

# Development and Standardization

## 2

### Development of the DECA-P2 Items

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Item development for the Devereux Early Childhood Assessment for Preschoolers, Second Edition (DECA-P2) began with a review of the items from the original Devereux Early Childhood Assessment (DECA; LeBuffe & Naglieri, 1999). Feedback on the DECA items was solicited from DECA program users, the DECA Revision National Advisory Board, and the staff of the Devereux Center for Resilient Children. Based on the feedback from these various stakeholders, two items from the original DECA were removed from consideration for inclusion in the revision. These items were “fail to show joy or gladness at a happy occasion” and “say positive things about the future.” The first item was found to be confusing to some raters and the second was viewed as being too dependent on verbal skills. The remaining 35 original items were included in the standardization form of the DECA-P2.

Next, we reviewed, and in some cases revised, these 35 original DECA items to make them clearer or to reduce the reading level. For instance, the item “touch children or adults inappropriately” was revised to “touch children or adults in a way that you thought was inappropriate.” In addition, to make the form easier to read, the order of gender pronouns (he/she, himself/herself) and adjectives (his/her) was written in a consistent manner.

Third, we reviewed the literature on resilience in young children and asked our National Advisory Board to determine if there were any additional within-child protective factors that should be included in the DECA-P2. The concept

of *approaches to learning* was suggested. We therefore reviewed the literature in this area and wrote a number of additional items to provide sufficient coverage of this area. We also reviewed suggestions for new items collected from DECA users over the past decade. This process resulted in a set of 59 items that were incorporated into the standardization edition of the DECA-P2.

## National Standardization

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We standardized the DECA-P2 using a carefully prescribed method so that the sample would closely represent the United States population of children ages 3 through 5 on several important dimensions. The data collection procedures also ensured that a wide variety of children were included for the generation of norms. We collected data using both a paper form and an on-line, computerized version. Both samples were collected simultaneously from September 2010 through June 2011.

We collected ratings on children from two groups of adults: (a) parents and other relatives living with the child and (b) teachers, assistant teachers, and child care providers. We obtained the latter group of raters from preschools, Head Start programs, child care centers, and family child care programs across the United States. We obtained parent ratings from these same organizations, through parenting listservs and Internet forums, and also through Devereux centers. Although a wide variety of demographic information was obtained for both standardization and research purposes, no personally identifying information was included in the standardization protocols.

This process resulted in an initial standardization data set of 4,964 protocols. Of these, 2,133 ratings were provided by parents and 2,831 were provided by teachers. To avoid overlap with the age range of the Devereux Early Childhood Assessment for Infants and Toddlers (DECA-I/T; Mackrain, LeBuffe, & Powell, 2007), we decided to limit the age range of the DECA-P2 to 3- through 5-year-olds. Consequently, 2-year-olds were dropped from the standardization sample. The remaining sample was then trimmed to make it more accurately reflect the demographic characteristics of young children

in the United States. That is, for those groups of children that were overrepresented in the initial standardization sample, randomly chosen cases were excluded until the final sample closely matched the demographic characteristics of the country as a whole. This process resulted in a final standardization sample of 3,553 children ages 3 through 5 (third birthday up to the sixth birthday) at the time of the data collection. Parents and other adult relatives living in the home provided ratings on 1,416 children; teachers and other early care and education staff provided ratings on 2,137 children.

## Computerized and Paper/Pencil Administrations

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The individuals who completed the DECA-P2 did so using one of two different formats: computerized or paper/pencil. Before the data obtained through computerized and paper/pencil administration methods were combined to form the standardization sample, a series of analyses was conducted to ensure that the method of data collection did not influence the ratings. Analysis of variance (ANOVA) was used to examine mean score differences between the two data collection methods. Effect sizes (*d*-ratios) were then computed to examine the magnitude of any differences between the ratings obtained using these two formats. This statistic is computed by subtracting the mean of one group from the mean of the other group and then dividing that difference by the average standard deviation for the two groups being contrasted. According to Cohen (1988), *d*-ratio values of less than .2 are negligible. Those from .2 up to .5 reflect a small effect size. Those from .5 up to .8 indicate a medium effect size, and *d*-ratios greater than .8 indicate a large effect size.

