

Critical Review: In preschool and school age children, is the presence of an internalizing emotional disorder associated with an increased risk of a co-morbid language disorder?

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This critical review examines the prevalence of language disorders in preschool and school age children who have internalizing emotional disorders. Study designs include: systematic review, cross-sectional design and case control study. Overall, research to date has demonstrated that there is an increased risk of language impairment in children who have emotional disorders. However, there is suggestive but insufficient literature to determine if there is an increased risk of language impairment in children with internalizing emotional disorders.

Introduction

It is estimated that 3-6% of school age children have emotional disorders (ED) (Rogers-Adkinson & Griffith, 1999). There are two types of these disorders; externalizing emotional disorders (EED) and internalizing emotional disorders (IED). In this review only IEDs will be examined as the author is interested in this population. An IED occurs when a child internalizes his/her emotional problems (Rogers-Adkinson & Griffith, 1999). Examples of IEDs include mood disorders, such as depression and bipolar disorder, as well as anxiety disorders like social phobia (i.e., a noticeable and persistent fear of doing something embarrassing in a social or performance situation) and separation anxiety (i.e., an extreme anxiety in any situation where the child is separated from the caregiver) (Im-Bolter & Cohen, 2007).

Research over the past 2 decades has pointed to a link between IED and language disorders/impairment (LI). It is important for speech-language pathologists, audiologists and other professionals to be aware of this link, as LI negatively affects a child's social, academic, emotional and behavioural life, both in the child's present and future (Im-Bolter & Cohen, 2007). For example, a child's LI affects him/her academically since language is the "medium of instruction" (p. 53, Benner, Nelson & Epstein, 2002) in the classroom. This is shown by the fact that elementary school children are required to learn by listening 60% of the time (Benner, Nelson & Epstein, 2002). Further, for children with IED, a diagnosis of LI is important as many of their psychiatric therapies are language-based, such as cognitive-behavioral therapy and social skills training (Im-Bolter, & Cohen, 2007).

Objectives

The primary objective of this paper was to critically evaluate the existing literature regarding the risk of LI in preschool and school-age children with IED. The secondary objective was to suggest an evidence-based clinical recommendation regarding the risk of LI in this population and to demonstrate the importance of providing language screening in this population.

Method

Search Strategy

The following computerized databases were searched: Medline, Proquest, PsychINFO and the Web of Science.

Key words used for the search included: (language disorder) AND [(emotional disorder) OR (psychiatric disorder)]

In addition, hand searching for relevant articles was performed using the references from the following resources:

- Cohen, 2001
- Im-Bolter, & Cohen, 2007
- Rescorla, Ross & McClure, 2007

Selection Criteria

Studies included in this critical review had to systematically study the co-morbidity of formally diagnosed LI (i.e., use standardized tests) and ED (i.e., diagnosed with ED according to special education or psychological criteria, such as the DSM-IV R) in children aged 4-13 years. Studies were excluded if they used qualitative research, did not describe their participants in any detail and/or had fairly small sample sizes (i.e., n<15).

Data Collection

Results of the literature search using the above selection criteria generated six articles; five which

examined LI in children with ED (LI articles) and one which studied ED in children with LI (ED articles). The five LI articles included a systematic review (1), cross-sectional designs (3) and a case control study (1). The one ED article was a case control study.

Results

LI Articles

Benner, Nelson, & Epstein (2002) completed a literature review to examine the language skills of children with ED. In this review, they searched 1) major computer databases, 2) previous reviews and references in the articles from 1) and 2). To be included in their review, the study had to be quantitative (i.e., experimental, causal/comparative or correlational research design) and the participants in the study had to be formally identified with ED (i.e., diagnosed with ED according to special education or psychological criteria). Twenty-six studies were reviewed and all employed a causal/comparative design. In the 26 studies, there were 2358 children with ED and 438 without ED. The reported mean age from the studies was 4-19 years old. Of these 26 studies, 18 examined the prevalence of LI in children with ED (LI studies) and 8 examined the prevalence of ED in children with LI (ED studies). These last 8 studies were therefore a validity check to the previous 18 studies. In the 18 LI studies, the definition of "LI" differed greatly. As for number of language tests used to identify LI, Benner, Nelson, & Epstein (2002) reported the following: 8 studies: 4+ tests; 5 studies: 2-3 tests and 5 studies: 1 test. All tests used were common standardized language tests. In addition, there were 2 different types of cutoff criteria used amongst the studies (i.e., the criteria to determine if LI was present). However, 7 of the 18 studies did not comment on the type of cut-off criteria used. The results from these 18 studies were that 71% of children with ED had LI (the average over the 18 studies). However, this prevalence rate was shown to change depending on the number of language measures used, the language cutoff criteria used and the placement of the participants (i.e. school vs. clinic setting). The prevalence rate may also have changed depending on the type of language measure used, but Benner, Nelson, & Epstein (2002) could not determine this, as the studies did not provide this information. Nevertheless, the prevalence rate remained no lower than 63% when only similar studies were used given the above factors (e.g., prevalence rate calculated only using studies examining participants in a school setting). Finally, the ED studies demonstrated that 57% of children with LI had ED (the average over the 8 studies). Again, this prevalence rate varied depending on factors, such as the placement of participants; however, it was never lower than 46%. Thus, Benner, Nelson, & Epstein (2002) stated that children with ED are "likely to have clinically significant language deficits" (p.51). In addition, the authors concluded that this finding was

