

The Devereux Early Childhood Assessment Clinical Form (DECA-C)

This PDF file contains only
Chapter 2 and Chapter 3
of the DECA-C Manual.

There is no Technical Manual for DECA-C.

These two chapters contain the
following technical information:

- Standardization
- Reliability
- Validity



**The Devereux
Early Childhood Assessment
Clinical Form (DECA-C)**

*A measure of behaviors related to risk and
resilience in preschool children*

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Chapter 2

Development and Standardization

Development of the DECA-C Items

Two approaches were used to develop the initial set of DECA-C items. First, the literature on resilience (e.g. Werner & Smith 1982, 1992) was carefully reviewed and behavioral descriptions of resilient children noted. In addition, focus groups with both preschool teachers and parents of preschoolers were conducted. In the focus group sessions, parents and teachers were asked to describe the behaviors of children who “were likely to do well” or that indicated that a child was “doing well” in regards to social and emotional health. Conversely, parents and teachers were also asked to describe behaviors that indicated a child was “likely to have problems.” These behavioral descriptions were then used to generate rating scale items.

Second, items related to emotional and behavioral problems found in some preschool children were selected from the childhood age level of the *Devereux Scales of Mental Disorders* (DSMD) (Naglieri, LeBuffe and Pfeiffer, 1994). The content of the DSMD was derived primarily from the diagnostic criteria of the Diagnostic and Statistical Manual of the American Psychiatric Association - Fourth Edition (DSM-IV) (APA, 1994). These two complementary approaches ensured that the DECA-C would provide a balanced examination of each child’s protective factors and behavioral concerns.

All the items were written to measure observable behaviors that require little or no inference on the part of the Rater. Careful attention was also paid to important psychometric qualities such as reliability and validity as well as ease of use of the scales. Throughout all phases of item development, the reading level of the items and rater directions were carefully considered so that the overall readability level of the text would be as low as possible.

The item development phase resulted in a pool of items, which served as the starting point in the construction of the DECA-C. A pilot study was con-

ducted in the spring of 1997 to examine the usefulness of the initial set of items and their inter-relationships. The results of the pilot study were used to create two forms, which were then used in the national standardization study. The first form (Form A) contained 53 items related to within-child protective factors in preschoolers. The second form (Form B) contained the same 53 protective factor items and an additional 77 items related to emotional and behavioral concerns found in some preschool children. These two different forms were developed because the DECA-C was standardized simultaneously with the DECA, which contains only protective factor items and a brief behavioral concern rating scale.

National Standardization

The DECA-C was standardized through a carefully prescribed method so that the sample would closely represent the United States population on salient dimensions. The data collection procedures also ensured that a wide variety of children were included for the generation of norms. Two samples were obtained, one for Form A and one for Form B. Both samples consisted of children aged 2 years 0 months to 5 years 11 months 30 days and were collected during the fall of 1997 and the spring of 1998.

Because both forms contained the protective factor items, both samples were used in the generation of norms for the protective factor scales. Therefore, the protective factor scales and norms are based on 2,000 children. This combined sample will subsequently be referred to as the “Protective Factors standardization sample.” The behavioral concern items are found only on Form B. Therefore, the behavioral concern scales and norms are based on 1,108 children. This sample will subsequently be referred to as the “Behavioral Concerns standardization sample.”

Ninety-five preschools and child care programs from across the United States participated in the standardization of the DECA-C. Teacher ratings were provided by the preschool teachers or child care staff at center based programs. Parent ratings were obtained not only from these same centers, but also in response to advertisements placed in parent magazines in Pittsburgh, PA; Atlanta, GA; Kansas City, KS; Phoenix, AZ; and Seattle, WA. To ensure the confidentiality of their responses, parents who chose to participate sent the com-

pleted rating forms directly to the Devereux Foundation Institute of Clinical Training and Research (ICTR). Teachers returned the completed forms in sealed envelopes to ICTR.

***Representativeness of the DECA-C Protective Factors
Standardization Sample***

The DECA-C Protective Factors standardization sample is comprised of 2,000 preschool children. Teachers provided ratings on 1,017 of these children; parents provided ratings on the remaining 983 children. As shown below, the DECA-C Protective Factors standardization sample closely approximated the two- to five-year old population of the United States with respect to age, gender, geographic region of residence, race, ethnicity, and socioeconomic status. The desired characteristics of the standardization sample were based on the Statistical Abstract of the United States: 2001 published by the U.S. Bureau of the Census. In the tables that follow, the total numbers of children included may not sum to 2,000 due to missing data.

Age and Gender - The numbers and percentages of males and females at each age from 2 through 5 years are presented in Table 2.1.

The number of children at each age ranged from 370 to 624 (mean was 493.5). These results show that each age was well sampled. The data also show that the percentages of males and females in the standardization sample as a whole, as well as at each age, very closely approximated the proportions of the U.S. population.

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Table 2.1

**DECA-C Protective Factors
Standardization Sample Characteristics**

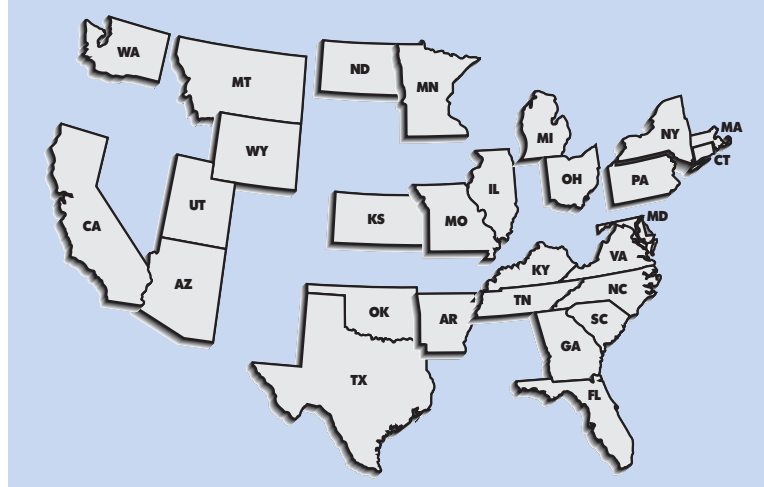
Age and Gender

	Males		Females		Total	
	n	%	n	%	n	%
2 year olds	219	51.3	208	48.7	427	21.6
3 year olds	322	51.6	302	48.4	624	31.6
4 year olds	272	49.2	281	50.8	553	28.0
5 year olds	195	52.7	175	47.3	370	18.7
Total Sample	1,008	51.1	966	48.9	1,974	
U.S. %^a		51.1		48.9		

^a The U. S. population data are based on the 1999 figures for 2- through 5-year olds only in “Resident Population, by Age and Sex: 1980 to 1999, Table No. 12,” *Statistical Abstract of the United States: 2001 (121st edition): U.S. Census Bureau, 2001.*

Figure 2.1

DECA-C Standardization Sites



Geographic Region - Data were collected from 95 sites in 28 states in the four geographic regions: Northeast, Midwest, West, and South. Figure 2.1 indicates these sites by region.

Table 2.2 shows the numbers and percentages for each age and the total sample for each of the four geographic regions. These data show that the DECA-C Protective Factors standardization sample closely approximated the regional distribution of the U.S. population.

