), 241-257.
- Smithmyer, C. M., Hubbard, J. A., & Simons, R. F. (2000). Proactive and reactive aggression in delinquent adolescents: Relations to aggression outcome expectancies. *Journal of Clinical Child Psychology* 29, 86-93.
- Stark, J.A., Menolascino, F.J., Albarelli, M.H., & Gray, V. (1988). Executive summary. In J.A. Stark, F.J. Menolascino, M.H. Albarelli, & V.C. Gray, (Eds.), *Mental retardation and mental health. Classification, diagnosis, treatment, services* (pp. xi-xviii), New York: Springer-Verlag.
- Tabachnick, B., & Fidell, L. (2001). *Using multivariate statistics*. Boston: Allyn and Bacon.

Table 1: *Participant and Rater Demographic Information*

Characteristic		Description	N (%)
Participant	Gender	Male	221 (60.5)
		Female	143 (39.2)
	Ethnicity	Asian-American	6 (1.6)
		African-American	7 (1.9)
		Hispanic-American	16 (4.4)
		European-America	327 (89.6)
	Diagnosis	Autistic Disorder	94 (25.8)
		ADHD	78 (21.4)
		Conduct Disorder	8 (2.2)
		Down Syndrome	58 (15.9)
Oppositional-Defiant Disorder		14 (3.8)	
Rater	Gender	Male	25 (6.8)
		Female	334 (91.5)
	Relationship	Biological Parent	325 (89.0)
		Grandparent	7 (1.9)
		Adoptive Parent	30 (8.2)
		Other	2 (0.5)
	Age	42.79 years (7.96)	
	Years Known	12.28 years (3.83)	

Table 2: *C-SHARP Factor Structure (Equamax Rotation)*

Item (abbreviated)	Factor I	Factor II	Factor III	Factor IV	Factor V
Subscale 1: Verbal Aggression					
10 Insults others in absence	0.69	-0.05	0.08	0.13	0.06
14 Hurtful statements	0.36	-0.05	0.34	0.27	0.05
16 Insults others to their faces	0.65	0.06	0.15	0.12	0.01
23 Profanity to shock	0.78	0.13	-0.04	0.06	0.02
27 Lashes out	0.36	0.17	0.16	0.24	0.05
28 Calls names	0.81	0.03	0.00	0.13	0.01
31 Insults behind backs	0.63	-0.02	0.20	0.05	0.07
35 Verbally teases	0.56	0.17	0.18	0.06	0.01
40 Hurtful words behind backs	0.58	-0.03	0.15	0.19	0.02
49 Encourages ganging up	0.53	0.14	0.18	-0.13	0.10
53 Verbally threatens	0.43	0.18	0.18	0.14	-0.01
55 Sexual comments	0.44	0.14	0.17	-0.17	0.21
Subscale 2: Bullying					
6 Breaks others' things	-0.10	0.61	0.00	0.17	0.03
8 Takes others' things	-0.07	0.52	0.09	0.08	0.26
11 Shoves or pushes	0.08	0.54	0.04	-0.04	0.36
12 Crowds others	-0.02	0.32	0.25	0.05	0.18

Continued

Table 2, continued

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
17 Throws objects	0.03	0.66	0.02	0.07	0.12
26 Steals	-0.03	0.42	0.38	0.01	-0.02
32 Breaks own things	0.04	0.62	0.00	0.17	-0.05
34 Charges at others	-0.08	0.35	-0.08	0.21	0.26
39 Spits	0.20	0.34	-0.15	0.07	0.10
44 Baites others	0.18	0.35	0.26	-0.14	0.15
50 Hits others with objects	0.08	0.66	-0.02	0.10	0.09
54 Hits or shoves	0.07	0.68	-0.10	0.13	0.10
Subscale 3: Covert Aggression					
1 Sneers	0.22	0.03	0.33	0.12	0.10
2 Sneaky	-0.11	0.17	0.41	0.16	0.20
9 Broods or pouts	0.07	-0.03	0.39	0.36	0.10
14 Hurtful statements	0.36	-0.05	0.34	0.27	0.05
22 Overly argumentative	0.12	0.06	0.52	0.27	-0.08
25 Physically teases	-0.02	0.15	0.45	-0.06	0.30
26 Steals	-0.03	0.42	0.38	0.01	-0.02
36 Denies behavior	0.01	-0.03	0.82	0.11	-0.04
45 Makes excuses	0.06	-0.02	0.75	0.17	-0.09
48 Glares	0.23	0.08	0.41	0.23	-0.02
Subscale 4: Hostility					
5 Resentful	0.04	-0.04	0.20	0.58	0.17
7 Hot-headed	-0.04	0.18	0.05	0.64	0.16
9 Broods or pouts	0.07	-0.03	0.39	0.36	0.10
18 Impulsive reaction	0.01	0.31	0.04	0.51	0.10
19 Shouts angrily	0.26	0.03	0.09	0.53	0.00
21 Gets mad when caught	-0.08	0.16	0.31	0.45	0.17
38 Slow to cool off	-0.03	0.13	0.01	0.70	0.14
42 Defensive: personal space	0.18	0.27	-0.08	0.35	0.16
51 Grouchy	0.21	0.12	0.07	0.49	0.03
Subscale 5: Physical Aggression					
4 Pinches	0.03	-0.03	-0.10	0.05	0.71
11 Shoves or pushes	0.08	0.54	0.04	-0.04	0.36
15 Bites others	-0.09	0.02	-0.25	0.13	0.54
29 Trips others	0.14	0.06	0.29	-0.20	0.33
30 Head-butts others	-0.11	0.06	-0.19	0.20	0.34
37 Pulls hair	-0.05	0.10	-0.11	-0.09	0.51
47 Scratches others	-0.10	-0.04	-0.18	0.19	0.64
57 Revenge	0.08	-0.12	0.06	0.06	0.48
58 Tries not to get caught	0.04	0.03	0.13	-0.13	0.45