The results, shown in Table 2.1, indicate that the means and standard deviations of the DECA-P2 *T*-scores for computerized and paper/pencil versions were very similar. The average difference between the *T*-score means for the protective factor and Behavioral Concerns scales was 1.2 and 0.8 for parents and teachers, respectively. The *d*-ratios ranged from .04 to .16 for parents and .01 to .18 for teacher raters, which indicates that at most, the means differed by about one-fifth of a standard deviation, which, using the interpretive

guidelines provided by Cohen (1988), would be interpreted as a negligible effect size. Of the 10 comparisons, only 4 were significant ( $p < .01$ ) and for these the mean score differences (effect sizes) were too small to be meaningful. Because of the similarity of the mean scores, we combined the data obtained from both administration methods in all subsequent analyses.

**Table 2.1****DECA-P2 T-Scores for Online and Paper Administration Formats for Parent and Teacher Raters**

Scales	Parents							Significance	d-ratio
	Online			Paper					
	Mean	SD	N	Mean	SD	N			
Total Protective Factors	51.0	10.2	459	49.5	9.8	813	*	0.15	
Initiative	51.0	10.1	492	49.5	9.7	870	*	0.16	
Self-Regulation	50.5	10.2	485	49.5	9.7	861		0.10	
Attachment/Relationships	50.9	9.5	492	49.4	10.1	870	*	0.15	
Behavioral Concerns	50.3	10.4	484	49.8	10.0	850		0.04	
Teachers									
Total Protective Factors	49.5	10.5	892	50.4	9.5	1,151		-0.09	
Initiative	49.5	10.2	865	50.2	9.6	1,191		-0.07	
Self-Regulation	49.0	10.2	856	50.7	9.6	1,189	*	-0.18	
Attachment/Relationships	49.9	10.3	892	50.0	9.6	1,185		-0.01	
Behavioral Concerns	50.4	10.6	862	49.6	9.7	1,176		0.08	

\* $p < .01$

## Representativeness of the DECA-P2 Standardization Sample

The DECA-P2 standardization sample closely approximated the population of young children in the United States with respect to age, gender, geographic region of residence, race, ethnicity, and socioeconomic status. We based the desired characteristics of the standardization sample on the *Statistical Abstract of the United States 2010: The National Data Book* published by the U.S. Census Bureau (2010). In the tables that follow, the total numbers of children included may not sum to 3,553 due to missing data.

## Gender and Age

Table 2.2 presents the numbers and percentages of males and females at each age for 3-, 4-, and 5-year-olds. The number of children at each age ranged from 821 for 5-year-olds to 1,749 for 4-year-olds. The mean number of children per age was 1,184. 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.

**Table 2.2**

**DECA-P2 Standardization Sample Characteristics: Gender and Age**

		Gender					
		Male		Female		Total	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<b>Age</b>	3	509	52	474	48	983	28
	4	908	52	841	48	1,749	49
	5	422	51	399	49	821	23
<b>Total</b>		<b>1,839</b>	<b>52</b>	<b>1,714</b>	<b>48</b>	<b>3,553</b>	
<b>U.S.%</b>			<b>51</b>		<b>49</b>		

**Note:** The U.S. population data are based on the figures for children under 5 only in "Resident Population by Sex and Age: 2008, Table No. 7," Statistical Abstract of the United States: 2010 (129th edition): U.S. Census Bureau, 2010. Because the next age grouping is 5–19 years of age, the under 5 years of age figures were used as the better estimate here and in Table 2.3.

## Geographic Region and Age

We collected data from parents and teachers of children attending approximately 150 programs in all 50 states and the District of Columbia. Of these, 64 sites, which are listed in Appendix C, contributed at least 10 complete protocols. Table 2.3 shows the numbers and percentages of children by age and location, according to the four geographic regions designated by the U.S. Census Bureau: Northeast, Midwest, South, and West. These data show that the DECA-P2 standardization sample closely approximated the regional distribution of the U.S. population in total and at each age.

