An Investigation of the Language Skills of Students With Emotional Disturbance Served in Public School Settings

J. Ron Nelson, *University of Nebraska–Lincoln*
Gregory J. Benner, *University of Washington–Tacoma*
Douglas Cheney, *University of Washington–Seattle*

The purpose of this cross-sectional study, conducted with a random sample of 166 students with emotional disturbance (ED), was to establish, with attention to age and gender differences, the extent to which students with ED served in public school settings experience language skill deficits. This study also examined particular types of problem behaviors related to language skills. Students with ED showed moderate to large language deficits, which appeared to be more pronounced in the expressive language domain. The language deficits of a majority of the students were clinically significant. These language deficits appeared to be relatively stable across age and gender. Furthermore, externalizing behaviors were related to receptive and expressive language skills, whereas internalizing ones were not.

Successful language acquisition is critical for achieving positive social adjustment (e.g., Benner, Nelson, & Epstein, 2002; Kaiser, Hancock, Cai, Foster, & Hester, 2000). Competent language skills are also prerequisites for successful academic learning in all areas, including reading, math, written expression, and content areas such as science and social studies (Baker & Cantwell, 1987). It is hypothesized that both language problems and emotional disturbance (ED) may emerge from the same etiological or environmental factors, such as parent–child interactions (Benner, Nelson, & Epstein, 2002; Kaiser & Hester, 1997; Kaiser et al., 2000). Furthermore, delays in language may worsen ED or vice versa. Although a plethora of research has been conducted with children and adolescents with ED served in clinical settings, only three research studies have been conducted with students with ED served in public school settings (Benner, Nelson, & Epstein, 2002). Thus, this study investigated the language skills of students with ED served in public school settings.

Previous research conducted on children and adolescents served in clinical settings has established the co-occurrence between language deficits and a wide range of problem behaviors (e.g., juvenile delinquency, antisocial behaviors, attention-deficit disorders; Benner, Nelson, & Epstein, 2002). Briefly, children with language deficits are 10 times more likely to exhibit antisocial behaviors than those in the general population (Donahue, Cole, & Hartas, 1994; Warr-Leeper, Wright, & Mack, 1994). The psychopathological problems of children with language deficits tend also to increase as the children age (Baker & Cantwell, 1985). Furthermore, children with pure language deficits (i.e., receptive, expressive, pragmatic) appear to be at higher risk for antisocial behaviors than those with speech disorders or speech-and-language disorders (Prizant et al., 1990; Rutter & Mawhood, 1991; Toppelberg & Shapiro, 2000). The likelihood of children exhibiting antisocial behaviors tends to be higher for those with pure receptive language deficits (Baker & Cantwell, 1985; Cohen, Davine, Horodezsky, Lipsett, & Isaacson, 1993).

A recent review synthesized the literature on the language skills of children formally identified as having ED (i.e., children who met special education or psychological criteria for ED; Benner, Nelson, et al., 2002). This review revealed three primary gaps in the literature on language skills of children and adolescents with ED. First, only three studies have been conducted to date on the language skills of students with ED served in public school settings (i.e., Camarata, Hughes, & Ruhl, 1988; McDonough, 1989; Miniutti, 1991). Furthermore, researchers used small convenience samples (n = 87) composed only of elementary-age children (8–10 years old). Second, researchers generally used a range of cutoff criteria (e.g., 1 standard deviation discrepancy from the mean) to establish the co-occurrence of language deficits and a range of problem behaviors including ED. Differences in the cutoff criteria used by researchers to establish a language deficit resulted in a high degree of variability in estimates of the percentages (i.e., 25%–95%) of children with ED who had language deficits. Finally, it appears that researchers have not investigated the particular types of problem behaviors (i.e., externalizing, internalizing) exhibited by students with ED

Address: J. Ron Nelson, Center for At-Risk Children's Services, 202 Barkley Center, Lincoln, NE 68583-0732

that are related to language deficits. The failure of researchers to investigate the types of problem behaviors that are related to language deficits is most likely a function of the common use of psychiatric classification systems in clinical settings. Such categorical classification systems make it difficult to identify types of problem behaviors related to language deficits.

