About Me (Reynolds Child Depression Scale)
Grade 4 / Year 5
Fast Track Project Technical Report
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I. Scale -Description

The Reynolds Child Depression Scale (RCDS, also called the 'About Me' questionnaire), was administered as part of the summer child interview for the first time in Year 4 of the Fast Track Project. The RCDS is a 30-item self-report measure of depressive symptoms developed by Reynolds (1989a, 1989b). The items assess symptoms of depression from the criteria listed from major depression and dysthymia in the Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised (DSM-III-R; American Psychiatric Association). All but one of the items assesses clinically relevant depressive symptoms on a4-point Likert-type scale, ranging from 1="almost never" to 4="all the time." (The items on the Fast Track scan form ranged from 0 to 3; thus, a constant of 1 was added to each of the item scores in order to make the scale similar to the original version). The last item consists of 4 (the original scale has 5) "smiley" faces ranging from sad to happy. Items 1, 5, 10, 12, 23, 25, and 30 were reversed scored so that higher scores on each item reflect higher levels of depressive symptoms. Item means, standard deviations, sample sizes, and factor loadings are listed in Table 1. These items were based upon the 340 subjects from the Normative sample who had at least some data from the About Me questionnaire.

II. Report Sample and Missing Data

Cohort 1 started at kindergarten stage in the school year 1990—1991. Across 4 sites there are total 618 children in cohort 1, including 310 children in the high-risk sample and 387 children in normative sample (some kids in the normative sample also qualified for high-risk status). In the longitudinal study, there are a total of 545 students at grade 4, including 341 students in the normative sample (including overlap) and 273 students in the high-risk sample. There is no value out of range — 0 to 3. Among grade 4 students, 73 students (12%) had missing responses for the entire questionnaire, including 46 normative students (12%) and 37 high-risk students (12%). The unit non-respondents included 18 students from Durham, 14 students from Nashville, 22 students from Pennsylvania, and 19 students from Seattle, respectively. See details in the following chart, where 0 means subjects are missing the entire questionnaire, and 1 means subjects answered some questions.

The FREQ Procedure
Table of yr5 by SITE

year5   SITE(Site Name)

Frequency Percent Row Pet Col Pet	DURH	NASH	PENN	WASH
0	18 2.91 24.66 10.98	14 2.27 19.18 9.59	22 3.56 30.14 13.41	19 3.07 26.03 13.19
1	146 23.62 26.79 89.02	132 21.36 24.22 90.41	142 22.98 26.06 86.59	125 20.23 22.94 86.81
Total	164 23.62	146 26.54	164 23.30	144 100.00	618 26.54

In addition, there are only 5 subjects who had missing items - missing responses for individual scale items. Detailed missing patterns are as following, where "N" at the 4th column stands for normal sample member. For missing items, single imputation was performed for each missing value. That is, missing items are replaced with the mean of non-missing items.

III. Scaling

The internal consistency reliability of the RCDS for normative sample, high-risk sample, pooled sample (normal + high-risk), and for various subsamples by 4 sites and by treatments, was computed using Cronbach's (1951) a. For the 30 items of the RCDS in the normative sample (Table 2), Cronbach's a = 0.88, which implies a high level of internal consistency. Table 2 shows that reliability coefficients by sites were uniformly high and range from 0.86 to 0.92 in normative sample. A pattern of high internal consistency for children depression shown in Table 5 and 6 for all groups, ranging from 0.83 to 0.89 in high-risk group (Table 5), and ranging from 0.84 to 0.89 in pooled sample (Table 6).