Race - Table 2.3 provides the DECA-C Protective Factors standardization sample composition by race and geographic region. Based on information provided on the rating forms, the children were classified according to five major race categories used by the U.S. Bureau of the Census: White, Black or African American, Asian or Pacific Islander, American Indian, and Other. The data in Table 2.3 indicate that the racial composition of the total standardization sample very closely approximated that of the U.S. population. Additionally, sample percentages within each region were also similar to the actual population percentages found in each geographic region.

Table 2.2

**DECA-C Protective Factors
Standardization Sample Characteristics**

Geographic Region and Age

	Northeast		Midwest		West		South		Total
	n	%	n	%	n	%	n	%	n
2 year olds	94	22.0	85	19.9	102	23.9	146	34.2	427
3 year olds	97	15.6	165	26.4	129	20.7	233	37.3	624
4 year olds	115	20.9	150	27.2	119	21.6	167	30.3	551
5 year olds	79	21.4	122	33.0	55	14.9	114	30.8	370
Total Sample	385	19.5	522	26.5	405	20.5	660	33.5	1,972
U.S. %^a		18.5		22.4		24.5		34.6	

^a The U. S. population data are based on “Resident Population, by Age and State: 2000, Table No. 20,” *Statistical Abstract of the United States: 2001 (121st edition)*: U.S. Census Bureau, 2001.

Table 2.3**DECA-C Protective Factors
Standardization Sample Characteristics**

	Race and Geographic Region										
	White		Black		Asian or Pacific Islander		American Indian		Other		Total
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Northeast	244	63.5	67	17.4	15	3.9	1	0.3	57	14.8	384
Midwest	392	74.2	63	11.9	29	5.5	8	1.5	36	6.8	528
West	331	80.7	21	5.1	10	2.4	3	0.7	45	11.0	410
South	413	62.0	190	28.5	15	2.3	7	1.1	41	6.2	666
Total	1,380	69.4	341	17.2	69	3.5	19	1.0	179	9.0	1,988
U.S. %^a		67.0		14.6		3.7		1.1		13.5	

^a The U. S. population data are for children under the age of five in *Census 2000 PHC-T-9. Population by Age, Sex, Race and Hispanic or Latino Origin for the United States:2000. www.census.gov*

Ethnicity - The proportions of children of Hispanic origin included in the DECA-C Protective Factors standardization sample are presented in Table 2.4. These data, based on the number of participants who reported Hispanic ethnicity, show that the composition of the standardization sample approximated that of the U.S. population.

Socioeconomic Status - Socioeconomic status of the DECA-C Protective Factors standardization sample was assessed by determining the number of children receiving either subsidized day care or public assistance. Of the entire sample of 2,000 children, 493 (24.65%) were either receiving subsidized day care or public assistance. This very closely approximates the 25% of preschool children living in poverty (Children’s Defense Fund, 1998).

Representativeness of the DECA-C Behavioral Concerns Standardization Sample

The behavioral concerns scales were standardized on a sample of 1,108 preschool children (2 years 0 months through 5 years 11 months 30 days) who

Table 2.4

**DECA-C Protective Factors
Standardization Sample Characteristics**

Hispanic Ethnicity and Geographic Region

	Hispanic		Non-Hispanic		Total
	n	%	n	%	n
Northeast	59	15.7	317	84.3	376
Midwest	24	4.7	487	95.3	511
West	49	12.2	351	87.8	400
South	74	11.6	565	88.4	639
Total	206	10.7	1,720	89.3	1,926
U.S. %^a		19.4		80.6	

^a The U.S. population data are based on children under the age of five in *Census 2000 PHC-T-9. Population by Age, Sex, Race and Hispanic or Latino Origin for the United States: 2000*. www.census.gov

were rated on Form B of the DECA. These children were rated by parents ($n = 541$) or teachers ($n = 567$). The sample is described in the following sections.

Age and Gender - The numbers and percentages of males and females at each age from 2 through 5 years are presented in Table 2.5. The average number of children at each age across the groups was 274, ranging from 200 to 351. These results show that each age was well sampled. The data also show that the percentages of males and females in the DECA-C Behavioral Concerns standardization sample as a whole, as well as at each age, closely approximated the proportions of the U.S. population.

Table 2.5**DECA-C Behavioral Concerns
Standardization Sample Characteristics****Age and Gender**

	Males		Females		Total	
	n	%	n	%	n	%
2 year olds	128	51.4	121	48.6	249	22.7
3 year olds	189	53.8	162	46.2	351	32.0
4 year olds	140	47.3	156	52.7	296	27.0
5 year olds	105	52.5	95	47.5	200	18.2
Total Sample	562	51.3	534	48.7	1,096	
U.S. %^a		51.1		48.9		

^a The U.S. population data are based on the 1999 figures for 2 to 5-year olds only in “Resident Population, by Age and Sex: 1980 to 1999, Table No. 12,” *Statistical Abstract of the United States: 2001 (121st edition)*: U.S. Census Bureau, 2001.

Table 2.6**DECA-C Behavioral Concerns
Standardization Sample Characteristics****Geographic Region and Age**

	Northeast		Midwest		West		South		Total
	n	%	n	%	n	%	n	%	n
2 year olds	79	31.9	73	29.4	46	18.5	50	20.2	248
3 year olds	74	21.1	101	28.9	71	20.3	104	29.7	350
4 year olds	80	27.1	79	26.8	60	20.3	76	25.8	295
5 year olds	63	31.5	57	28.5	36	18.0	44	22.0	200
Total Sample	296	27.1	310	28.4	213	19.5	274	25.1	1,093
U.S. %^a		17.7		22.7		23.9		35.7	

^a The U. S. population data are based on “Resident Population, by Age and State: 2000, Table No. 20,” *Statistical Abstract of the United States: 2001 (121st edition)*: U.S. Census Bureau, 2001.

Geographic Region - Data were collected from the same sites as the DECA-C Protective Factors standardization sample and as indicated in Figure 2.1 above. Table 2.6 shows the numbers and percentages for each age and the total sample for each of the four geographic regions. These data show that the DECA-C Behavioral Concerns standardization sample was similar to the U.S. population in terms of regional distribution.

Race - Table 2.7 provides the DECA-C Behavioral Concerns standardization sample composition by race and geographic region. Based on information provided on the rating forms, the children were classified according to five race categories used by the U.S. Census Bureau: White, Black or African American, Asian or Pacific Islander, American Indian, and Other. The data in Table 2.7 indicate that the racial composition of the DECA-C Behavioral Concerns standardization sample approximated that of the U.S. population. Additionally, sample percentages within each geographic region were similar to the U.S. population percentages found in each geographic region.