supported by the fact that they found that children with LI are prone to have ED.

In Benner, Nelson, & Epstein's (2002) study there were some methodological flaws. The search strategy employed was clearly described, but could have been more comprehensive (e.g., use more databases, search for unpublished research or contact experts). Further, the examiners who searched and then excluded studies were not specified, and neither were the individuals who administered the language tests. In addition, the prevalence rates for the LI studies and the ED studies were averages over all the studies, thus giving equal weight to each study. No analyses were completed to determine if this equal weighting was valid such as finding reasonable homogeneity of findings across the individual studies. In addition, there were some variables that affected the validity of the findings that Benner, Nelson, & Epstein (2002) could not control for. These variables included the minimal information given about the characteristics of the participants in the 26 studies (e.g., SES, ethnicity), the limited settings the participants were from (i.e., mostly clinical settings vs. school settings), and being unable to determine the LI prevalence rate depending on the type of standardized language test used in the studies. Given these methodological weaknesses, especially the validity issue regarding how the prevalence rates for the LI studies were determined, this literature review was given a level 3/4 (importance=suggestive, validity=suggestive/equivocal) for evidence.

A cross-sectional design was used in the Nelson, Benner and Cheney (2005) study to determine "the extent to which students with ED served in public school settings experience language skill deficits" (p.97) and to examine the type of behaviors; IED or EED behaviors that are associated with language skills. The authors randomly selected 260 students; 20 from each grade, including kindergarten to grade 12, from all of the students with ED in a relatively high performing public school district in the Midwest USA. As their parents gave consent, 166 of these 260 students participated in the study. Nelson, Benner and Cheney (2005) stated that the gender and severity of problem behaviors of these participants was representative of children with ED in public school settings. However, the ethnicity of these participants was underrepresentative, while the lower SES was overrepresentative. Only form and content-related language skills were measured in the participants by having 6 trained data collectors administer the core subtests of the *Clinical Evaluation of Language Fundamentals-Third Edition (CELF-III)* and then determine a total scale score (Total Language). The results from this test demonstrated that 68% of the participants were found to have a clinically significant LI, according to the criteria given by the CELF-III authors. Nelson, Benner and Cheney (2005) therefore stated that a majority of children with ED in school settings have LI. They were confident in this finding, given that the school

district these children belonged to was high achieving. An ANOVA was also completed and demonstrated that the Total Language scores were not different between the grade-level groups (i.e., K-3, 4-6, 7-9, 10-12). The student's type of ED behaviors were determined by having his/her main teacher complete the *Child Behavior Checklist: Teacher Report Form* (TRF). Nelson, Benner and Cheney (2005) stated that the TRF is the rating scale that is most used by schools and in research of children with ED. The TRF uses Likert-type scale rating (3 point system) on 118 problem behaviours (e.g., "disrupts other pupils"). A total scale score (Total Problems) and 2 broadband scale scores (Internalizing and Externalizing- which are obtained by summing specific narrowband scale scores) were obtained. Multiple regression analyses were completed to determine if the specific narrowband scale scores for either the Internalizing or Externalizing Scale Score of the TRF could predict the Total Language Score. The age of onset of ED was also used in the regression analyses to control for this variable. The results demonstrated that only the narrowband scale scores for the Externalizing Scale Score contributed to the prediction of the Total Language Score. Thus, it was more likely for students who had EED behaviors to have a form and/or content-related LI than for students who had IED behaviors.