Factor analyses of the 30-item have been performed to determine whether the depression measurement would cluster into several factors for 341 normative subjects. Prior to rotation, only two eigenvalues are greater than 1 - A,i=6.66 and A* =1.31, accounting for 82% of the total variance. Scree plot for determining the meaningfulness of the factors also suggests 2-factor structure. Thus, factor analysis identified 2 factors—factor 1 negative attitude and factor 2 positive attitude for normative sample based on oblique rotation. The 2nd factor consists of exactly all of the reversed items—item 1, 5, 10 12, 23, 25 and 30. Thus, oblique rotation displays a clear 2-factor structure—negative and

positive attitude, presented in Table 1. Orthogonal rotation lead to similar good results as with oblique rotation, but PROMAX—oblique rotation presents a clearer factor structure and is more interpretable. The PROMAX is almost always the preferred solution, because if the factor inter-correlation is 0, you end up with the same solution as the VARIMAX— orthogonal rotation. <u>Virtually the same factor structure was found at grade 3 (year 4) in updated technique report.</u> Inter-factor correlation is 0.34 at grade 4, i.e. 2 factors are correlated.

The RCDS Professional Manual (Reynolds, 1989) presented preliminary findings of an orthogonal rotated five-factor solution to the RCDS, which is different from the present results. Different factor structures of RCDS and Fast track may be due to different questions on several items of RCDS and Fast track. The current results of factor analysis are recommended.

Table 1 depicts item means, standard deviations, sample sizes and factor loadings. These item means were obtained based upon 341 subjects from the normative sample who had 30 items for the About Me questionnaire after single imputation.

Table 1. Means, SD's and factor loadings of the RCDS (About Me) items: Normative sample

Variable	Label				N	Mean	Std Dev	Rotated Factor 1 loading	Rotated Factor 2 loading
C5GAM1	I	feel	happy		341	2.02	0.77		0.37
C5GAM2	I	worry about school			341	2.00	0.97	0.36	
C5GAM3	I	feel	lonely		341	1.51	0.74	0.34	
C5GAM4	I	feel	my parents dont like me		341	1.34	0.78	0.54	
C5GAM5	I	feel	important		341	2.09	0.93		0.49
C5GAM6	I	feel	like hiding from people		341	1.53	0.82	0.49	
C5GAM7	I	feel	sad		341	1.62	0.69	0.42	
C5GAM8	I	feel	like crying		341	1.52	0.73	0.53	
C5GAM9	I	feel	that no one cares about	me	341	1.39	0.73	0.64	
C5GAM10	I	feel	like playing with other	kids	341	1.59	0.77		0.53
C5GAM11	I	feel	sick		341	1.68	0.70	0.47	
C56AM12	I	feel	loved		341	1.52	0.80		0.42
C5GAM13	I	feel	like running away		341	1.32	0.70	0.56	
C5GAM14	I	feel	like hurting myself		341	1.21	0.56	0.55	
C56AM15	I	feel	that other kids don't like me		341	1.63	0.82	0.53	
C5GAM16	I	feel	upset about things		341	1.85	0.75	0.49	
C5GAM17	I	feel	life is not fair		341	1.88	0.96	0.49	
C5GAM18	I	feel	tired		341	2.32	0.89	0.34	
C5GAM19	I	feel	I am bad		341	1.60	0.79	0.45	
C5GAM20	I	feel	I am no good		341	1.34	0.70	0.68	
C5GAM21	I	have	trouble paying attention	i in class	341	1.77	0.88	0.48	
C5GAM22	I	feel	sorry for myself		341	1.49	0.74	0.68	
C5GAM23	I	feel	like talking to other kids		341	1.99	0.91		0.55
C5GAM24	I	have	trouble sleeping		341	1.99	1.01	0.44	
C5GAM25	I	feel	like having fun		341	1.34	0.65		0.42
C5GAM26	I	feel	worried		341	1.71	0.79	0.66	
C5GAM27	I	get	stomach aches		341	1.79	0.79	0.51	
C5GAM28	I	feel	bored		341	2.16	0.90	0.45	
C5GAM29	I	feel	like nothing I do helps	anymore	341	1.49	0.78	0.62	
C5GAM30	Indicate how the child feels				341	1.56	0.66		0.38

When using a sum of the RCDS items, Reynolds recommends using a cut-off score of 74 as an indicator of clinically significant level of depressive symptomatology. Since the FAST Track dataset use the mean of all 30 items, instead of a sum, the equivalent cut-off score will be 2.47 (74/30). In the FAST Track normative sample, 15 subjects (4.4%) had RCDS mean scores equal to or greater than 2.47.