Table 2.7

**DECA-C Behavioral Concerns
Standardization Sample Characteristics**

	Race and Geographic Region										
	White		Black		Asian or Pacific Islander		American Indian		Other		Total
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Northeast	216	73.0	25	8.4	11	3.7	1	0.3	43	14.5	296
Midwest	256	82.1	30	9.6	4	1.3	3	1.0	19	6.1	312
West	173	80.5	15	7.0	6	2.8	3	1.4	18	8.4	215
South	161	58.3	102	37.0	0	0.0	3	1.1	10	3.6	276
Total	806	73.3	172	15.7	21	1.9	10	0.9	90	8.2	1,099
U.S. %^a		67.0		14.6		3.7		1.1		13.5	

^a The U.S. population data are for children under the age of five in *Census 2000 PHC-T-9. Population by Age, Sex, Race and Hispanic or Latino Origin for the United States:2000*. www.census.gov

Table 2.8

**DECA-C Behavioral Concerns
Standardization Sample Characteristics**

Hispanic Ethnicity and Geographic Region

	Hispanic		Non-Hispanic		Total
	n	%	n	%	n
Northeast	40	13.8	250	86.2	290
Midwest	13	4.4	285	95.6	298
West	23	11.1	184	88.9	207
South	21	8.2	236	91.8	257
Total	97	9.2	955	90.8	1,052
U.S. %^a		19.4		80.6	

^a The U.S. population data are based on children under the age of five in *Census 2000 PHC-T-9. Population by Age, Sex, Race and Hispanic or Latino Origin for the United States: 2000*. www.census.gov

Ethnicity - The proportions of children of Hispanic origin included in the DECA-C Behavioral Concerns standardization sample are presented in Table 2.8. These data, based on the number of participants who reported Hispanic Ethnicity, show that the composition of this sample approximated that of the U.S. population.

Socioeconomic Status - The socioeconomic status of the DECA-C Behavioral Concerns standardization sample was assessed by determining the number of children receiving either subsidized child care or public assistance. Of the entire sample of 1,108 children, 281 (25.4%) were either receiving subsidized child care or public assistance. This very closely approximates the 25% of preschool children living in poverty (Children's Defense Fund, 1998).

Organization of DECA-C Items into Scales

Utilizing both standardization data sets, DECA-C items were organized into statistically and logically derived scales. The protective factor and behavioral concern scales were identified using item factor analysis. A series of analyses were conducted to determine the most interpretable, parsimonious, and

defensible factor solution. To achieve this goal items were deleted from the larger pool of items used during standardization based on the following goals: 1) to identify the best factor solution from psychometric and interpretability perspectives, 2) to shorten the DECA-C as much as possible without compromising breadth of coverage, and 3) to ensure that the constructs are measured reliably by the scales.

The individual DECA-C item factor loadings were obtained using principal factor analysis with varimax rotation. These results showed that each of the factors that would become the scales of the DECA-C was comprised of items with substantial loadings on the scale on which they were placed. Only a small number of items had lower secondary loadings on a different factor, illustrating the strength of the findings. The final results suggested that three factors best described the protective factor data (labeled Initiative, Self-control, and Attachment) and four factors best described the behavioral concern data (labeled Withdrawal/Depression, Emotional Control Problems, Attention Problems, and Aggression).

Norming Procedures - The first step in preparation of the norms was to determine if any trends existed in the data. The children's Total Protective Factors and Total Behavioral Concerns Scale raw scores were examined for age, rater, and gender differences. Results of these analyses indicated that the scores did not show age-related changes across the 2- through 5-year age span, therefore, the norms were constructed for all ages combined. The lack of age trends in the data was further explored in a subsequent study. The findings of this study indicated that although there are differences in the specific forms of behaviors measured by the DECA-C items across the 2- to 5-year age span, there were not differences in the frequency of these behaviors, which is what the scale measures. For example, a two-year old may calm himself down by holding a teddy bear and sucking his thumb, as compared to a five-year old who may calm herself down by talking to an adult, but both two- and five- year olds engage in these different behaviors with the same frequency. The DECA-C does not assess the form of the behavior, only the frequency of its occurrence, which, in fact, did not differ across the two- to five-year age range.

Separate norms by Rater (Parent or Teacher) were prepared because of the different environments in which the children are seen by the different raters.

Gender differences, which reflect real disparities in how boys and girls behave, were indicated by mean score differences. To preserve these findings, one set of norms was constructed based on the combined data from both genders. (Having separate norms by gender would have removed these differences.)

After determining that norms would be constructed by rater, the distributions of raw scores were examined for normality. The cumulative frequency distributions for the factorially derived scales all approached normality but were slightly positively skewed. For this reason, it was decided that norms would be computed using normalization procedures. This was accomplished by fitting the obtained frequency distribution for each scale to normal probability standard scores via the obtained percentile ranks. Minor irregularities in raw score to standard score progressions were eliminated by smoothing. These procedures were followed for all the protective factors and behavioral concerns scales.

***T*-Scores**

Standard scores for the DECA-C were computed separately for the seven scales (Initiative, Self-control, Attachment, Withdrawal/Depression, Emotional Control Problems, Attention Problems, and Aggression) and for the Total Protective Factors and Total Behavioral Concerns Scales. The *T*-scores were all based on separate raw score distributions. The standard scores corresponding to the percentiles for which they are theoretically associated, based on the normal curve, were obtained. *T*-scores for each scale were set at a mean of 50 and a standard deviation of 10. This metric was selected because of its familiarity to professionals and because it facilitates interpretation of the results and comparison to scores from other similar scales.

Chapter 3

Psychometric Properties

Reliability

The reliability of an assessment tool like the DECA-C is defined as, “the consistency of scores obtained by the same person when reexamined with the same test on different occasions, or with different sets of equivalent items, or under other variable examining conditions” (Anastasi, 1988, p. 102). DECA-C scale reliability was assessed using several methods. First, the internal reliability coefficient for each scale was computed. Second, test-retest reliability of each scale was assessed. Finally, interrater reliability (two raters evaluating the same child) for each scale was determined.

Internal Reliability - Internal reliability (or internal consistency) refers to the extent to which the items on the same scale or assessment instrument measure the same underlying construct. Internal consistency was determined using Cronbach’s alpha (Cronbach, 1951). The internal reliability coefficients (alphas) were based on the Protective Factors standardization sample for the protective factor scales, and the Behavioral Concerns standardization sample was used for the behavioral concern scales. The internal consistency estimate for each scale was calculated according to rater and are presented in Table 3.1. The results indicate that the DECA-C Total Scales have excellent internal reliability. The Total Protective Factors Scale alpha coefficients for Parent Raters (.91) and Teacher Raters (.94) both exceed the .90 value for a total score suggested by Bracken (1987) and meet the “desirable standard” described by Nunnally (1978, p. 246). Similarly, the Total Behavioral Concerns Scale alpha coefficients for Parent Raters (.88) and Teachers (.93) are above or very close to the recommended standard.

The internal reliability coefficients for the protective factor scales (Initiative, Self-control, and Attachment) range from a low of .76 (Attachment – Parent Raters) to a high of .90 (Initiative and Self-control – Teacher Raters).

The median reliability coefficient across these three scales was .84 for Parent Raters and .90 for Teacher Raters. These median values exceed the .80 minimum suggested by Bracken (1987).

The internal reliability coefficients for the behavioral concern scales (Withdrawal/Depression, Emotional Control Problems, Attention Problems, and Aggression) range from a low of .66 (Withdrawal/Depression – Parent Raters) to a high of .90 (Attention Problems – Teacher Raters). The median reliability coefficient across these four scales was .76 for Parent Raters and .88 for Teacher Raters. These median values meet or approach the .80 minimum suggested by Bracken (1987).