**Table 2.3****DECA-P2 Standardization Sample Characteristics: Geographic Region and Age**

		Region									
		Northeast		Midwest		South		West		Total	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<b>Age</b>	3	161	16	252	26	371	38	198	20	982	28
	4	215	12	407	23	752	43	367	21	1,741	49
	5	115	14	194	24	317	39	188	23	814	23
<b>Total Sample</b>		<b>491</b>	<b>14</b>	<b>853</b>	<b>24</b>	<b>1,440</b>	<b>41</b>	<b>753</b>	<b>21</b>	<b>3,537</b>	
<b>U.S.%</b>			<b>16</b>		<b>21</b>		<b>38</b>		<b>25</b>		

**Note:** The U.S. population data are based on the 2008 figures for children under 5 years in "Resident Population by Age and State: 2008, Table No. 16," Statistical Abstract of the United States: 2010 (129th edition): U.S. Census Bureau, 2010.

## Race and Geographic Region

Table 2.4 provides the DECA-P2 standardization sample composition by race and geographic region. Based on information provided on the rating forms, we classified the children according to the five major race categories used by the U.S. Census Bureau: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White. Consistent with the U.S. Census Bureau, a child could also be classified as two or more races. The data in Table 2.4 indicate that the racial composition of the total standardization sample very closely approximated that of the U.S. population. In addition, the data show that children of all races, with the exception of Native Hawaiian and Pacific Islander, lived in all four regions of the United States.

**Table 2.4****DECA-P2 Standardization Sample Characteristics: Race and Geographic Region**

	American Indian		Asian		Black		Native Hawaiian		White		Two or More		Total
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Northeast	3	1	2	0	36	8	0	0	363	84	30	7	434
Midwest	2	0	13	2	32	4	2	0	664	85	66	8	779
South	13	1	19	2	282	24	0	0	808	68	72	6	1,194
West	30	5	20	3	59	9	8	1	479	77	30	5	626
<b>Total</b>	<b>48</b>	<b>2</b>	<b>54</b>	<b>2</b>	<b>409</b>	<b>13</b>	<b>10</b>	<b>0</b>	<b>2,314</b>	<b>76</b>	<b>198</b>	<b>7</b>	<b>3,033</b>
<b>U.S.%</b>		<b>1</b>		<b>5</b>		<b>13</b>		<b>0</b>		<b>80</b>		<b>4</b>	

**Note:** The U.S. race data are based on the figures for 3- through 5-year-olds in "Resident Population by Race, Hispanic Origin, and Single Years of Age: 2008, Table No. 10," Statistical Abstract of the United States: 2010 (129th edition): U.S. Census Bureau, 2010.

## Hispanic Ethnicity and Geographic Region

The proportion of children of Hispanic ethnicity included in the DECA-P2 standardization sample is presented in Table 2.5. 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 with regard to this demographic characteristic and that Hispanic/Latino children in the standardization sample lived in all four regions of the United States.

**Table 2.5**

**DECA-P2 Standardization Sample Characteristics: Geographic Region and Hispanic Ethnicity**

		Region										U.S. %
		Northeast		Midwest		South		West		Total		
		n	%	n	%	n	%	n	%	n	%	
<b>Hispanic/ Latino Ethnicity</b>	Yes	88	19	95	12	447	34	255	35	885	27	<b>25</b>
	No	365	79	666	84	802	61	459	63	2,292	70	<b>75</b>
	Don't know	10	2	32	4	59	5	14	2	115	3	
<b>Total</b>		<b>463</b>		<b>793</b>		<b>1,308</b>		<b>728</b>		<b>3,292</b>		

**Note:** The U.S. ethnicity data are based on the figures for 3- through 5-year-olds in "Resident Population by Race, Hispanic Origin, and Single Years of Age: 2008, Table No. 10." Statistical Abstract of the United States: 2010 (129th edition): U.S. Census Bureau, 2010.

## Socioeconomic Status

To assess the socioeconomic status of the DECA-P2 standardization sample, we determined the number of children whose families were receiving food stamps. This indicator was chosen because food stamp eligibility is determined by monthly or annual gross income and this criterion is consistent from state to state. Of the entire sample of 3,553 children, 877 (24.7%) were from families that indicated they were currently receiving food stamps. This very closely approximated the 25% of children and youth living in poverty (Children's Defense Fund, 2011).

## Parental Education

To avoid unreliable data, only parental reports of parent education were utilized. The parent education data presented in Table 2.6 indicate that although all levels of parent education were represented in the sample, the DECA-P2 parent sample was somewhat more highly educated than parents in the United States in general. This may be expected because parents had to be able to read the standardization forms to participate.