Table 3: *Pearson Correlations Between Factors in Five-Factor Equamax Solution*

	Factor I	Factor II	Factor III	Factor IV	Factor V
Factor I	1.00	-	-	-	-
Factor II	0.25	1.00	-	-	-
Factor III	0.45	0.22	1.00	-	-
Factor IV	0.34	0.41	0.39	1.00	-
Factor V	0.14	0.47	0.16	0.29	1.00

Table 4: *C-SHARP Problem Scale Scores as a Function of Selected Validation Variables*

Variable (n)	(I) Verbal		(II) Bullying		(III) Covert		(IV) Hostility		(V) Physical		Total		
	Avg	<i>t</i> (df)	Avg	<i>t</i> (df)	Avg	<i>t</i> (df)	Avg	<i>t</i> (df)	Avg	<i>t</i> (df)	Avg	<i>t</i> (df)	
Race	White (327)	2.25	0.65	4.87	-0.75	4.56	0.67	5.92	-0.23	2.34	-1.48	17.93	-0.44
	Other (35)	1.69	(360)	5.91	(38)	3.89	(360)	6.16	(360)	3.62	(37)	19.43	(360)
Autism	With (94)	1.72	-1.22	7.00	3.78 ²	3.67	-2.05 ¹	7.32	2.53 ¹	3.80	4.38 ³	21.44	1.91
	Other (271)	2.44	(363)	4.30	(363)	4.83	(229)	5.51	(363)	1.99	(141)	17.06	(363)
ADHD	With (78)	4.58	3.52 ³	7.77	4.14 ³	8.61	5.74 ³	9.43	4.95 ³	3.33	2.31 ¹	30.29	5.25 ³
	Other (287)	1.62	(90)	4.24	(106)	3.42	(90)	5.03	(99)	2.22	(103)	14.90	(95)
CD/ODD	With (19)	11.11	3.83 ³	14.63	7.65 ³	13.98	4.89 ³	15.74	7.86 ³	5.89	4.86 ³	55.00	6.19 ³
	Other (346)	1.77	(18)	4.46	(363)	4.01	(19)	5.44	(363)	2.27	(363)	16.16	(19)
DS	With (58)	1.26	-2.44 ¹	3.67	-2.02 ¹	3.49	-2.28 ¹	3.70	-4.40 ³	1.42	-3.61 ³	12.01	-3.65 ³
	Other (307)	2.44	(136)	5.24	(89)	4.73	(140)	6.40	(126)	2.65	(118)	19.35	(119)

¹ $p \leq 0.05$ ² $p \leq 0.01$ ³ $p \leq 0.001$

Table 5: *Provocation Quotient Scores as a Function of Selected Validation Variables*