This cross-sectional study of the receptive and expressive language skills of students with ED served in public school settings addresses these three identified gaps. First, we sampled randomly from students with ED served in public school settings across Grades K–12. Sampling randomly across the grades provides a more complete picture of the language skills of students with ED. Second, we used mean standardized scores from an individually administered measure of receptive and expressive language skills. The use of mean standardized scores rather than cutoff scores provides a more accurate estimate of the receptive and expressive language skills of students with ED. Finally, we used a dimensional classification to examine the particular types of problem behaviors that are related to receptive and expressive language skills. In contrast to psychiatric classification systems, dimensional ones are designed to measure the degree to which students exhibit particular behavioral syndromes or patterns on a continuum. Dimensional classification systems assume that a number of behavioral traits exist and that all children possess these traits to some degree (Mash & Wolfe, 1999). In the present study, we used the *Teacher Report Form* (TRF; Achenbach, 1991) to determine the particular types of problem behaviors that are related to receptive and expressive language skills. The TRF is one of the rating scales most commonly used by schools and in research conducted with students with ED (Mattison, 2001).

Based on previous research conducted with children and adolescents with ED served in clinical and school settings (cf. Baker & Cantwell, 1985; Benner, Nelson, et al., 2002; Donahue et al., 1994; Gallagher, 1999; Prizant et al., 1990; Rutter & Mawhood, 1991; Toppelberg & Shapiro, 2000, for reviews of the literature), we expected the following four outcomes. First, we expected that our sample of students with ED would experience moderate to large receptive and expressive language deficits relative to the norm. Second, we expected the students' language skill deficits to be relatively stable across the years because schools typically do not attempt to remediate these deficits. Third, given the pervasive nature of ED, we expected that boys and girls would experience similar language skill deficits. Finally, although it appears that researchers have not studied the particular types of problem behaviors related to language skills, we expected that externalizing ones would be more strongly related to language skills than internalizing ones. We expected this because previous research has revealed that externalizing behaviors are related to academic achievement but internalizing ones are not (e.g., Nelson, Benner, Lane, & Smith, 2004).

Method

Participants

One hundred sixty-six students (136 boys and 30 girls, K–12) receiving special education services for ED in a medium-sized urban school district in the Midwest served as participants in the present study. The district is a relatively high achieving one with above-average mean standardized test (*Metropolitan Achievement Test;* MAT9) scores at the third and eighth grades (e.g., third-grade reading NCE = 75). Approximately 65% of the students with ED receiving special education services were eligible for free or reduced-price lunch. The 166 participating students were part of 260 students (20 each from kindergarten through Grade 12) who were randomly selected from all of the students receiving special education services for ED. These students were formally classified with ED under federal and state special education criteria. Project staff contacted the parents or guardians of the initial pool of students to explain the purposes of the study and, if applicable, obtain informed consent and child assent to participate in the project. Approximately 64% of the parents or guardians allowed their children to participate in the present study. One hundred percent of these children assented to participate. This resulted in an initial pool of 166 students.

The mean age, age of onset (age when formally diagnosed with ED), hours of special education services per day, and mean full-scale IQ score overall and for four grade-level groups are presented in Table 1. One hundred forty-one (84%) of the participants were European American, 20 (12%) were African American, 3 (2%) were Latino, and 3 (2%) were Native American. Ethnicity was not considered in subsequent analyses because of the limited numbers of students. The ethnic makeup of our sample was generally consistent with the total population of students with ED served by the school district, but underrepresentative of African American and Hispanic/Latino groups nationally. Furthermore, the ratio of boys to girls in the sample is consistent with the total population of students with ED served nationally (Kauffman, 2001).

