

About Me (Reynolds Child Depression Scale)

Grade 5 / Year 6

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 a 4-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.

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 529 students at grade 5, including 329 students in the normative sample (including overlap) and 269 students in the high-risk sample. There is no value out of range — 0 to 3. Among grade 5 students, 89 students (14%) had missing responses for the entire questionnaire, including 58 normative students (15%) and 41 high-risk students (13%). The unit non-respondents included 10 students from Durham, 18 students from Nashville, 30 students from Pennsylvania, and 31 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.

missing data information The
FREQ Procedure

Table of yr6 by SITE

Year6		SITE(Site Name)			
Frequency	DURH	NASH	PENN	WASH	
Percent					
Row Pet					
Col Pet					
0	10 1.62 11.24 6.10	18 2.91 20.22 12.33	30 4.85 33.71 18.29	31 5.02 34.83 21.53	
1	154 24.92 29.11 93.90	128 20.71 24.20 87.67	134 21.68 25.33 81.71	113 18.28 21.36 78.47	
Total	164	146	164	144	618 26.54
		23.62	26.54	23.30	100.00

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 in the 4th column stands for NORMAL sample. 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) α . For the 30 items of the RCDS in the normative sample (Table 2), Cronbach's $\alpha = 0.88$ (same as grade 4), 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 0.89 in normative sample. A pattern of high internal consistency for children depression shown in Table 5 and 6 for all groups, ranging from 0.82 to 0.92 in high-risk group (Table 5), and ranging from 0.86 to 0.89 in pooled sample (Table 6). In addition, since the sample sizes for some of the control and treatment groups are small, the reliability coefficients should be interpreted cautiously.

Factor analyses of the 30-item have been performed to determine whether the depression measurement would cluster into several factors for 329 normative subjects. Prior to rotation, three eigenvalues are greater than 1 - $\lambda_1=6.62$, $\lambda_2=1.68$ and $\lambda_3=1.003$, accounting for 63%, 16% and 9% of the total

variance, respectively. Details are as following. Scree plot for determining the meaningfulness of the factors also suggests 2 or 3 factor structure.

Eigenvalues of the Reduced Correlation Matrix:

	Eigenvalue	Difference	Proportion	Cumulative
1	6.62012328	4.93525435	0.6255	0.6255
2	1.68486893	0.68161280	0.1592	0.7847
3	1.00325613	0.28497512	0.0948	0.8795

Orthogonal rotation shows 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. Thus, PROMAX—oblique rotation is recommended.

Results of oblique rotation about 3-factor are as following. The 3rd factor can be characterized as positive attitudes, while negative attitudes split into 2 factors with the 8th and the 19th items having ambiguous loading.

3-factor structure output

The FACTOR Procedure
Rotation Method: Promax

Inter-Factor Correlations

	Factor1	Factor2	Factor3
Factor1	1.00000	0.53534	0.22811
Factor2	0.53534	1.00000	0.31468
Factor3	0.22811	0.31468	1.00000

Rotated Factor Pattern (Standardized Regression Coefficients)

		Factor1	Factor2	Factor3
C6GAM1	I feel happy	0.29999	-0.14847	0.44425
C6GAM2	I worry about school	0.09606	0.36105	-0.22535
C6GAM3	I feel lonely	0.40291	0.11552	0.06845
C6GAM4	I feel my parents dont like me	-0.05867	0.54943	0.21857
C6GAM5	I feel important	0.03865	-0.06417	0.53986
C6GAM6	I feel like hiding from people	0.41293	0.14291	0.01075
C6GAM7	I feel sad	0.38715	0.10592	0.15350
C6GAM8	I feel like crying	0.30624	0.34057	-0.03411
C6GAM9	I feel that no one cares about me	-0.07385	0.77417	0.03624
C6GAM1	I feel like playing with other kids	-0.18410	0.04416	0.45964
C6GAM1	I feel sick	0.38614	0.07688	-0.18037
C6GAM1	I feel loved	0.05744	0.19718	0.48527
C6GAM1	I feel like running away	0.09247	0.50434	0.19999
C6GAM1	I feel like hurting myself	-0.08854	0.76358	-0.05580
C6GAM1	I feel that other kids don't like me	0.26345	0.39441	0.12672
C6GAM1	I feel upset about things	0.39542	0.22293	0.11873
C6GAM1	I feel life is not fair	0.45933	0.14730	0.16869
C6GAM1	I feel tired	0.41997	-0.12936	-0.09422
C6GAM1	I feel I am bad	0.30188	0.31444	-0.06168
C6GAM2	I feel I am no good	0.44645	0.27405	-0.01561
C6GAM2	I have trouble paying attention i in class	0.37965	0.23700	-0.11923
C6GAM2	I feel sorry for myself	0.27372	0.46155	-0.07963
C6GAM2	I feel like talking to other kids	-0.11117	-0.02929	0.50265
C6GAM2	I have trouble sleeping	0.43053	0.04611	0.02088
C6GAM2	I feel like having fun	-0.15968	0.12432	0.47069
C6GAM2	I feel worried	0.61156	0.08079	-0.03064
C6GAM2	I get stomach aches	0.34731	0.19757	-0.23184
C6GAM2	I feel bored	0.56698	-0.12520	-0.00819
C6GAM2	I feel like nothing I do helps anymore	0.50661	0.22601	0.00686
C6GAM3	Indicate how the child feels	0.33369	-0.17018	0.36369