**Table 2.6**

**DECA-P2 Standardization Sample Characteristics: Parental Education**

	Parental Education (as reported by parent raters)		
	<i>n</i>	%	U.S.%
Not a high school graduate	86	6.1	<b>13.4</b>
High school graduate/GED	334	23.6	<b>31.2</b>
Some college, but no degree	351	24.8	<b>17.2</b>
Associate's degree	175	12.4	<b>8.8</b>
Bachelor's degree	289	20.4	<b>19.1</b>
Advanced degree	170	12.0	<b>10.3</b>
Don't know	8	.6	
<b>Total</b>	<b>1,413</b>		

**Note:** The U.S. parental education data are based on the 2008 figures in "Educational Attainment by Selected Characteristics: 2008, Table No. 226," Statistical Abstract of the United States: 2010 (129th edition): U.S. Census Bureau, 2010.

## Organization of DECA-P2 Items Into Scales

We conducted a series of analyses to determine which protective factor and behavioral concerns items should be retained or deleted to obtain the best configuration of scales. These analyses were based on the following goals: (1) to identify the best factor solution from both psychometric and interpretability perspectives; (2) to shorten the DECA-P2 as much as possible without compromising breadth of coverage; (3) to simplify the administration, scoring, and interpretation of the DECA-P2; and (4) to ensure that the constructs are measured reliably by the scales.

Utilizing the standardization data set, we conducted a series of item-level analyses to guide the organization of DECA-P2 items into statistically and



logically derived scales. Examination of the items on the protective factor scales was conducted using factor analysis, specifically, principal axis factor extraction with varimax rotation. To determine the numbers of factors to select, we began by (a) basing the number of factors to anticipate on the first edition of the DECA and (b) overfactoring and then reducing the number of factors selected until the results were interpretable. The results of these analyses are provided separately in Table 2.7a for parent raters and Table 2.7b for teacher raters. The results are similar to what was found for the DECA; that is, three factors were found across the protective factors items. The first factor was dominated by items concerning self-regulation (e.g., items 3, 20, and 16) and related behaviors such as cooperation (e.g., items 19 and 28) for both types of raters. The second factor was defined by items having to do with willingness to engage in a task (e.g., items 33 and 10) and related behaviors such as persistence (e.g., item 7). The items with their highest loading on the third factor involved positive interactions with other children or adults (e.g., items 14 and 11). Two considerations regarding these findings are important. First, the solutions for the parents and teachers were very similar, with each item loading on the same factor for both sets of raters, and second, that in every instance, the item had its highest loading on the factor corresponding to the scale on which it is placed. There were, however, some items that did have cross-loadings (using .30 as a minimally acceptable value), for example, item 37 for parent raters, but the amount of variance accounted for by the loading on the scale on which the item was placed (28%) was twice as much as the value for the secondary loadings (11%).

We therefore concluded that the factorial results suggested that three scales (labeled Self-Regulation, Initiative, and Attachment/Relationships) best described the data for parent and teacher raters. Approaches to learning did not comprise a new factor. Items related to this construct loaded onto the other three scales. These three scales would be combined to provide an overall estimate of a child's social and emotional competencies labeled Total Protective Factors.

**Table 2.7a****DECA-P2 Protective Factor Item Factor Analysis Using Varimax Rotation for Parent Raters (N = 1,272)**

Parent Raters	Self-Regulation	Initiative	Attachment/Relationships
3. control his/her anger	.77		
20. handle frustration well	.77		
16. show patience	.75		
2. listen to or respect others	.71		
29. calm himself/herself down	.67	.37	
19. share with other children	.64		
28. cooperate with others	.63	.39	
25. accept another choice when his/her first choice...	.57	.32	
37. play well with others	.53	.33	.31
33. choose to do a task that was hard...		.70	
10. try different ways to solve a problem	.38	.66	
31. make decisions for himself/herself		.65	
7. keep trying when unsuccessful (show persistence)		.64	
13. try or ask to try new things or activities		.63	
5. show confidence in his/her abilities...		.62	.33
23. show an interest in learning new things		.58	.39
38. remember important information		.57	
15. start or organize play with other children	.32	.53	
14. show affection for familiar adults			.70
24. trust familiar adults and believe what they say			.67
11. seem happy or excited to see his/her parent...			.60
17. ask adults to play with or read to him/her			.57
1. act in a way that made adults smile...			.57
34. look forward to activities at home or school...		.39	.56
32. appear happy when playing with others		.34	.54
26. seek help from children/adults when necessary		.36	.44
36. show a preference for a certain adult...			.36