Approximately 50% of students met the recommended borderline or clinical cut scores on the broadband TRF Total scale. This percentage falls within the range reported in previous research conducted with students with ED served in public school settings (e.g., Nelson, Babyak, Gonzalez, & Benner, 2003). Twice as many students scored in the recommended borderline or clinical range on the broadband Externalizing scale (50%) as on the Internalizing one (21%). This is consistent with previous investigations indicating that students with ED are more likely to be characterized by significant externalizing behaviors when rated by teachers (i.e., McKinney & Forman, 1982) and caregivers (i.e., Epstein, Kutash, & Duchnowski, 1998). Overall, the students participating in the present study appear to be relatively representative in terms of severity of problem behaviors of the population of children

TABLE 1. Characteristics of Participants by Grade-Level Group

Characteristic	Grade-level group				Total sample[e]
	K–3[a]	4–6[b]	7–9[c]	10–12[d]	
Boys (%)	84	80	83	79	82
Age (yrs.)	7.75 (1.18)	10.97 (0.86)	14.23 (1.02)	17.12 (1.20)	11.72 (3.67)
Age of onset of ED	5.79 (1.60)	7.78 (1.61)	9.82 (2.49)	11.31 (3.38)	8.24 (3.05)
Hrs./day special education	1.17 (1.91)	0.99 (1.04)	1.67 (1.44)	1.72 (1.40)	1.34 (1.29)
Full-scale IQ score	93.79 (14.66)	100.50 (13.77)	94.78 (15.28)	99.15 (18.37)	96.40 (15.14)

Note. Values in parentheses represent standard deviations.
[a]$n = 57$. [b]$n = 39$. [c]$n = 42$. [d]$n = 28$. [e]$n = 166$.

and youth with ED served in public school settings. The participating students, however, appear to be underrepresentative in terms of ethnicity and overrepresentative in relation to low socioeconomic status.

Research Design

A cross-sectional research design (Martella, Nelson, & Marchand-Martella, 1999) was used to collect information on the 166 randomly selected participants within a 4-month time span (February through May).

Dependent Measures

Three categories of dependent measures were collected: social adjustment, language, and student record search to collect information on ethnicity, hours of special education per day, age of onset, and IQ. The social adjustment measure was completed by each student's primary teacher. The language measure was administered by six trained data collectors. The data collectors also conducted the student record search. A description of the dependent measures follows.

Social Adjustment. The *Child Behavior Checklist: Teacher Report Form* (TRF; Achenbach, 1991) was used to measure the social adjustment of participants. The TRF consists of 118 problem items such as "difficulty following directions," "disturbs other pupils," and "disrupts class discipline." The teacher rates the child on each item, indicating the severity of the problem on a 3-point Likert-type scale ranging from 0 (*no problem*) to 2 (*severe problem*). The TRF scoring profile provides a total scale score (Total Problems), two broadband scale scores (Internalizing and Externalizing), and eight narrowband subscale scores (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior). The broadband Internalizing scale score is based on the sum of the Withdrawn, Somatic Complaints, and Anxious/Depressed scale scores. The broadband Externalizing scale score is based on the Delinquent Behavior and Aggressive Behavior scale scores. The narrowband Social Problems, Thought Problems, and Attention Problems scale scores are not included on either the broadband Internalizing or Externalizing scale scores. The TRF test–retest and internal consistency values for the broad- and narrowband scales were .62 to .96 and .72 to .95, respectively (Achenbach, 1991). The TRF broad- and narrowband scales displayed reasonably strong internal consistency with the study participants, with Cronbach alphas ranging from .65 to .92.