Results of oblique rotation about 2-factor are as following, which presents a clearer factor structure—factor 1 negative attitudes and factor 2 positive attitudes for normative sample, although loadings of the 4th and 13th item are ambiguous. The 1st factor consists of exactly the entire negative stances. At the same time, all of positive items are in the 2nd factor. Inter-factor correlation is 0.41 at grade 5, i.e. 2 factors are correlated. Thus, 2-factor structure—factor 1 negative attitudes and factor 2 positive attitudes for normative sample based on oblique rotation is recommended.

2-factor structure output

The FACTOR Procedure
Rotation Method: Promax

Inter-Factor Correlations

	Factor1	Factor2
Factor1	1.00000	0.40900
Factor2	0.40900	1.00000

Rotated Factor Pattern (Standardized Regression Coefficients)

		Factor1	Factor2
C6GAM1	I feel happy	0.10171	0.39395
C6GAM2	I worry about school	0.39501	-0.15648
C6GAM3	I feel lonely	0.45716	0.05777
C6GAM4	I feel my parents dont like me	0.31154	0.36387
C6GAM5	I feel important	-0.10125	0.53957
C6GAM6	I feel like hiding from people	0.49657	0.00360
C6GAM7	I feel sad	0.42078	0.14511
C6GAM8	I feel like crying	0.54792	0.01532
C6GAM9	I feel that no one cares about me	0.49311	0.23052
C6GAM10	I feel like playing with other kids	-0.22018	0.50503
C6GAM11	I feel sick	0.45464	-0.20736
C6GAM12	I feel loved	0.11810	0.54379
C6GAM13	I feel like running away	0.42544	0.31854
C6GAM14	I feel like hurting myself	0.48682	0.13418
C6GAM15	I feel that other kids don't like me	0.51972	0.19905
C6GAM16	I feel upset about things	0.52059	0.13632
C6GAM17	I feel life is not fair	0.51741	0.16345
C6GAM18	I feel tired	0.32063	-0.17104
C6GAM19	I feel I am bad	0.52918	-0.01904
C6GAM20	I feel I am no good	0.62940	0.00435
C6GAM21	I have trouble paying attention in class	0.55596	-0.10504
C6GAM22	I feel sorry for myself	0.61361	0.00048
C6GAM23	I feel like talking to other kids	-0.21200	0.52457
C6GAM24	I have trouble sleeping	0.44041	-0.01090
C6GAM25	I feel like having fun	-0.13981	0.53320
C6GAM26	I feel worried	0.64699	-0.07424
C6GAM27	I get stomach aches	0.51511	-0.22780
C6GAM28	I feel bored	0.44922	-0.09586
C6GAM29	I feel like nothing I do helps anymore	0.64756	0.01001
C6GAM30	Indicate how the child feels	0.13139	0.30194

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.

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, 5 subjects (1.52%) had RCDS mean scores equal to or greater than 2.47.

IV. Means, SD's and Differences between Groups or Among Sites

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.