**Note:** Only loadings of .30 and greater are shown.

**Table 2.7b****DECA-P2 Protective Factor Item Factor Analysis Using Varimax Rotation for Teacher Raters (N = 1,959).**

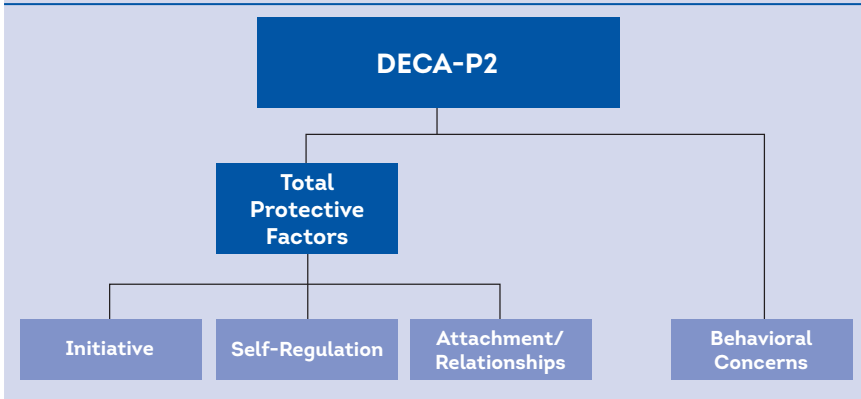
Teacher Raters	Self-Regulation	Initiative	Attachment/Relationships
3. control his/her anger	.82		
20. handle frustration well	.82		
16. show patience	.81		
25. accept another choice...	.76		
28. cooperate with others	.76	.30	
19. share with other children	.73	.30	
2. listen to or respect others	.73		
37. play well with others	.72		
29. calm himself/herself down	.69		
33. choose to do a task that was hard...		.75	
13. try or ask to try new things or activities		.75	
10. try different ways to solve a problem	.34	.73	
23. show an interest in learning new things		.72	.34
5. show confidence in his/her abilities...		.72	
38. remember important information		.69	
31. make decisions for himself/herself		.67	
7. keep trying when unsuccessful (show persistence)	.33	.67	
15. start or organize play with other children		.64	
14. show affection for familiar adults			.76
11. seem happy or excited to see his/her parent...			.64
17. ask adults to play with or read to him/her		.38	.60
1. act in a way that made adults smile...		.34	.57
36. show a preference for a certain adult...			.57
34. look forward to activities at home or school...		.49	.54
26. seek help from children/adults when necessary	.36		.54
24. trust familiar adults and believe what they say	.41	.35	.53
32. appear happy when playing with others	.42	.36	.50

**Note:** Only loadings of .30 and greater are shown.

The remaining 11 items that comprise the Behavioral Concerns scale were selected from the problem behavior items on the DECA-P2 standardization form based on both their psychometric properties (e.g., reliability and item total correlations) and their representation of a wide range of behaviors. The final scale structure of the DECA-P2 is shown in Figure 2.1.

**Figure 2.1**

**DECA-P2 Scale Structure**



## Norming Procedures

The first step in preparation of the norms was to determine if any trends existed in the data. We examined the DECA-P2 scale raw scores for age, rater, and gender differences. Table 2.8 presents the raw score means for the three

**Table 2.8**

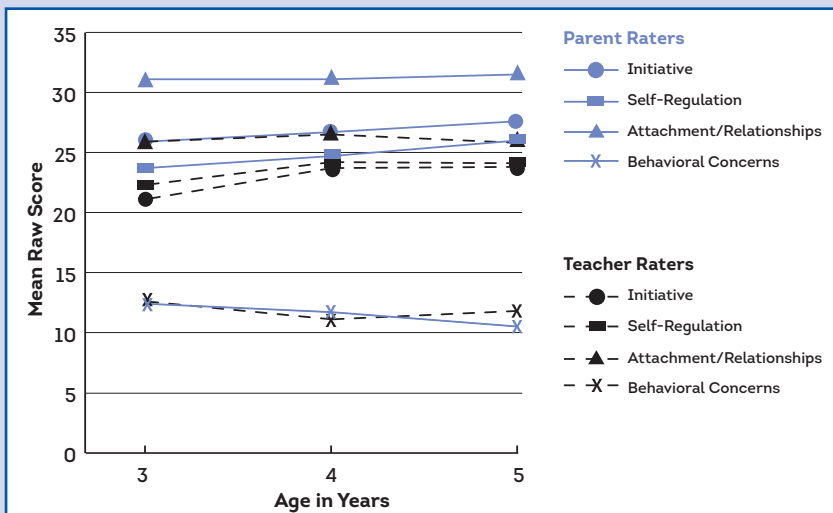
**Raw Score Means for DECA-P2 Scales by Age and Rater**