Language. The core subtests of *Clinical Evaluation of Language Fundamentals–Third Edition* (CELF-III; Semel, Wiig, & Secord, 1995) were used to measure form- and content-related language skills. The CELF-III core subtests include sentence structure, word structure, concepts and directions, formulated sentences, word classes, recalling sentences, sentence assembly, and semantic relationships. The CELF-III scoring profile provides a total scale score (Total Language), two primary scale scores (Receptive and Expressive), and six subtest scores (three each compose the Receptive and Expressive primary scale scores). The six subtests used to compute the Total, Receptive, and Expressive scale scores differ with age. The three Receptive (Sentence Structure, Concepts and Directions, and Word Classes) and Expressive (Word Structure, Formulated Sentences, and Recalling Sentences) subtests for students 6 to 8 years differ from the Receptive (Concepts and Directions, Word Classes, and Semantic Relationships) and Expressive (Formulated Sentences, Recalling Sentences, and Sentence

TABLE 2. Mean Language Scores of Participants by Grade-Level Group and Overall Sample

CELF-III Subscale	Grade-level group				Total sample[e]
	K–3[a]	4–6[b]	7–9[c]	10–12[d]	
Total Language	84.95 (15.96)	86.08 (16.24)	82.92 (14.90)	81.39 (17.55)	84.13 (16.01)
Receptive Language	87.67 (16.02)	92.54 (17.91)	87.74 (19.54)	86.25 (20.34)	88.61 (18.10)
Expressive Language	84.26 (16.47)	81.59 (15.63)	80.62 (12.79)	78.61 (17.04)	81.78 (15.56)

Note. CELF-III = *Clinical Evaluation of Language Fundamentals–Third Edition* (Semel et al., 1995). The values in parentheses represent standard deviations.
[a]$n = 57$. [b]$n = 39$. [c]$n = 42$. [d]$n = 28$. [e]$n = 166$.

Assembly) subtests for students 9 years and older. Regardless of age, the Receptive and Expressive scale scores are based on the sum of the three respective subtest scores. The Total Language scale score is based on the sum of the six Receptive and Expressive scale scores.

Student Records. The school records of each participant were searched to collect information on their ethnicity, hours of special education services per day, age of onset, and mean Full Scale, Verbal, and Performance IQ. The *Wechsler Intelligence Scale for Children, Third Edition* (WISC-III; Wechsler, 1991) was used for a majority of the students.

Results

Language Skill Deficits

The mean CELF-III Total Language, Receptive, and Expressive scale scores overall and by grade-level group (K–3, 4–6, 7–9, 10–12) are presented in Table 2. The percentages of students who scored below the mean of the norm group on the Total Language, Receptive, and Expressive scales were 85%, 77%, and 89%, respectively. A similar pattern was generally found across the grade-level groups. The percentage of students experiencing clinical language deficits was 68%. Clinical language deficits were determined in two ways, as outlined by authors of the CELF-III: (a) if scale scores (i.e., Total, Expressive, or Receptive) fell at least 1 standard deviation below the mean (i.e., standard score criteria), or (b) if the difference between expressive and receptive language scores was greater than or equal to 23 (i.e., discrepancy criteria).

An ANOVA was computed to determine whether there were statistically significant differences in the total language scores of students with ED across the grade-level groups. No statistically significant difference was found for grade, $F(3, 163) = .584$, $p > .05$. The students' CELF-III Receptive and Expressive subtest language scores were analyzed in a Grade (K–3, 4–6, 7–9, 10–12) × Language Type (Receptive, Expressive) ANOVA, with Language Type being a within-subject factor, to determine if there were statistically significant differences in the receptive and expressive language skills of students with ED. A statistically significant main effect for Language Type was obtained: $F(1, 158) = 4.59$, $p < .001$. There were no other significant main or interaction effects. Taken together, these findings indicate that students with ED are more likely to evidence expressive language deficits than receptive language deficits.