Table 3.1

**Internal Reliability (Alpha) Coefficients
for the DECA-C Scales by Rater**

Scales	Raters	
	Parents	Teachers
Total Protective Factors	.91	.94
Initiative	.84	.90
Self-control	.86	.90
Attachment	.76	.85
Total Behavioral Concerns	.88	.93
Withdrawal/Depression	.66	.80
Emotional Control Problems	.78	.88
Attention Problems	.76	.90
Aggression	.76	.88

Standard Errors of Measurement - The standard error of measurement (SE_M) is an estimate of the amount of error in observed scores, expressed in standard score units (i.e., T -scores). We obtained the SE_M for each of the DECA-C scale T -scores directly from the internal reliability coefficients using the formula,

$$SE_M = SD\sqrt{1-reliability}$$

Where SD is the theoretical standard deviation of the T -score (10) and the

appropriate reliability coefficient is used. The SE_M s for each DECA-C scale are presented in Table 3.2 according to rater. Note that the values of the SE_M vary with the size of the reliability coefficient – the higher the reliability, the smaller the standard error of measurement.

Table 3.2

**Standard Errors of Measurement
for the DECA-C Scale T-Scores**

Scales	Raters	
	Parents	Teachers
Total Protective Factors	3.00	2.45
Initiative	4.00	3.16
Self-control	3.74	3.16
Attachment	4.90	3.87
Total Behavioral Concerns	3.46	2.65
Withdrawal/Depression	5.83	4.47
Emotional Control Problems	4.69	3.46
Attention Problems	4.90	3.16
Aggression	4.90	3.46

Test-Retest Reliability - The correlation between scores obtained for the same child on two separate occasions is another indicator of the reliability of an assessment instrument. The correlation of this pair of scores is the test-retest reliability coefficient (r), and the magnitude of the obtained value informs us about the degree to which random changes influence the scores (Anastasi, 1988).

To investigate the test-retest reliability of the DECA-C, a group of teachers ($n = 41$) and a group of parents ($n = 25$) rated the same child on two different occasions separated by a 24- to 72-hour interval of time. The children involved in the study attended a variety of preschool programs. The sample was comprised of approximately 70% white children whose parental education levels varied across all categories.

The results of this study are shown in Table 3.3. All of the correlations are significant ($p < .01$) and indicate that the DECA-C scales have good test-retest reliability.

Table 3.3**Test-Retest Reliability Coefficients for Two DECA-C Ratings
by the Same Teacher or Parent for the Same Child
over a 24 to 72 Hour Interval**

Scales	Raters	
	Parents	Teachers
Total Protective Factors	.74	.94
Initiative	.80	.91
Self-control	.64	.91
Attachment	.55	.87
Total Behavioral Concerns	.88	.86
Withdrawal/Depression	.85	.78
Emotional Control Problems	.83	.80
Attention Problems	.84	.87
Aggression	.79	.87

Note. All correlations are significant at $p < .01$.

Interrater Reliability - The correlation between scores obtained for the same child at the same time by two different Raters is an indicator of the interrater reliability of an assessment instrument. The magnitude of the correlations between these scores tells us about the degree of similarity in the different Raters' perception of the child's behavior. The optimal condition for evaluating the interrater reliability of an assessment is to have two Raters observing the same child in the same environment at the same time. Therefore we examined the interrater reliability of the DECA-C by comparing ratings obtained from two teachers, or a teacher and teacher aide, who work in the same classroom.

The correlations of a set of ratings obtained for the same children by two teachers (or a teacher and a teacher aide) are provided in Table 3.4. The teacher-teacher data for the protective factor scales were obtained from pairs of ratings on 80 children, and the behavioral concern scales data from pairs of ratings on 43 children. The results indicate that pairs of teachers who saw the children in the same environment at the same time rated the children similarly. All the correlations are significant ($p < .05$). The values range from .32 (Withdrawal/

Depression) to .77 (Self-control). This range of scores suggests that behaviors associated with Withdrawal/Depression may be harder to reliably observe, presumably because of the subtle nature of the behaviors, whereas the more obvious behaviors involving outward expression of emotion are more reliably identified. The data also suggest that protective factors and behavioral concerns scales have about the same level of interrater reliability.

Table 3.4

Interrater Reliability Coefficients for Two DECA-C Ratings by Two Teachers for the Same Child

Scales	Correlation
Total Protective Factors	.69
Initiative	.59
Self-control	.77
Attachment	.57
Total Behavioral Concerns	.66
Withdrawal/Depression	.32
Emotional Control Problems	.65
Attention Problems	.63
Aggression	.70

Note. All correlations are significant at $p < .05$.

Summary - The results of the several reliability studies of the DECA-C indicated that the instrument is sufficiently reliable for assessing preschool children's protective factors and behavioral concerns. The internal consistency data demonstrated that the DECA-C meets standards suggested by professionals in the field. The test-retest study showed that raters give similar DECA-C scores over time and that day-to-day changes in behavior do not unduly influence ratings. Finally, the results for the interrater reliability study showed that different teachers rate children similarly on behaviors associated with protective factors and behavioral concerns. These results should assure early care and educational professionals that the DECA-C is a reliable instrument that can be used with confidence.

Validity

The validity of a test “concerns what the test measures and how well it does so” (Anastasi, 1988, p. 139). More specifically, validity studies investigate the evidence that supports the conclusions or inferences that are made based on test results and the interpretive guidelines presented in the test manual.

According to the *Standards for Educational and Psychological Testing* (APA, 1999), validity evidence can be conceptualized as content-related, criterion-related, and construct-related. We investigated the validity of the DECA-C in regard to each of these three areas.

Content-Related Validity - This type of validity assesses the degree to which the domain measured by the test is represented by the test items. With respect to the DECA-C, content-related validity addresses how well the 27 protective factor items represent the domain of within-child behavioral characteristics related to resilience in preschoolers, and how well the 35 behavioral concern items represent the domain of preschool emotional and behavioral problems.

The DECA, which contains the same protective factor items as the DECA-C, was the first standardized, norm-referenced measure of within-child protective factors in preschool children to be published. As such, it is not possible to compare the protective factor item coverage of the DECA-C with other similar instruments – a common method for establishing content-related validity. However, the protective factor items on the DECA and DECA-C were based on a thorough review of the literature as well as focus groups conducted with parents and teachers of preschoolers.

The content-related validity of the behavioral concern items on the DECA-C has been established through a variety of means. These items were developed from information gathered from three sources: 1) parent and teacher focus groups, 2) a thorough review of the developmental psychopathology literature, and 3) the childhood version of the *Devereux Scales of Mental Disorders* (DSMD) (Naglieri, LeBuffe, & Pfeiffer, 1994). The DSMD items were based largely on the diagnostic criteria and associated features for a wide variety of mental disorders as set forth by the American Psychiatric Association in the *DSM-IV (Diagnostic and Statistical Manual of the American Psychiatric Association, Fourth Edition, 1994)*. Overall, the final set of items on the

DECA-C reflect what professionals in the early care and education field and parents of preschooler believe, what the research indicates, and what the American Psychiatric Association asserts to be problematic behavior in early childhood.