Parent Raters		Age in Years		
		3	4	5
	Initiative	25.9	26.7	27.6
	Self-Regulation	23.7	24.8	26.0
	Attachment/Relationships	31.1	31.1	31.5
	Behavioral Concerns	12.4	11.7	10.5
Teacher Raters				
	Initiative	21.1	23.7	23.8
	Self-Regulation	22.3	24.2	24.1
	Attachment/Relationships	25.9	26.5	25.8
	Behavioral Concerns	12.6	11.1	11.8

DECA-P2 protective factor scales and the Behavioral Concerns scale by age. These data are also presented in Figure 2.2. The Total Protective Factors scale is not included in this analysis because it is a derived scale based on the sum of the *T*-scores of the three protective factor scales. It is apparent that there is only minor variability across age in these means, indicating an absence of age trends across the 3- through 5-year-old age range; therefore, we constructed the norms for all ages combined.

**Figure 2.2**

**Age Trends for the DECA-P2 Scales**



We also examined the raw score means and standard deviations of the three protective factor scales and Behavioral Concerns scale for rater differences. Although parent and teacher ratings did not differ on the Behavioral Concerns scale, there were significant differences on the three protective factor scales. (See Table 2.9.) The effect sizes (*d*-ratios) for the protective factor scale raw score mean differences were negligible (0.19) for Initiative, medium (0.63) for Self-Regulation, and large (1.08) for Attachment/Relationships. Consequently, we prepared separate norms for parents and teachers. This is to be expected, as behavior often differs across environments and in the presence of different adults.

**Table 2.9****Raw Score Means, Standard Deviations, and Sample Sizes by Scale and Rater**

Scale	Parents			Teachers			Significance	(d-ratio)
	Mean	SD	N	Mean	SD	N		
Initiative	26.7	5.3	1,362	23.0	6.3	2,056	*	0.63
Self-Regulation	24.8	5.3	1,346	23.7	6.4	2,045	*	0.19
Attachment/ Relationships	31.2	3.8	1,362	26.2	5.1	2,077	*	1.08
Behavioral Concerns	11.6	5.5	1,334	11.7	7.1	2,038		-0.01

\* $p < .01$ 

Mean-score differences also indicated gender differences, which reflect real disparities in how boys and girls behave. Table 2.10 presents the  $T$ -score means, standard deviations, and sample size by scale and by rater for boys and girls. On the protective factor scales, for both parent and teacher raters, the mean-scale  $T$ -scores for girls are consistently two to five points higher than those for boys. Similarly, on the Behavioral Concerns scale, the girls received scores three to five points lower than the boys. To evaluate the practical significance of these mean-scale  $T$ -score differences, we calculated  $d$ -ratios, a

**Table 2.10** **$T$ -Score Means, Standard Deviations, and Sample Sizes for DECA-P2 Scales by Gender**

Parent Raters	Males			Females			$F$	Male/ Female ( $d$ -ratio)
	Mean	SD	N	Mean	SD	N		
Initiative	49.0	10.1	674	51.1	9.5	688	14.6*	-0.21
Self-Regulation	48.5	9.8	660	51.2	9.7	686	26.5*	-0.28
Attachment/Relationships	49.1	9.9	673	50.7	9.8	689	9.4*	-0.17
Total Protective Factors	48.8	9.9	618	51.1	9.8	654	17.3*	-0.23
Behavioral Concerns	51.3	10.2	663	48.7	9.9	671	21.6*	0.25
Teacher Raters								
Initiative	48.2	9.9	1,093	51.8	9.5	963	71.6*	-0.37
Self-Regulation	47.7	10.0	1,086	52.6	9.3	959	131.0*	-0.51
Attachment/Relationships	48.4	10.0	1,102	51.7	9.5	975	57.7*	-0.33
Total Protective Factors	47.9	10.0	1,036	52.4	9.3	923	104.0*	-0.46
Behavioral Concerns	52.4	10.3	1,084	47.3	9.2	954	138.6*	0.52