TABLE 3. Mean Language Scores of Boys and Girls

CELF-III subscale	Boys[a]	Girls[b]	*t*(59)
Total Language	84.74 (16.29)	86.13 (16.21)	0.41
Receptive Language	89.16 (17.50)	86.13 (16.21)	0.25
Expressive Language	82.39 (15.89)	79.06 (13.91)	0.28

Note. CELF-III = *Clinical Evaluation of Language Fundamentals–Third Edition* (Semel et al., 1995). The values in parentheses represent standard deviations.
[a]$n = 30$.

Gender Differences

A matched sample (grade, age [± 6 months], TRF Total Problem Behaviors [± 1 standard error of measurement], and mean IQ [± 1 standard error of measurement]) of 30 boys was selected randomly from the male participants for comparative analysis with the 30 girls on the CELF-III Total, Receptive, and Expressive clusters. Independent-samples *t* tests were computed to determine if there were statistically significant differences in the total, receptive, and expressive scores of boys and girls. The means and associated standard deviations as well as the resulting *t* values for boys and girls are presented in Table 3. There were no statistically significant differences.

TABLE 4. Regression Analyses for Externalizing and Internalizing Behaviors

Construct	Initial entry				Entry in last position		
	df	Simple *R*	*F*	*p*	R^2 increment	*F* change	*p*
CELF-III Total Language subscale							
Age of onset	1	.01	0.01	.909			
Externalizing	4	.31	4.01	.004	.12	6.58	.000
Internalizing	9	.12	0.39	.887	.04	1.22	.305
CELF-III Expressive Language subscale							
Age of onset	1	.07	0.77	.988			
Externalizing	4	.30	3.81	.006	.09	5.01	.002
Internalizing	9	.14	0.47	.832	.02	0.65	.659
CELF-III Receptive Language subscale							
Age of onset	1	.05	0.34	.560			
Externalizing	4	.28	3.17	.016	.10	5.73	.001
Internalizing	9	.14	0.53	.788	.05	1.55	.178

Note. CELF-III = *Clinical Evaluation of Language Fundamentals–Third Edition* (Semel et al., 1995).

Problem Behaviors Related to Language Skills

Multiple regression analyses were used to assess the contribution of externalizing and internalizing problem behaviors to the prediction of receptive, expressive, and total language skills. We controlled for any variation due to age of onset before entering two sets of constructs into the regression formula (i.e., externalizing behavior, internalizing behavior). Regression diagnostics were conducted prior to conducting these analyses to screen data for deviant cases that may be extreme outliers or have undue influence on the results (Pedhazur, 1999). Influential cases have a significant effect on values of regression statistics either uniquely or in combination with other observations. To detect influential cases, the following regression diagnostics were examined: (a) leverage (detects cases that affect the regression line), (b) Cook's *D* (detects cases that are influential because of their values on Y, X, or both), and (c) Standardized DFBETA (detects cases that affect the regression coefficient). The results of the regression diagnostics indicated that there were no deviant cases or outliers that would unduly influence the results of the regression analyses. In addition, collinearity diagnostics indicated that the predictive variables were not a linear combination of one another. The obtained condition index in all cases was less than 10. A condition index of 30 to 100 indicates moderate to strong collinearity (Fox, 1991).

The target variables for the regression analyses were the CELF-III Total Language, Expressive, and Receptive Language scale scores. The same two constructs were entered into each of the regression analyses. These constructs included (a) externalizing behavior (i.e., TRF Delinquent, Aggressive, Attention Problems narrowbands) and (b) internalizing (i.e., TRF Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems narrowbands). Each of these constructs was entered in the first position (after age of onset) as well as the last position in the regression analysis. This enabled us to establish the initial contribution of the externalizing and internalizing constructs when the other predictors were not present (i.e., first position) and the final contribution of each construct after the other one was entered into the equation (i.e., final position). Entry in the final position allowed us to examine which of the externalizing and internalizing constructs contributed to the prediction of receptive, expressive, and total language skills above and beyond the contribution of the other construct. These analyses also provided information on the combined contribution of the externalizing and internalizing constructs to the prediction of receptive, expressive, and total language skills.