Criterion-Related Validity - This type of validity measures the degree to which the scores on the assessment instrument predict either an individual's performance on an outcome or criterion measure, or the status or group membership of the individual.

As discussed in the foreword, protective factors buffer children against stress and adversity, resulting in better outcomes than would have been possible in their absence. One important outcome for preschool children is social and emotional health. Consequently, children with high scores on the protective factor scales should have greater social and emotional health than children with low scores on these scales. Conversely, children with high scores on the behavioral concern scales should have poorer mental health outcomes.

To test this hypothesis, we obtained DECA-C ratings on two samples of preschool children. The "identified sample" ($n = 95$) had known emotional and behavioral problems. These children met at least one of the following criteria: 1) a program or plan had been developed to manage their behavior problems, 2) they had been referred to a professional for emotional or behavioral problems, 3) they were currently being treated by a mental health professional, 4) they had been asked to leave a child care or preschool program due to their behavior, or 5) they had been given a psychiatric diagnosis.

Also obtained were DECA-C ratings for a comparison group of typical preschool children, the "community sample" ($n = 300$). The children involved in this study were from 39 different programs in 18 states.

A matched sample of 86 children from the community sample was identified for comparison to the identified sample. These two groups were matched on age, gender, race, and ethnicity. Table 3.5 provides descriptive information on both samples and shows that the two groups were demographically similar.

Table 3.5**Sample Characteristics
for the DECA-C Criterion Validity Study**

	Identified Sample		Community Sample	
	n	%	n	%
Size of Sample	95		86	
Age (years)				
Mean	4.6		4.6	
SD	0.9		0.9	
Gender				
Boys	63	66	58	67
Girls	32	34	28	33
Race				
Asian/Pacific	2	2	3	3
Black	25	27	28	33
American Indian	1	1	0	0
White	57	60	50	58
Other	9	10	5	6
Hispanic Ethnicity	9	10	4	5

Contrasted Groups – The contrasted groups approach to assessing criterion validity examines scale score differences between groups of individuals who differ on some important characteristic. Multivariate Analysis of Variance (MANOVA) procedures were used to contrast Initiative, Self-control, Attachment, Withdrawal/Depression, Emotional Control Problems, Attention Problems, and Aggression Scale scores for the identified and community samples. Independent *t*-tests were used to compare both the Total Protective Factors and Total Behavioral Concerns Scale scores for the two groups.

Table 3.6 presents the results of this study and documents that there were large and significant differences between the mean scores of the identified and community samples on all DECA-C scales. The mean standard score differences and other results reported in Table 3.6 clearly show that the ratings of the two groups differed significantly despite the similarity in demographic characteristics. All scale comparisons were significant ($p < .01$).

In addition to being statistically significant, the means of the two groups on each scale differed by approximately half a standard deviation or more (d -ratios range from .42 to 1.12). The d -ratio is a measure of the size of the difference between the mean scores of two groups expressed in standard deviation units. According to commonly accepted guidelines for interpreting d -ratios (Cohen, 1988), d -ratios of .2, .5, and .8 are interpreted as small, medium, and large, respectively. Therefore, of the effect sizes reported in Table 3.6, two (Withdrawal/Depression and Attachment) are small, one (Initiative) is medium, and six are large. The mean scale scores of the identified and community samples differed by at least a standard deviation on three scales (Self-control, Attention Problems and Total Behavioral Concerns). These results provide strong evidence of the validity of both the protective factor and behavioral concern scales in discriminating between groups of preschoolers with and without emotional and behavioral problems.

Examination of Potential Adverse Impact on Minority Children - The contrasted group approach can also be used to examine group differences on a variable thought to be *irrelevant* to the construct being assessed. Messick (1995) calls this construct irrelevant variance. To evaluate the appropriateness of the DECA-C for use with minority children, we compared the mean scores of the Black and White children and of the Hispanic and Non-Hispanic children included in the Behavioral Concerns standardization sample. The goal was to determine if these groups of children received similar ratings on the DECA-C. The demographic characteristics of these groups of children are shown in Table 3.7. On both the rater and gender variables, the three samples of children were quite similar. There were, however, some differences on region of residence, with more Black children living in the South, more white children living in the Midwest, and more Hispanic children living in the Northeast than the other two groups. There were also differences in socioeconomic status. Nearly half of the Black and Hispanic children received subsidized child care as compared to 13% for White children. Similarly, a larger percentage of Black and Hispanic children's families received public assistance (28.2% and 15.5% respectively) than White children's families (7.3%).

Table 3.6**Mean T-Scores, Standard Deviations and Difference Statistics for DECA-C Criterion Validity Study**

	Identified Sample (n = 95)	Community Sample (n = 86)
Initiative		
Mean	41.2	48.6
SD	9.8	9.2
F Value		27.3***
d-ratio		.78
Self-control		
Mean	38.9	49.1
SD	10.2	10.1
F Value		46.4***
d-ratio		1.00
Attachment		
Mean	41.9	47.0
SD	10.5	11.2
F Value		10.1**
d-ratio		.47
Total Protective Factors		
Mean	38.5	47.3
SD	9.9	10.0
t Value^a		-6.00***
d-ratio		.88
Withdrawal/Depression		
Mean	58.5	53.7
SD	12.0	10.6
F Value		8.1**
d-ratio		.42
Emotional Control Problems		
Mean	63.2	54.7
SD	9.9	9.0
F Value		35.9***
d-ratio		.90

Table 3.6 continued

Attention Problems		
Mean	65.1	54.8
SD	10.1	10.2
F Value	47.4***	
d-ratio	1.01	
Aggression		
Mean	63.8	54.5
SD	9.9	9.5
F Value	41.8***	
d-ratio	.96	
Total Behavioral Concerns		
Mean	65.2	54.5
SD	9.1	10.0
t Value^a	7.48***	
d-ratio	1.12	

** $p < .01$.

*** $p < .001$.

^a t test for independent samples

To assess the difference in the DECA-C ratings we compared the means using the d -ratio statistic. Table 3.8 presents the results of these analyses. The results in Table 3.8 indicate that the DECA-C scores earned by Black, White, and Hispanic children were similar. The differences between Black and White children when, rated by teachers, were negligible (d -ratio less than .20) for two of the nine comparisons and small (d -ratio of .20 to .50) for the remaining comparisons according to Cohen's interpretive guidelines. For Parent Raters, six of the nine comparisons were negligible and the remaining three were small.

Similarly, for teachers who rated Hispanic and Non-Hispanic children, four of the comparisons yielded negligible effect sizes and all of the remaining differences were small. For Parent Raters, five effect sizes for Hispanic and Non-Hispanic children were negligible and four small.