There were a few methodological weaknesses in the Nelson, Benner and Cheney (2005) study. For example, there was no discussion about excluding participants who could have diagnoses that may confound the LI (e.g., hearing loss, neuromotor impairment, etc.). In addition, although trained data collectors administered the CELF-III, what professional designation these collectors had was not stated nor was reliability of scoring addressed. Furthermore, there was one factor that affected the validity of the results that Nelson, Benner and Cheney (2005) could not control for. This factor was the 36% of the randomly selected children with ED who did not participate in the study. Thus, the sample of children used in this study may not have been completely representative of this school population of children with ED. Finally, the results of this study may not be generalizable to other students with ED, as it was representative of students with ED in one school district in one geographic area. Thus, for these reasons, along with the fact that this study had a fairly large sample size, the level of evidence for this study was level 3 (importance=compelling, validity=suggestive).

Cohen, Davine, Horodezky, Lipsett and Isaacson (1993) also used a cross-sectional design, but it was to determine the prevalence of unsuspected LI in child psychiatric outpatients. The sample in their study consisted of 399 children, aged 4-12 years who were consecutively referred to 3 mental health centers in Toronto. These centers accepted children from all SES backgrounds. Children were included in the study if they had an IQ of greater than or equal to 80 and did not have a neuromotor or neurosensory impairment or neurogenic

communication disorder. Children with autism and hearing loss were excluded. To measure language skills, a battery of standardized tests was given to each participant to measure form and content-related language. Participants were diagnosed as having a moderate or severe LI according to criteria selected by the authors. A participant was considered to have a previously identified LI (PILI) if the participant: (1) had a formal school or speech/language clinic assessment of language or a language-related learning disability and/or (2) was receiving language treatment in a special education class or (3) was currently being assessed for such a placement. A participant was designated as having an unsuspected LI (ULI), if his/her LI was diagnosed as a result of his/her performance on the standardized tests given in this study. In the sample, 111 children (28%) had a PILI. In the remaining 233 children, 99 children (34%) had an ULI. Thus, in this study, 53% of the children with a psychiatric disorder had a LI.

The final study by Cohen, Barwick, Horodezky, Vallance and Im (1998) used a cross-sectional design. The purpose of this study was to examine the language skills of children referred to psychiatric services. In this study, 380 children, aged 7-14 years, who were consecutively referred to 2 mental health centers in Toronto, were used as the participants. This study used the same inclusion and exclusion criteria as the Cohen et. al. study (1993) to obtain this sample, except that the participants had to have an IQ score of 85 or above. As in the Cohen et. al. (1993) study, participants' language skills were assessed by using a battery of standardized tests to evaluate form and content-related language; however, narrative skills and pragmatic areas were also assessed. The same designation criteria used in the Cohen et. al. (1993) study for determining ULI was used in this study. Thus, in this study the tests of narrative skill and pragmatics were not used in determining ULI. The designation criteria for PILI was slightly different in this study compared to the Cohen et. al. (1993) study. The Cohen et. al. (1993) study criteria was used, but to ensure that children in the special education class were receiving services for a language-related disorder and not a non-language learning disability or behavioral problem, the child's teacher completed a checklist about the reason(s) for the child's placement. Based on these criteria, 145 participants (38%) of the entire 380 participants had PILI. For the remaining 235 children, 97 children (41%) had an ULI. Therefore, 64% of the entire sample of children referred to psychiatric service had a LI. Thus, all of these results replicated the Cohen et. al. (1993) study results, by showing that a "sizable proportion of children" (p. 873) referred to psychiatric outpatient services have ULI.

As the critical appraisal of both of Cohen, et. al. studies (1993, 1998) are related, they will be discussed together. There were only two methodological flaws in the 1993 study, including the fact that the person who administered the standardized language tests was not

specified nor was the type of psychiatric disorders in the participants specified. These weaknesses were corrected in the 1998 study. Further, for both studies, the generalizability to other children referred to psychiatric services may be taken with caution, as these studies represented students in these services in one geographic area. Therefore, in the 1993 study, due to the small amount of weaknesses, the fairly large sample size, along with the fact that the sample may have included children who had a psychiatric diagnosis other than ED, the level of evidence was level 3

(importance=compelling /suggestive, validity=suggestive/equivocal). For the 1998 study, for similar reasons to the 1993 study, along with the fact that in the 1998 study the psychiatric diagnosis were determined and that this study replicated the 1993 study's finding, the level of evidence was level 3 and this study was given more weight than the 1993 study (importance=compelling, validity=suggestive).