\* $p < .01$

measure of effect size, which are presented in Table 2.10. All of the *d*-ratios presented in Table 2.10 would be classified as small, except for Attachment/Relationships for parent raters, which is negligible, and Self-Regulation and Behavioral Concerns for teacher raters, which just exceeded the minimum value for a moderate effect size. The data in this table indicate that, as a group, girls consistently show more behaviors related to social and emotional competence and fewer behavioral concerns than boys, but the magnitude of this difference is small.

Girls in the DECA-P2 standardization sample earned higher scores than boys on each protective factor scale. In order to preserve these important differences in social–emotional competencies, we constructed the raw-score-to-*T*-score norms-conversion tables based on both genders. Consequently, it can be expected that girls will, on average, earn higher scores on the DECA-P2 than boys. This reflects the natural differences between the genders and establishes a single set of social and emotional competency expectations that applies equally to both genders.

After determining that norms would be constructed by rater, we examined the distributions of raw scores for normality. The cumulative frequency distributions for the scales all approached normality, but they were slightly positively skewed. For this reason, we decided to compute norms 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. We eliminated minor irregularities in raw-score-to-standard-score progressions by smoothing, and we followed these procedures for all the scales. Separate norms were created for parents and teachers on all scales. For the three protective factor scales and the Behavioral Concerns scale, we computed standard scores (*T*-scores with a mean of 50 and a standard deviation of 10) based on percentile score distributions. We based the Total Protective Factors *T*-score on the percentile distribution of the sum of the three protective factor scale *T*-scores for each case. We selected the *T*-score metric because of its familiarity to professionals and because it facilitates interpretation of the results and comparison to scores obtained from other, similar scales.

The final results of norming are provided in Tables 2.11 and 2.12. The first table shows the *T*-score means, standard deviations, and sample sizes for teacher and parent raters for all the scales. These values are very close to the intended mean of 50 and standard deviation of 10. The second table shows the intercorrelations of the protective factor and Behavioral Concerns scales. These results illustrate that the DECA-P2 scale correlations are all significant and that the value of these scale intercorrelations can be described as moderate in size.

**Table 2.11**

***T*-Score Means, Standard Deviations, and Sample Sizes for DECA-P2 Scales by Rater**

	Parent Raters			Teacher Raters		
	Mean	SD	<i>N</i>	Mean	SD	<i>N</i>
Initiative	50.1	9.9	1,362	49.9	9.9	2,056
Self-Regulation	49.9	9.9	1,346	50.0	10.0	2,045
Attachment/Relationships	49.9	9.9	1,362	49.9	9.9	2,077
Total Protective Factors	50.0	10.1	1,334	50.0	10.1	2,038
Behavioral Concerns	50.0	10.0	1,272	50.0	9.9	1,959

**Table 2.12**

**Pearson Correlations of DECA-P2 Scales for Teacher (Above Diagonal) and Parent (Below Diagonal) Raters for the Standardization Sample (*N* = 2,038 and 1,334, respectively)**

	Self-Regulation	Initiative	Attachment/Relationships	Behavioral Concerns
Self-Regulation		.626*	.561*	-.751*
Initiative	.688*		.682*	-.449*
Attachment/Relationships	.530*	.641*		-.399*
Behavioral Concerns	-.625*	-.443*	-.282*	

\**p* < .01



The scale development and norming process resulted in a rating scale that is easy to use because it has only one form and only two sets of norms. The final scales and norms have two distinctive characteristics that differentiate the DECA-P2 from many other similar rating scales. First, the same set of items and scales is used for both parent and teacher raters. This enables the direct and meaningful comparison of ratings on the same child by these two groups of raters. More information about comparing scores obtained by different raters is presented in Chapter 5 of this manual. Second, whereas many rating scales provide different norms for boys and girls, the DECA-P2 combines both genders in the same norms tables. As explained above, this ensures that the DECA-P2 scores reflect the real differences in the social and emotional competencies and behavioral concerns of young children. Both features enhance the use of the DECA-P2.