In all cases, the probability of *F* to enter was less than .05, and to remove, greater than .10. When all variables were entered into the regression formula, 13%, 11%, and 12% of the variance in the total, expressive, and receptive language skills of students was accounted for (see Table 4). Only the externalizing construct contributed to the overall fit of the model when entered in the first (following age of onset) or the last position in the regression analyses for total, expressive, and receptive language skills. The TRF Aggression, Delinquent, and Attention Problem scores contributed to the prediction of total, expressive, and receptive language skills. The *t* test for the beta weight for this measure was statistically significant when the externalizing construct was in either the initial ($p <$

.05) or final ($p < .01$) position. Thus, overall, students with ED who exhibited externalizing problem behaviors (i.e., aggression, delinquency, or attention problems) were more likely to experience language deficits (i.e., total, expressive, or receptive) than students who evidenced internalizing ones (i.e., withdrawn, somatic complaints, anxious/depressed, social problems, or thought problems).

Discussion

There is substantial evidence that ED (and other forms of antisocial behaviors) and language deficits are likely to co-occur (e.g., Baker & Cantwell, 1985; Benner, Nelson & Epstein, 2002; Rutter & Mawhood, 1991). Researchers, however, have failed to study extensively the language skills of children with ED served in public school settings. The purpose of this study was to establish the extent to which students with ED served in public school settings experience language skill deficits, with attention to age and gender differences, and to examine the particular types of problem behaviors related to language skills.

There are several findings we would like to highlight. The first centers on the degree to which students with ED experience language deficits. As expected for the sample as a whole, students with ED (both boys and girls) experienced large expressive and receptive deficits relative to those of the norm group. We found that 68% of the sample met CELF-III standard score or discrepancy criteria for a language deficit. Confidence in our findings is increased because the sample was drawn from a relatively high performing school district and because we used standardized scores from an individually administered measure of language fundamentals to estimate students' expressive and receptive language skills. The findings of our study generally corroborate previous studies, which have demonstrated that the majority of students with ED served in public school settings have language deficits (Camarata et al., 1988; McDonough, 1989; Miniutti, 1991). Our findings, however, suggest that reports that nearly 9 out of 10 children with ED have overall or expressive and receptive language deficits may be overestimates. We estimate that two thirds of students with ED experience overall or clinically significant expressive and receptive language deficits. In addition, our findings (albeit tentative) that boys and girls with ED appear to experience similar expressive and receptive language deficits provide a supplement to our knowledge of the language skills of students with ED.

The second finding focuses on the stability of language skills of students with ED served in public school settings. Students, on average, evidenced large expressive and receptive deficits across the school years. This finding suggests that the language deficits of students with ED served in public school settings are relatively stable over time, and it supports previous research conducted with children with ED served in clinical settings (e.g., Baker & Cantwell, 1987; Beitchman et al., 2001). For example, Beitchman and colleagues (2001) followed a sample ($n = 301$) of children with speech and language disorders over 14 years. The language skills of children with speech and language disorders remained relatively stable over the 14-year period. Just as antisocial behavior patterns are stable and resistant to the current social development practices of schools (Kazdin, 1993; Walker & Severson, 2002), it appears that the language deficits of students with ED also may be stable and resistant to the current language development efforts of schools. This is not to imply that students' language deficits are solely a function of their ED. Rather, they are likely a function of the complex interaction between the presenting problems associated with students' ED (e.g., noncompliance, inattention) and the social and language development practices provided to them. The recognition of language difficulties in public school children with ED is often eclipsed by the pressing challenge of managing the behavior of these students in the classroom (Warr-Leeper et al., 1994).