As most other studies examining the ED-LI relationship focus on structural language, Helland and Heimann (2007) used a case control study to evaluate the prevalence of pragmatic language impairment (PLI) in children referred to psychiatric services. In this study, 50 children, aged 8-10 years, from a child psychiatric outpatient clinic were recruited. Of these 50 children, 21 participated in the study. This clinical group of 21 children included children who had developmental disorders, EDs, and children who were presently being evaluated for their psychiatric diagnosis. For the control group, 66 children were recruited who attended a primary school and were within the same age range as the clinical group. Of these 66 children, 29 participated. These control children had never been referred to psychiatric services. The Norwegian translation of the *Children's Communication Checklist* (CCC) was used to measure the participants' pragmatic language abilities. The CCC was developed for use by parents or professionals, and no training was needed to complete it. It examines pragmatic performance, speech and syntax and is divided into 9 subscales (A:speech, B:syntax, C:inappropriate initiation, D:coherence, E:stereotyped language, F:use of context, G:rapport, H:social relationships and I:interests). In each subscale, there are statements (e.g., "talks too much" for C:inappropriate initiation subscale) that the parent/professional has to rate on a Likeart-type scale (3 point system) or state that he/she is unable to judge that statement. The scores from subscales C-G are summed to produce the global pragmatic composite score (GPS). GPS scores below 140 were used as indicating a PLI, as this had been used in a previous study. However, it was noted that this cut-off also picks up abnormally low scores from typically developing children. The original 50 families contacted to be in the clinical group, were given a letter, along with the CCC, asking them to participate in the study. The 21 families in the actual clinical group completed and returned the CCC. Similarly, the 29 families in the actual

control group were the families of the original 66 families contacted, that completed and returned the CCC. The investigators scoring the completed CCCs were blinded to the identities of the participants. In the clinical group and control group, 4 children and 3 children respectively, had missing data (i.e., >20% checklist not filled in). Group differences were tested using the non-parametric Man Whitney U-test. The mean GPS between the clinical (138) and control (153) group was highly significant. In addition, 57% of children in the clinical group had a GPS below 140, while 10% of children in the control group had a GPS below this level. Thus, PLI was identified, according to the CCC, in 57% of clinical group compared to only 10% of the control group. Thus, Helland and Heimann (2007) stated that that children referred to psychiatric services are more likely to have PLI than normally developing children.

The Helland and Heimann (2007) study had several methodological weaknesses. These included limited description of the clinical and control group. No data was available on SES, IQ, the location of the psychiatric outpatient clinic and primary school, or whether or not the participants were randomly selected. In addition, although Helland and Heimann (2007) gave reasons for including children with developmental disorders in the clinical group, it is this author's view that this still caused a confounding variable regarding the diagnosis of PLI. Further, the author believes that the design for determining PLI could have been improved if a speech-language pathologist completed an informal assessment of each child's pragmatic abilities, along with using the CCC cutoff criteria, as this criteria has not yet been standardized. Additionally, factors that Helland and Heimann (2007) were unable to control were also weaknesses. These factors included the families that chose not to participate, as this may have affected the representativeness of the sample. Furthermore, the CCCs with missing data may have affected the results. Therefore, due to these weaknesses and the small sample size, this study was given a level 2/3 for evidence (importance=suggestive, validity=equivocal).

ED Article

Beitchman, Nair, Clegg, Ferguson and Patel (1986) used a case control study to determine prevalence of psychiatric disorders in 5 year old children with speech and language problems in the community. A one-in-three stratified random sample of children in the Ottawa-Carleton region was used. To cover all settings with 5 year old children, children in private schools, nursery and daycares and special needs centers were also included in the study. However, since the number of these settings was small, sampling was not done; rather a 1/3 random sample of this entire group of children was taken. This overall one-in-three sample, consisting of 1655 children, was then administered the stage 1 tests of a 3-stage screening protocol. This first stage consisted of