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

Variable	Label	N	Mean	Std Dev
C6GAM1	I feel happy	329	1.95	0.78
C6GAM2	I worry about school	329	2.07	0.99
C6GAM3	I feel lonely	329	1.51	0.75
C6GAM4	I feel my parents don't like me	329	1.20	0.55
C6GAM5	I feel important	329	1.97	0.96
C6GAM6	I feel like hiding from people	329	1.38	0.71
C6GAM7	I feel sad	329	1.62	0.64
C6GAM8	I feel like crying	329	1.44	0.63
C6GAM9	I feel that no one cares about me	329	1.28	0.59
C6GAM10	I feel like playing with other kids	329	1.57	0.77
C6GAM11	I feel sick	329	1.57	0.63
C6GAM12	I feel loved	329	1.48	0.78
C6GAM13	I feel like running away	329	1.27	0.62
C6GAM14	I feel like hurting myself	329	1.12	0.45
C6GAM15	I feel that other kids don't like me	329	1.55	0.77
C6GAM16	I feel upset about things	329	1.78	0.74
C6GAM17	I feel life is not fair	329	1.82	0.89
C6GAM18	I feel tired	329	2.23	0.87
C6GAM19	I feel I am bad	329	1.52	0.71
C6GAM20	I feel I am no good	329	1.22	0.56
C6GAM21	I have trouble paying attention in class	329	1.75	0.86
C6GAM22	I feel sorry for myself	329	1.34	0.70
C6GAM23	I feel like talking to other kids	329	1.92	0.88
C6GAM24	I have trouble sleeping	329	1.72	0.81
C6GAM25	I feel like having fun	329	1.31	0.60
C6GAM26	I feel worried	329	1.55	0.69
C6GAM27	I get stomach aches	329	1.74	0.72
C6GAM28	I feel bored	329	2.12	0.89
C6GAM29	I feel like nothing I do helps anymore	329	1.40	0.71
C6GAM30	Indicate how the child feels	329	1.57	0.61

Table 1 depicts item means, standard deviations and sample sizes. These item means were obtained based upon 329 subjects from the normative sample who had 30 items for the About Me questionnaire after single imputation.

The mean score for the 329 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 not statistically significant different mean level of depressive symptoms among 4 sites at the 0.05 level. However, the mean score in Nashville 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 0.05 level and same superscripts stand for no significant difference. Table 6 presents no significant site differences in total sample (normal + high risk).

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 (46%), 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 $t=2.88$ and $p=0.004$ 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 statistically significant difference at $\alpha=0.05$ 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) with $t=2.68$ and $p=0.008$. 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 19 (I feel I am bad), 21 (I have trouble paying attention in class), 22 (I feel sorry for myself), 27 (I get stomachaches) and 29 (I feel like nothing I do helps anymore) are significantly different at a $\alpha=0.05$ level. All mean scores are higher in high-risk control group for above 5 items. These differences further suggest multidimensionality in the instrument.

V. Recommendations for Use

Any undefined values are treated as missing values, i.e. replacing previous a few item-imputations to missing. Four raw data sets—dc6g1.sd2, nc6g1.sd2, pc6g1.sd2 and sc6g1.sd2 already had single imputation for the 5 subjects who missed a few items. 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 8 ($=1+3+1+2+1$) 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 thirty 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 subject has data for at least 15 items). The variable name of this score for grade 5 (year 6) is: AME6MEA.
- 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: AME6DEP, where 0=RCDS not clinically significant (<2.47); 1=RCDS clinically significant (> 2.47).

Tables

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

Sample	N	Mean	Std. Dev.	Reliability Coefficient
Normative Sample	329	1.60	0.33	0.88
Durham	94	1.62 ^{ab}	0.35	0.88
Nashville	87	1.66 ^a	0.38	0.89
Perm	78	1.56 ^{ab}	0.29	0.86
Washington	70	1.55 ^b	0.29	0.86

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	163	1.61	0.33
	Girls	166	1.59	0.34
Durham	Boys	48	1.61	0.36
	Girls	46	1.63	0.33
Nashville	Boys	42	1.60	0.38
	Girls	45	1.72	0.38
Penn	Boys	36	1.61	0.25
	Girls	42	1.51	0.31
Washington	Boys	37	1.61	0.31
	Girls	33	1.47	0.25

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	166	1.55	0.29
	African American	152	1.66	0.37
Durham	Caucasian	11	1.43	0.27
	African American	83	1.64	0.35
Nashville	Caucasian	43	1.55	0.29
	African American	44	1.77	0.43
Penn	Caucasian	77	1.55	0.29
	African American	1	1.80	NA
Washington	Caucasian	35	1.60	0.31
	African American	24	1.51	0.26

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	269	1.68	0.36	0.87
	Control	135	1.67	0.34	0.86
Durham	High risk	73	1.73	0.40	0.88
	Control	35	1.66	0.39	0.89
Nashville	High risk	73	1.69	0.32	0.83
	Control	37	1.69	0.33	0.84
Perm	High risk	67	1.65	0.39	0.89
	Control	33	1.70	0.34	0.86
Washington	High risk	56	1.64	0.33	0.86
	Control	30	1.62	0.33	0.86

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	529	1.63	0.35	1.03	3.30	0.87
Durham	154	1.66	0.36	1.07	3.20	0.87
Nashville	128	1.67	0.35	1.03	3.30	0.87
Penn	134	1.59	0.35	1.03	2.97	0.89
Washington	113	1.58	0.31	1.03	2.63	0.86

Note: there is no significant site difference at the 0.05 level.

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	135	1.67	0.34
Normal Sample Low-Risk Group	260	1.57	0.32

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)