IV. <u>Means. SD's and Differences Between Groups or Among Sites</u>

Upon the above analyses, as long as a child answered at least half (15) RCDS questions, a mean score of all RCDS items was calculated as an index of each subject's level of depressive symptomatology, based on single imputation results.

The use of a separate normal sample is an important consideration in scale construction. The normal sample has skewed distribution. To be consistent with the old technical report at grade 3 (year 4), Tables 1 to 6 are put in the same order. Comparison of the normal sample low-risk group and the high-risk control group is presented in Table 7. Tables 1 to 4 depict normative sample characteristics. Table 5 is focused on the high-risk sample. Table 6 examines differences across sites within the total sample.

The mean score for the 341 individuals available from the normative sample, as well as means for each site, are displayed in Table 2, along with standard deviations, Cronbach's alphas and sample sizes. From ANOVA model, Table 2 displays statistically significant different mean level of depressive symptoms among 4 sites with F=4.05. The mean score in Durham site is significantly higher than that of Penn and Washington sites using Duncan's multiple range test. Means with different superscripts are significant different at the 0.05 level and same superscripts stand for no significant difference. Virtually the same significant site differences are found in total sample (normal + high risk) in Table 6.

Table 3 lists mean RCDS scores for boys and girls separately by site. There is no significant gender difference on mean scores, at 0.05 level, in the total normative sample (Table3). Gender difference for each site was not examined.

The normative sample may be considered reasonably heterogeneous racially, being composed of Caucasian (50%), African American (45%), Hispanic (2%), Native American (0.3%) and other race group (2%). African American have statistically significant higher levels of depressive symptomatology than Caucasian subjects, with t=4.18 and p<0.0001 in pooled 4 sites normative sample (Table 4).

For the mean scores of the 30 items in Table 7, a t-test shows that there is no statistically significant difference at a=0.05 level between normal sample low-risk group (the 387 normative subjects minus the controls) and high-risk control group (including normal sample high-risk subjects). The mean is higher in high-risk control group. Differences on each item are examined by t-tests between high-risk control group vs. normal sample low-risk group. Items 6 (I feel like hiding from people), 16 (I feel upset about things), 21 (I have trouble paying attention in class) and 25 (I feel like having fun) are significantly different at a =0.05 level. All but one (item 16) mean scores are higher in high-risk control group for above 4 items. These differences further suggest multidimensionality in the instrument.

V.   Recommendations for Use

Any undefined values are treated as missing values, i.e. replacing one symbol * and previous 5 item-imputations to missing. Four raw data sets—dc5g1.sd2, nc5g1.sd2, pc5g1.sd2 and sc5g1.sd2 already had single imputation for the 5 subjects who missed one item. Because the previous single imputations were NOT based on the "same direction" items, imputation by mean of non-missing items would not be appropriate and misleading. After reversing some items, the 30 items are in the same direction, with higher values standing for higher levels of depressive symptoms. Then single imputation is conducted using the mean of non-missing items for the 5 missing data points. All of numbers in tables 1 to 7 are based on the results of single imputation. It is recommended that analysts carefully consider the construct of interest for the specific analysis before casually using the 30-item scale. Also, analysts should be aware of possible skewed distributional issues, particularly in the normal sample. The 30 items possess good reliability-high Cronbach's alpha. Based on the analyses performed for this report, it is suggested that 2 variables be created and retained from the Reynolds Child Depression Scale:

1)   A means of all (30) RCDS items (as long as the subjects has data for at least 15 items). The variable name of this score for grade 4 (year 5) is: AME5MEA.
2)   A variable denoting whether or not the subject's mean RCDS score is in the clinically significant range. The variable name for his item will be: AME5DEP, where 0=RCDS not clinically significant (<2.47); 1=RCDS clinically significant (> 2.47).