Variable (n)	I: Verbal		II: Bullying		III: Covert		IV: Hostility		V: Physical		
	Avg.	<i>t</i> (df)	Avg.	<i>t</i> (df)	Avg.	<i>t</i> (df)	Avg.	<i>t</i> (df)	Avg.	<i>t</i> (df)	
Race	White (241)	0.94	0.18	1.56	-0.33	0.95	0.99	0.88	-0.54	1.26	-1.34
	Other (23)	0.90	(262)	1.76	(262)	0.78	(262)	0.94	(262)	2.06	(23)
Aut.	With (75)	0.96	0.30	2.25	2.15 ¹	1.00	0.84	0.93	1.00	1.85	2.37 ¹
	Other (192)	0.93	(263)	1.30	(101)	0.92	(183)	0.87	(201)	1.11	(88.5)
AD/HD	With (67)	1.17	1.43	1.82	0.87	1.12	1.68	0.99	1.92	1.33	0.05
	Other (200)	0.86	(70)	1.48	(265)	0.88	(80)	0.85	(265)	1.32	(265)
CD/ODD	With (14)	2.18	1.85	2.61	1.45	1.82	2.26 ¹	1.81	4.30 ³	1.55	0.49
	Other (253)	0.17	(13)	1.51	(265)	0.89	(13)	0.83	(13)	1.30	(265)
DS	With (38)	0.89	0.34	0.88	2.64 ¹	0.81	1.10	0.70	3.08 ²	0.83	3.15 ²
	Other (229)	0.95	(265)	1.68	(96)	0.96	(265)	0.91	(67)	1.40	(119)

¹ $p \leq 0.05$ ² $p \leq 0.01$ ³ $p \leq 0.001$

Table 6: *C-SHARP Problem Scale Reliability Statistics*

Subscale	Item Number	Item-Total Correlation	Average Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha for Subscale
I. Verbal Aggression	10	0.743	0.690	0.914	0.923
	14	0.666		0.919	
	16	0.761		0.913	
	23	0.751		0.913	
	27	0.639		0.920	
	28	0.815		0.910	
	31	0.739		0.915	
	35	0.697		0.916	
	40	0.725		0.915	
	49	0.603		0.922	
	53	0.656		0.917	
	55	0.488		0.924	
	II. Bullying	6		0.648	
8		0.687	0.876		
11		0.712	0.874		
12		0.484	0.890		
17		0.693	0.875		
26		0.474	0.887		
32		0.658	0.877		
34		0.483	0.886		
39		0.413	0.889		
44		0.475	0.887		
50		0.728	0.874		
54		0.727	0.873		
III. Covert Aggression		1	0.551	0.600	0.876
	2	0.563	0.877		
	9	0.620	0.872		
	14	0.631	0.871		
	22	0.665	0.869		
	25	0.504	0.879		
	26	0.472	0.881		
	36	0.749	0.863		
	45	0.731	0.864		
	48	0.653	0.870		
	58	0.457	0.882		

Continued

Table 6, Continued

Subscale	Item Number	Item-Total Correlation	Average Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha for Subscale
IV. Hostility	5	0.681	0.671	0.890	0.901
	7	0.753		0.884	
	9	0.585		0.896	
	18	0.688		0.889	
	19	0.662		0.891	
	21	0.704		0.888	
	38	0.743		0.884	
	42	0.564		0.898	
V. Physical Aggression	51	0.660	0.458	0.892	0.774
	4	0.633		0.722	
	11	0.529		0.744	
	15	0.464		0.752	
	29	0.303		0.773	
	30	0.341		0.768	
	37	0.449		0.754	
	47	0.580		0.733	
	57	0.393		0.762	
	58	0.427		0.759	

Table 7: Interrater Reliability (ICC) for Provocation Scale and Provocation Quotient

Subscale	Problem Scale	Provocation Quotient
I. Verbal Aggression	0.87	0.63
II. Bullying	0.91	0.77
III. Covert Aggression	0.86	0.15
IV. Hostility	0.67	0.29
V. Physical Aggression	0.83	0.69
Total Score	0.91	-

Table 8: Norms for Iowa Sample Only

Subscale	All (n = 344)		Gender				Age (years)			
	M	SD	Female (n = 139)		Male (n = 204)		≤ 12 (n = 133)		> 12 (n = 211)	
	M	SD	M	SD	M	SD	M	SD	M	SD
I. Verbal	2.22	4.98	2.13	5.42	2.3	4.69	1.66	3.59	2.58	5.67
II. Bullying	4.77	6.02	3.86	6.06	5.4	5.93	4.95	5.56	4.65	6.3
III. Covert	4.5	5.66	4.38	5.95	4.58	5.49	4.35	5.33	4.6	5.87
IV. Hostility	5.81	6.03	5.05	5.56	6.35	6.29	5.83	5.89	5.8	6.13
V. Physical	2.32	3.1	1.91	3.18	2.62	3.02	2.78	3.08	2.04	3.08
Total Score	17.64	19.27	15.5	20.16	19.16	18.57	17.53	16.47	17.71	20.88