Table 3.7**Sample Characteristics for the d-Ratios
Comparing Minority and Non-Minority Children**

	Black		White		Hispanic	
	n	%	n	%	n	%
Size of Sample	173		806		98	
Rater						
Teacher	108	62.4	379	47.0	59	60.2
Parent	65	37.6	427	53.0	39	39.8
Gender						
Boys	85	49.1	416	51.7	56	57.1
Girls	88	50.9	388	48.3	42	42.9
Region						
Northeast	25	14.5	215	26.7	40	41.2
Midwest	30	17.4	256	31.8	13	13.4
West	15	8.7	173	21.5	23	23.7
South	102	59.3	161	20.0	21	21.6
Subsidized Child Care						
Yes	72	45.3	101	12.9	48	49.5
No	87	54.7	683	87.1	49	50.5
Public Assistance						
Yes	44	28.2	57	7.3	15	15.5
No	112	71.8	720	92.7	82	84.5

Table 3.8**DECA-C Scale Scores: d-Ratios Comparing Minority and Non-Minority Children**

	Black vs. White	Hispanic vs. Non-Hispanic
Teacher Raters		
Initiative	.32	.20
Self-control	.33	.06
Attachment	.38	.20
Total Protective Factors	.38	.18
Withdrawal/Depression	.47	.13
Emotional Control Problems	.09	.01
Attention Problems	.29	.35
Aggression	.12	.36
Total Behavioral Concerns	.28	.26
Parent Raters		
Initiative	.04	.25
Self-control	.12	.27
Attachment	.38	.16
Total Protective Factors	.17	.27
Withdrawal/Depression	.26	.18
Emotional Control Problems	.02	.03
Attention Problems	.27	.20
Aggression	.17	.19
Total Behavioral Concerns	.05	.19
Total Sample		
Initiative	.18	.23
Self-control	.23	.17
Attachment	.38	.18
Total Protective Factors	.28	.23
Withdrawal/Depression	.39	.14
Emotional Control Problems	.06	.01
Attention Problems	.05	.28
Aggression	.01	.29
Total Behavioral Concerns	.15	.23

When all raters are considered together, the median effect size for Black compared to White Children was .23 for the three protective factor scales and .06 for the four behavioral concern scales. When Hispanic and Non-Hispanic children are compared, the median effect size for the three protective factors scales was .18, and for the four behavioral concern scales was .21. These results indicate that these groups of children receive very similar mean scale scores on the DECA-C despite the demographic differences noted above.

Individual Prediction - The criterion validity of an assessment can also be determined by examining the ability of scale scores to predict accurately group membership. The extent to which both the Total Protective Factors and the Total Behavioral Concerns Scale scores accurately predicted membership in either the identified or the community sample were, therefore, examined.

For the Total Protective Factors Scale, we predicted that individuals with a *T*-score of less than or equal to 40 would be members of the identified sample, and those with scores above 40 would be members of the community sample. For the Total Behavioral Concerns Scale, we predicted that individuals with a *T*-score of greater than or equal to 60 would be members of the identified sample, and those with scores below 60 would be members of the community sample. (Recall that *T*-scores of 40 and below on the protective factor scales and 60 and above on the behavioral concern scales indicate areas of concern.) We then compared these predictions with actual group membership. Table 3.9 presents the results of this study.

As shown in Table 3.9, low Total Protective Factors Scale scores correctly predicted group membership for 67% of the identified sample. Similarly, average to high Total Protective Factors Scale scores correctly predicted 71% of the community sample. Overall, the Total Protective Factors Scale scores correctly predicted group membership for 69% of the 181 children in this study. Significant chi-square analysis results ($X^2 = 26.5$, $df = 1$, $p < .001$, *phi* coefficient = .38) indicated that the Total Protective Factors Scale scores were significantly related to group membership.

High scores on the Total Behavioral Concerns Scale correctly predicted group membership for 76% of the identified sample. Similarly, average to low scores on this scale correctly predicted group membership for 72% of the children in the community sample. Overall, the Total Behavioral Concerns Scale

Table 3.9**Actual and Predicted Group Membership
for the DECA-C Criterion Validity Study**

	Identified Sample		Community Sample	
	n	%	n	%
Actual Group Membership	95		86	
Predicted Group Membership				
Total Protective Factors				
TPF ≤ 40	64	67	25	29
TPF > 40	31	33	61	71
Total Behavioral Concerns				
TBC ≥ 60	72	76	24	28
TBC < 60	23	24	62	72

correctly predicted group membership for 74% of the children in this study. Significant chi-square analysis results ($X^2 = 41.55$, $df = 1$, $p < .001$, phi coefficient = .48) indicated that the Total Behavioral Concerns Scale scores were significantly related to group membership. The higher phi coefficient for the Total Behavioral Concerns Scale indicates that this scale is more strongly related to group membership than the Total Protective Factors Scale.

It should be noted that the classification accuracy of any assessment is determined both by the psychometric properties of the assessment and the decision rules (i.e., cut scores) used to make these decisions. A less stringent decision rule will result in more children being identified as having significant emotional and behavioral problems. A more stringent decision rule will result in fewer children being identified. In the case of the DECA-C, we have chosen a relatively stringent decision rule to minimize the chances of children being overidentified as having emotional and behavioral problems.

Construct-Related Validity - This type of validity examines the degree to which the assessment instrument measures the theoretical construct of interest. In the case of the DECA-C, construct-related validity concerns the extent to which the protective factor scales scores relate to resilience versus some other

characteristic of preschool children. Similarly construct-related validity for the behavioral concern scales relates scale scores to emotional and behavioral concerns in young children.

Protective Factor Construct-Related Validity – The validity chapter of the DECA Technical Manual (LeBuffe & Naglieri, 1999b) presents a study that examined the construct-related validity of the protective factor scales of the DECA-C. The results of this study indicated that for both high risk and low risk children, high scores on the protective factor scales were associated with significantly fewer behavioral concerns than low scores on these scales. This finding provides evidence that the protective factor scales do measure characteristics of children that decrease the impact of risk factors. Interestingly, the results of this study also indicated that the DECA protective factors were as strongly related to behavioral concerns as a composite of over 60 risk factors.

Behavioral Concern Construct-Related Validity – To explore the construct-related validity of the Withdrawal/Depression, Emotional Control Problems, Attention Problems, and Aggression scales, DECA-C assessments were completed on 123 children from 19 sites in six states. Only children who had been given a psychiatric diagnosis were included in this study. Although the DECA-C is not designed to yield a specific psychiatric diagnosis, it is reasonable to expect a relationship between a child's diagnosis and the pattern of DECA-C scores. For instance, children with depressive disorders should have elevated scores on the Withdrawal/Depression Scale. Finding such logical relationships would provide construct-related evidence for the DECA-C scales.

In addition to the DECA-C, the Rater completed a demographic information sheet that requested information about the child's psychiatric disorder(s). These diagnoses had been given by psychiatrists (54%), psychologists (30%), pediatricians/family practitioners (13%), and other professionals (3%). Common diagnoses were Attention-Deficit/Hyperactivity Disorder, Oppositional Defiant Disorder, Pervasive Developmental Disorder, Adjustment Disorder, Reactive Attachment Disorder, and Depression/Dysthymia. These diagnoses were not, however, confirmed by an independent mental health professional. Demographic information on this sample is provided in Table 3.10.