The third finding centers on differences in the receptive and expressive language skills of students with ED served in public school settings. The findings from the present study suggest that such students are more likely to evidence expressive language deficits than receptive ones. This finding is consistent with previous research conducted with children with ED served in school settings (Camarata et al., 1988), but is in contrast to research conducted with children served in clinical settings. These children are more likely to evidence receptive language deficits than expressive ones (Cantwell & Baker, 1991; Cohen et al., 1993). For example, Cohen and colleagues (1993) examined the co-occurrence of ED and receptive and expressive language deficits in a sample of 399 elementary-age children (293 boys and 106 girls) served in clinical settings. Approximately 42% and 29% of the children evidenced receptive and expressive language deficits, respectively. A body of research has indicated that expressive language disorders are a risk factor for, and an associated comorbid feature of, externalizing ED (American Psychiatric Association, 2000; Walker, Ramsey, & Gresham, 2004). In this context, the finding that students with ED in schools evidence expressive language deficits more than receptive ones could be due to the fact that students with ED are likely to be characterized by significant externalizing behaviors when rated by teachers using instruments such as the TRF (McKinney & Forman, 1982). Furthermore, a large majority of these students qualify for special education services for ED because of the severity and frequency of their externalizing behaviors (Kauffman, 2001).

The final finding that we would like to highlight focuses on the contribution of externalizing and internalizing problem behaviors to the prediction of the language skills of students with ED served in public school settings. The results of the present study indicate that students with ED who exhibit externalizing problem behaviors were more likely to experience form- and content-related language deficits than students who evidenced internalizing ones. This finding corroborates the results of a plethora of causal-comparative studies (e.g., Cantwell & Baker, 1987) and epidemiological studies (e.g., Steven-

son & Richman, 1978) that suggest that there is a relationship between ED and language skills. Researchers to date have not examined the strength and nature of the relationship between the social adjustment and language skills of students with ED (Benner, Nelson, & Epstein, 2002). Taken together, previous research and the findings from the present study suggest not only that ED and language deficits co-occur at a relatively high rate but also that the externalizing problem behaviors of students with ED are related to language skills. Patterson's (1982) microsocial coercive family process model offers one causal pathway for the development of language disorder and externalizing ED. Patterson indicated that parents attempt to use aggressive and coercive tactics to control their child's behavior. The child then learns that behaviors such as arguing, escalation, confrontation, aggression, and noncompliance often lead to escape from undesirable tasks and serve as the modus operandi for interpersonal communication. Researchers have found that children reared in such environments use less verbal communication and more direct physical actions to solve interpersonal problems because of limited language skills (Gallagher, 1999; Walker et al., 2004). As a result, such children may misinterpret communications, become frustrated, and consequently develop chains of miscommunication and antisocial behavior patterns (American Psychiatric Association, 2000; Department of Health and Human Services, 1999).

Given these findings, future research is needed to clarify the strength and nature of the relationship between ED and language deficits, particularly in the area of social communication (i.e., pragmatic language skills). This would require three categories of investigations. One category should be correlational in nature and focus on identifying predictor and moderator variables (e.g., information processing, memory, socioeconomic status [SES]) of the relationship between ED and language deficits. The second category should be longitudinal in nature and center on examining whether ED emerges from language deficits or vice versa, as well as the extent to which the relationship between ED and language deficits is stable over time. The final category should be experimental in nature and focus on studying the nature of the relationship between language deficits and ED. Experimental studies could focus on testing two alternative hypotheses: (a) Language interventions cause improvements in the behavior of students with ED, and (b) behavioral interventions cause improvements in the language skills of students with ED.