a 30 minute speech and language interview using speech and language screening tests administered by trained screeners. If children scored below the cutoff, they went on to stage 2. A random selection of 51 children who passed stage 1 also underwent stage 2. In stage 2, a speech-language pathologist performed a full assessment of the child's speech and language skills including administration of the *Test of Language Development*, *Peabody Picture Vocabulary Test-Revised* and *Goldman-Fristoe-Woodcock Auditory Memory Test*. If the child scored below the cutoff, he/she was identified as speech-language impaired (SLI). A total of 180 children were identified as SLI. Of these 180 children, 142 participated in the rest of the study. A control group of 142 students was then obtained from the group in stage 1 that passed the screening. This control group was matched to the clinical group for age, sex, and placement setting (e.g., school or day care), and all participants in this clinical group participated in stage 3. Stage 3 consisted of a battery of tests and checklists: audiological test, IQ test, *Conners' Teachers Rating Scale (TRS)* & *Child Behavior Checklist (CBCL)*. The TRS is a 39-item behavior-symptom checklist that has 6 factors and has been used extensively to screen for children with behavior problems. Children scoring at or below a prescribed criterion, according to the TRS authors, were defined as possibly showing an ED. The CBCL is a 118-item behavior problem and 20-item social competence checklist that is completed by parents. The CBCL authors' cutoff criterion was used to determine which children demonstrated a possible ED. Next, all the children who were identified by either checklist as showing a possible ED and a random sample of those children who scored in the normal range for these checklists were asked to undergo a psychiatric interview. Both the child and his/her parent were interviewed by a psychiatrist. The psychiatrist was blind to the child's language status, but knew the results of both of the child's checklists before he/she made the psychiatric diagnosis. In the 85 children who underwent the interview, 45 were SLI with 30 showing a possible ED according to the checklists and 15 being within normal range from these checklists. Forty children were from the control group with 25 showing a possible ED according to the checklists and 15 being within normal range from these checklists. Results demonstrated that the SLI group (34%) had a significantly higher percentage of students rated as possibly showing ED compared to the control group (23%) on the TRS. In the CBCL, the SLI group (32%) did have a higher percentage of possibly showing an ED compared to the control group (22%); however, this difference was not statistically significant. When the abnormal ratings from the TRS & CBCL were combined to produce a subgroup at risk for an ED, 55% of children with SLI were at risk for ED compared with 37% of the control group, which was significant. For the psychiatric diagnosis, estimates for each group (SLI and control) were derived by using the combined TRS/CBCL

measure, along with the percentage of diagnosis given to each group after the psychiatric interview. These estimates demonstrated that overall, 49% of the SLI group had a psychiatric disorder, compared to only 12% of the control group. Using the DSM-III and these estimates, the SLI group was at highest risk for Attention Deficit Disorder (30%) and ED (13%) compared to a control group risk of 5% for Attention Deficit Disorder and 1.5% for ED. Thus, Beitchman et. al. (1986) concluded that "almost 50% of kindergarten children with SLI show evidence of (a) diagnosable psychiatric disorder" (p. 534).

The Beitchman et. al. (1986) study had a few methodological flaws. Although they tested children for hearing status and IQ, specific criteria for excluding children from the study because of these factors or other factors like neurological impairments was not provided. Although statistical tests were completed, this information was also not given. In addition, a weakness of this study relative to the author's research question is that speech-impaired children were included in the sample of children with LI. There were many strengths in this study: very large sample size and a good design for determining SLI and ED. As a result of these important strengths, and the relatively few weaknesses, this study was given a level 2 design, and more weight than any of the other studies previously described (importance=compelling, validity=compelling/suggestive).

Conclusion

Overall, the studies from this review of the link between ED and LI had few methodological flaws. For example, in most of these studies, there may have been some children in the clinical group who had diagnoses that confounded the LI, such as hearing loss or neurological impairment. Furthermore, although there was a systematic review that did in fact study the prevalence of LI in children with ED; this review had the weakness of not performing analyses to determine the correct weighting for the studies.

Despite these few weaknesses, the collected literature had many strengths. One of these strengths was the fairly large sample sizes. In addition, most studies examined children from a wide age range, including both preschool and school-age children. Furthermore, the studies in this review examined children in a variety of settings, including clinical or school settings. Finally, there was validation of the ED diagnoses in the Beitchman et. al. study (1986) which found a higher risk of ED in children with speech and language disorders compared to the control group.

In relation to the author's question regarding the IED-LI link, only one of the six studies directly addressed this question (Benner, Nelson & Epstein, 2005). This study found that it was more likely for children with EED to have a form- and content-related LI

than children with IED. However, although this study had relatively few flaws, it only examined children in one geographic area, and thus must be validated by research in other geographic areas. Furthermore, this study found that structural LI was related more to EED than IED; thus PLI was not studied. Since many of the language difficulties that children with IED have appear to be pragmatic, this IED-PLI link should be another area of further research.

Given the relatively few flaws and many strengths of the studies and that the collected literature demonstrated the prevalence of LI in children with ED ranges from 53-71%, it is concluded that there is an increased risk of LI in children who have ED. However, as was stated above, there is suggestive but insufficient evidence to determine if there is an increased risk of LI in children with IED.

Clinical Recommendations

The collected literature demonstrated that there is a higher risk of LI in children with ED. As a result, children diagnosed with ED should be screened for LI and children diagnosed with LI should be screened for ED. Also, as the treatment regimes for children with ED are usually language-based, all members of the professional team must be appraised of the particular language problems of these children and a team approach should be taken for management of children who have ED and a co-occurring LI. Finally, children, parents, teachers and other professionals should be counseled about the language issues that affect children's emotions and behaviours (e.g., the difference between not comprehending instructions or directions and non-compliance, the child's language difficulties being partially responsible for the child's impoverished social skills, etc.).

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