Table 2. Means, SD's and factor loadings of the RCDS (About Me) items: Normative sample

Sample	N	Mean	Std. Dev.	Reliability Coefficient
Total Normative	341	1.67	0.37	0.88
Durham	89	1.77^a	0.36	0.86
Nashville	90	1.69^{ab}	0.38	0.86
Penn	83	1.59^b	0.38	0.92
Washington	79	1.63^b	0.34	0.88

Note: Means with different superscripts are significant different at 0.05 level and same superscripts stand for no significant difference using Duncan's multiple range test.

Table 3 Means and SD's for the mean of all RCDS items: Normative sample boys and girls at each site

Site	Gender	N	Mean	Std. Dev.
Total Normative	Boys	168	1.68	0.37
	Girls	173	1.67	0.37
Durham	Boys	44	1.75	0.35
	Girls	45	1.79	0.38
Nashville	Boys	44	1.69	0.43
	Girls	46	1.69	0.33
Perm	Boys	40	1.59	0.29
	Girls	43	1.61	0.44
Washington	Boys	40	1.69	0.39
	Girls	39	1.57	0.28

Table 4. Means and SD's for the mean of all RCDS items: Caucasian and African American normative subjects

Site	Race	N	Mean	Std. Dev.
Total Normative	Caucasian	171	1.59	0.32
	African American	155	1.76	0.40
Durham	Caucasian	9	1.56	0.18
	African American	80	1.79	0.37
Nashville	Caucasian	43	1.60	0.29
	African American	46	1.77	0.43
Penn	Caucasian	82	1.60	0.38
	African American	1	1.67	NA
Washington	Caucasian	37	1.59	0.27
	African American	28	1.66	0.42

Note: NA means not available, because of only 1 subject.

Table 5 Means, SD's and reliability coefficients for the mean of all RCDS items: High risk sample

Site	sample	N	Mean	Std. Dev.	Reliability Coefficient
All Sites	High Risk	273	1.71	0.37	0.85
	Control	136	1.72	0.37	0.86
Durham	High risk	68	1.76	0.36	0.84
	Control	32	1.73	0.35	0.85
Nashville	High risk	76	1.69	0.36	0.84
	Control	39	1.72	0.38	0.86
Perm	High risk	69	1.65	0.35	0.86
	Control	33	1.65	0.37	0.89
Washington	High risk	60	1.73	0.39	0.88
	Control	32	1.75	0.41	0.88

Note: NA means not available, because all 36 observations for the Pennsylvania site intervention group had a value of 1 for question 14: c4gaml4.

Table 6 Means, SD's and reliability coefficients for the mean of all RCDS items: All subjects (Normative sample and High Risk sample combined)

Sample	N	Mean	Std. Dev.	Min.	Max.	Reliability Coefficient
All Subjects	545	1.68	0.36	1.00	3.43	0.87
Durham	146	1.76 [a]	0.36	1.17	2.83	0.84
Nashville	132	1.68[ab]	0.36	1.10	3.03	0.85
Perm	142	1.61 [b]	0.36	1.10	3.43	0.89
Washington	125	1.65 [b]	0.35	1.10	2.70	0.87

Note: Means with different superscripts are significant different at 0.05 level and same superscripts stand for no significant difference using Duncan's multiple range test.

Table 7 Means, SD's of the RCDS (About Me) items: High Risk Control Group vs. Normal Sample Low-Risk Group

Group	N	Mean	Std. Dev.
High Risk Control Group (including normal sample high-risk subjects)	136	1.72	0.37
Normal Sample Low-Risk Group (the 387 normative subjects minus the controls)	272	1.65	0.35

References:

Reynolds, W. M. (1989a). *Reynolds Children Depression Scale: Professional Manual.* Psychological Assessment Resources.

Stephanie Little, Fast Track Project technical report, *Reynolds Children Depression Scale,* May 1995 (year 4)