Approximately two-thirds (62%) of the children in this sample fell into three diagnostic groups: Attention Deficit/Hyperactivity Disorder ($n = 42$),

Table 3.10**Demographic Characteristics of the DECA-C Construct Validity Sample**

	N	%
Size of Sample	123	
Gender		
Boys	90	73
Girls	33	27
Race		
Black	42	34
White	69	56
Other	12	10
Hispanic Ethnicity	12	10

Oppositional Defiant Disorder ($n = 25$), and Depression/Dysthymia ($n = 10$). The mean DECA-C scale scores and standard deviations for these three groups are found in Table 3.11, and the corresponding DECA-C profiles are presented in Figures 3.1 through 3.3. The percentage of children in each group with a T -score falling in the concern range for each scale are presented in Table 3.12. Each diagnostic group is discussed below.

Attention-Deficit/Hyperactivity Disorder - As shown in Figure 3.1, the 42 children in the Attention-Deficit/Hyperactivity Disorder (ADHD) group received their highest mean scale score on the Attention Problems Scale ($T = 62$), as would be expected. Furthermore, 67% of the children in this group received a rating on this scale that was in the Concern Range (i.e., T -score of 60 or higher). Nearly 20% more children with ADHD had a Concern rating on the Attention Problems Scale than any of the other three behavioral concern scales. The mean scale score on the Withdrawal/Depression scale was also in the Concern Range, as was the Total Behavioral Concerns Scale. The mean scale scores on both Emotional Control Problems and Aggression were in the Typical Range.

Children in this group also had mean scores in the Concern Range on the Attachment and Total Protective Factors Scales. In addition, the mean scores on both Initiative and Self-control were in the lower reaches of the Typical Range.

Table 3.11**Mean T-scores and Standard Deviations for Different Diagnostic Groups in the DECA-C Construct Validity Sample**

	Diagnostic Group					
	ADHD		ODD		Depression	
	n = 42		n = 25		n = 10	
	mean	SD	mean	SD	mean	SD
Initiative	43	8.5	48	9.9	45	10.9
Self-control	43	10.1	41	9.0	46	8.2
Attachment	40	9.9	42	9.2	43	10.1
Total Protective Factors	40	8.7	43	9.3	42	9.3
Withdrawal/Depression	60	9.8	58	7.8	62	7.9
Emotional Control Problems	56	11.9	60	10.5	58	8.5
Attention Problems	62	7.9	60	8.7	58	12.0
Aggression	56	10.1	60	11.4	53	10.0
Total Behavioral Concerns	60	10.4	62	8.8	59	9.4

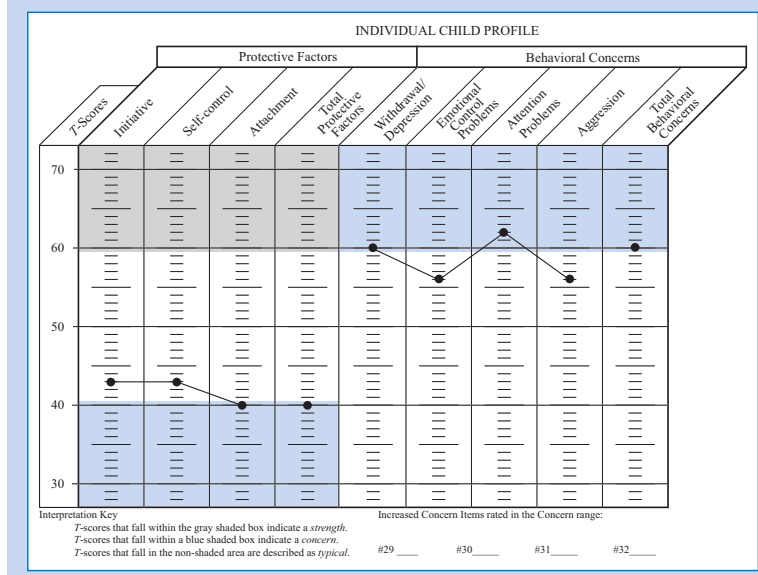
Table 3.12**Percentage of Children in the Construct Validity Sample Receiving a T-score Rating in the Concern Range for each DECA-C Scale**

	Diagnostic Group		
	ADHD	ODD	Depression
	n = 42	n = 25	n = 10
Size of Sample			
Initiative	38%	24%	40%
Self-control	43%	44%	40%
Attachment	62%	48%	30%
Total Protective Factors	60%	36%	40%
Withdrawal/Depression	48%	40%	50%
Emotional Control Problems	38%	56%	50%
Attention Problems	67%	56%	50%
Aggression	48%	56%	30%
Total Behavioral Concerns	55%	60%	60%

Children with ADHD, like the children in the other two diagnostic groups, tend to have high scores on the DECA-C behavioral concern scales and low scores on the protective factor scales. In fact, for this group, more children received a Concern rating on the Total Protective Factors Scale (60%) than the Total Behavioral Concerns Scale (55%).

Figure 3.1

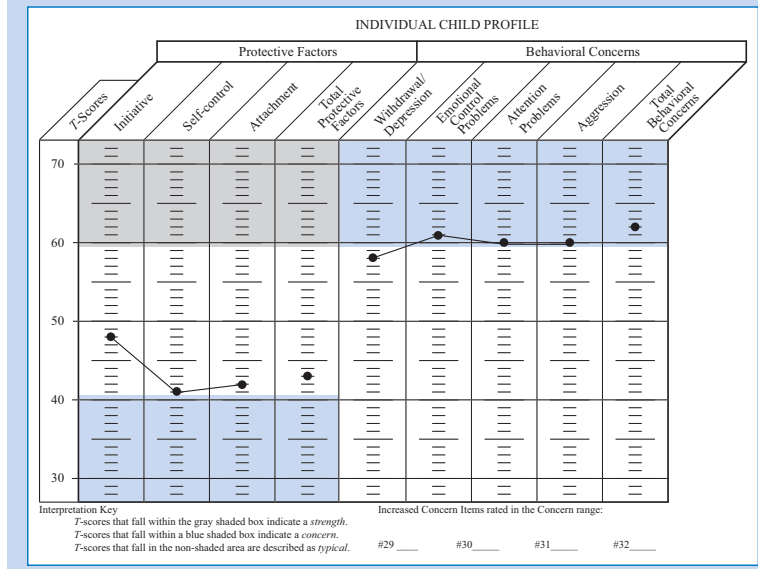
Profile of Mean T-Scores for the ADHD Sample (n = 42)



Oppositional Defiant Disorder – As shown in Figure 3.2, the 25 children in this group tended to have Typical or low Typical scores on the protective factor scales, and Concern scores on all of the behavioral concern scales except Withdrawal/Depression. Fifty-six percent of the children with ODD received ratings in the Concern Range on Emotional Control Problems, Attention Problems and Aggression; however, only 40% received a rating in the Concern Range on Withdrawal/Depression.