Limitations

There are several limitations to the findings that should be noted. First, we did not assess the pragmatic language skills of students with ED. We chose a measure that focuses on the form and content of language (i.e., the CELF-III) as opposed to language use. Although the CELF-III is a technically adequate and widely used measure of form- and content-related language skills, the relative degree of relationship between language and social adjustment skills may vary with different language measures. Likewise, given that the social adjustment of students with ED was studied with only one dependent measure, replications are necessary using different measures of social adjustment. Second, the sample of children was drawn from one school district in one geographic location and may not be representative of the general population of public school students with ED. It is possible that the findings may not generalize to other (e.g., minority) groups of students or other geographical regions and schools. Future research should replicate these finding across varied contexts. Third, related to the first limitation, 36% of parents and guardians failed to consent to their child's participation in the study. Although we were unable to detect any differences in the characteristics between parents and guardians who provided consent and those who did not, it is unclear whether the sample was representative of the entire population of students with ED served by the school district. Fourth, researchers should identify and document the relationship among a wide range of learner and family characteristics. This information would lead to a more complete understanding of the variables that lead to both language deficits and ED. Fifth, our regression analyses did not examine the variables that influence the relationship between social adjustment and language skills. A more complete set of demographic, developmental, contextual, and biological variables may have revealed more about the factors that influence the language skills of students with ED. Future research is needed to identify the full range of variables that affect the language skills of students with ED.

Implications for Practice

With the above limitations in mind, the present study has several practical implications. It is clear that a relatively large number of children with ED served in public school settings evidence moderate to serious language deficits. Further, these deficits appear to be stable over time and across gender. Based on the findings of the present study, it makes sense to engage in proactive screening and identification of language deficits. This is important because language deficits may be obscured by the challenge of preventing and ameliorating the problem behaviors of children with ED. Identifying reliable and valid screening and assessment processes will require the involvement of speech–language pathologists. Involving speech–language pathologists in these activities may require new and innovative screening and assessment processes to identify young children at risk for both ED and language problems, given the case loads of these professionals. For example, a language screening process might be incorporated into the second stage of the *Systematic Screening for Behavior Disorders* (SSBD; Walker & Severson, 1990) to identify children at risk for ED and language deficits. The SSBD is a three-stage process that begins with teacher nominations and rank ordering of pupils meeting specific definitions of behavior difficulties. The second stage consists of teacher ratings of adaptive and maladaptive behavior patterns. Direct observations of

classroom and playground behavior are conducted in the final stage.

Educators should provide children with ED who evidence language deficits with effective language instruction. This instruction should include three important elements. The first element is the incorporation of effective instruction principles. Effective instruction is a necessity for children with behavior problems (U.S. Department of Education, 2001). Researchers of two meta-analyses of more than 800 studies concluded that interventions based on effective instruction principles produced the greatest gains in the academic performance of a range of low-performing students, especially those with ED. Effective instruction principles (e.g., Berliner & Rosenshine, 1976; Lloyd, Forness, & Kavale, 1998) include teacher-directed instruction, frequent low-level questions, teacher feedback, lessons with a scope and sequence, simple and conspicuous instructional strategies, mediated scaffolding, and judicious review of instructional material. The second element is that speech–language pathologists should be integrally involved in the design, planning, and delivery of language interventions. Surprisingly, there is limited research on the effects of collaborative efforts between speech–language pathologists and special education personnel to improve the language skills of students with ED (Hyter, Rogers-Adkinson, Self, Simmons, & Jantz, 2001). The final element is that language interventions should be prevention oriented. One such prevention-oriented intervention is Language for Learning (Engelmann & Osborn, 1999), an empirically validated language development program that can be delivered by both general and special education teachers. This program teaches syntactic, semantic, and pragmatic skills believed to be necessary for success in school. A recent experimental field test of Language for Learning across two elementary schools demonstrated that the program produced positive effects on the language skills of a sample of kindergarten children (Benner, Trout, et al., 2002).

Finally, professional development programs for special education teachers should incorporate courses and field experiences designed to enhance their knowledge and competencies in language assessment and intervention. Unfortunately, we believe that few, if any, professional development programs incorporate courses and field experiences designed to enable special education teachers to effectively address the language skills of children with ED. Incorporating such courses and field experiences may require the development of collaborative and integrative special education and communication disorders courses and field experiences.

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