Figure 3.2

Profile of Mean T-Scores for the ODD Sample (n = 25)

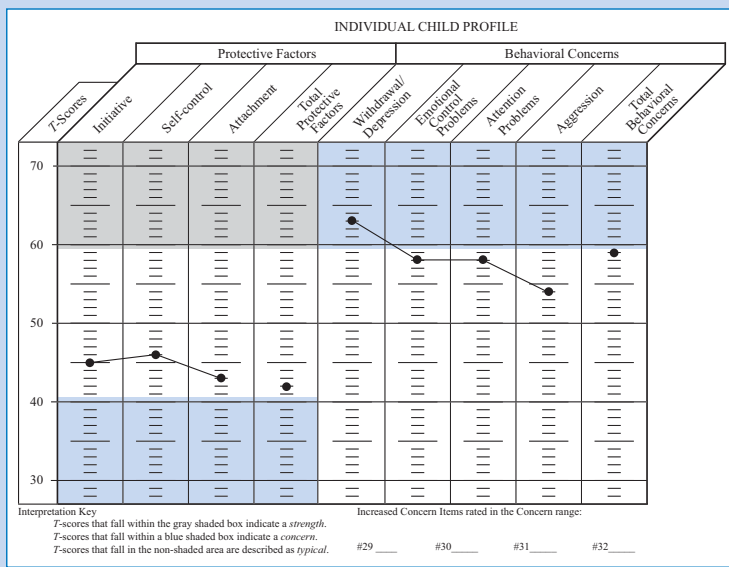


Depression- As shown in Figure 3.3, the only mean scale score in the Concern Range for the 10 children in this group was Withdrawal/Depression ($T = 62$). In addition to the elevation on the Withdrawal/Depression Scale, this group of children is characterized by typical protective factor scale scores and relatively low Aggression Scale scores. Only 30% of the children in this group had a Concern Range rating on the Aggression Scale. While these results are consistent with expectations, further examination of these questions is warranted due to the small sample size.

Relationships Between the Protective Factor and Behavioral Concern Scales – The interrelationships of the protective factor and behavioral concern scales were investigated as the final step in examining the construct-related validity of the DECA-C. Two approaches were used: examination of scale inter-correlations, and actuarial analysis of the protective factor and behavioral concern scales.

Figure 3.3

Profile of Mean T-Scores for the Depression Sample (n = 10)



...text continues on page 48

The model underlying the DECA-C would hold that the scales should be positively correlated within their groupings (protective factors versus behavioral concerns), but negatively correlated across groupings. Table 3.13 presents the intercorrelation matrix for the DECA-C scale *T*-scores for the Behavioral Concerns standardization sample ($N = 1,107$).

Table 3.13

Intercorrelation Matrix of DECA-C Scales for the Behavioral Concerns Standardization Sample ($N = 1,107$)

	IN	SC	AT	WD	ECP	AP
SC	.67					
AT	.61	.53				
WD	-.45	-.42	-.44			
ECP	-.34	-.60	-.23	.46		
AP	-.41	-.54	-.26	.44	.55	
AG	-.26	-.53	-.23	.38	.55	.61

Note. All $ps < .000$

IN = Initiative, SC = Self-control, AT = Attachment, WD = Withdrawal/Depression, ECP = Emotional Control Problems, AP = Attention Problems, AG = Aggression

As expected, all of the protective factor scales correlated positively with each other (r ranging from .53 to .67) and all the correlations were significant. Similarly, all of the behavioral concern scales correlated positively with each other (r ranging from .38 to .61) and all of the correlations were significant. The lowest correlation was found between the Aggression and Withdrawal/Depression Scales. This is not surprising in that these scales measure what are generally regarded as two different types of behavioral concerns, internalizing and externalizing problems. In contrast, the highest correlation was found between the Aggression and Attention Problems Scales, which measure two dimensions of externalizing problems.

All of the correlations between protective factor and behavioral concern scales were negative in direction and significant. The correlations ranged from -.23 (Attachment and Emotional Control Problems, Attachment and Aggression)

Table 3.14

**Actuarial Analyses
of DECA-C Scale Scores**

	Normative Sample (N = 1,107)		Clinical Sample (N = 123)	
	<i>n</i>	%	<i>n</i>	%
Protective Factors				
No Concerns	774	70	39	32
One Concern	184	17	38	31
Two Concerns	93	8	27	22
Three Concerns	56	5	19	15
Behavioral Concerns				
No Concerns	623	57	30	25
One Concern	234	21	20	16
Two Concerns	124	11	15	12
Three Concerns	89	8	22	18
Four Concerns	37	3	36	29

to $-.60$ (Self-control and Emotional Control Problems). The correlation between the Total Protective Factors and Total Behavioral Concerns Scales was $-.58$.

An actuarial analysis of the DECA-C scales was conducted to examine the co-occurrence of ratings in the Concern Range across all of the protective factor and behavioral concern scales. If the three protective factor scales are too closely related (i.e., not measuring somewhat independent constructs), individual children should tend to have concerns on all or none of these scales. Similarly, if the behavioral concern scales lack independence, children should tend to have concerns on all or none of these scales, as well. This analysis was conducted separately for a normative sample (the Behavioral Concerns standardization sample, $N = 1,107$), as well as a clinical sample (the Construct Validity sample, $N = 123$). The results of the actuarial analysis are found in Table 3.14.

The data in Table 3.14 indicate that both the individual protective factor and behavioral concern scales measure related but distinct constructs. For the 1,107 children in the normative sample, 70% had no protective factor concerns.

Of the remaining 30% of the children, 17% had one protective factor concern, 8% had two, and 5% had all three scales rated in the Concern Range. Similarly, 57% of this sample had no concerns noted on the behavioral concern scales. Of the 43% of the children that had at least one scale with a concern, only 3% had concerns on all four scales.

For the clinical sample, 32% of the children did not have a concern noted on any protective factor scale. Of the remaining children, 31% had one scale in the Concern Range, 22% had two scales, and only 15% had all three protective factor scales rated in the Concern Range. Similar results were found with the clinical sample on the behavioral concern scales: 25% had no concerns noted, 16% had one concern, 12% two concerns, 18% three concerns, and 29% had concerns on all four scales.

Table 3.15 presents another way to examine these data. This table presents a crosstabulation of children with and without concerns on the Total Protective Factors and Total Behavioral Concerns Scales. For both samples, more children had concerns on only one total scale than on both (19% vs. 9% for the normative sample and 39% vs. 35% for the clinical sample.)

Table 3.15

Crosstabulations of Total Protective Factors and Total Behavioral Concerns Scales Rated in the Concern Range for both Normative and Clinical Samples

	Normative Sample (N = 1,107)		Clinical Sample (N = 123)	
	TPF Concern		TPF Concern	
	No	Yes	No	Yes
TBC Concern No	72%	9%	26%	14%
TBC Concern Yes	10%	9%	25%	35%

Summary

The content-related evidence provided in this chapter established the relationship of the DECA-C items to both the research and practice literature and the perceptions of parents and teachers on social and emotional well being and problems in preschool children. The results of the criterion-related validity stud-

ies demonstrated that the DECA-C can be useful in making important decisions about children's social and emotional health. DECA-C scale scores are related both to resilience in young children and the presence of social and emotional difficulties.

The construct-related evidence established that the various DECA-C scales do measure somewhat different aspects of children's social and emotional functioning and related these scales to commonly occurring disorders in children.

The authors of the DECA-C welcome any opportunities to assist other researchers in further exploring the validity and utility of the DECA-C in assessing, and ultimately helping, young children at risk for social and emotional problems. The authors can be reached through the Devereux Foundation's Institute of Clinical Training and Research in Villanova, Pennsylvania.