Narrative Analysis in Developmental Social and Linguistic Pathologies: Dissociation

Between Emotional and Informational Language Use

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Abstract

This study examined the use of emotional and informational aspects of language in populations that demonstrate developmental social-emotional and linguistic pathologies. We tested high-functioning autistic (HFA) individuals because this group reveals deficiencies in social-emotional and informative aspects of language as well as abnormalities in sociability. We tested Williams syndrome (WS) individuals because of the claim that the social-emotional aspects of language use and sociability are differentially preserved in the context of mental retardation. We compared the performance of these two groups with two groups of control children (7 and 11 year olds). All of the participants viewed a slide show depicting an event, and were asked to retell the story. These narratives were coded for emotional and informational elements. The results showed that on measures of emotional elements, the WS group patterned with the control groups and only the HFA participants received lower scores, while on the informational elements, the two pathological groups did not differ, and both were lower than the controls. The results suggest that the preservation of language among WS individuals is specific for the emotional aspects of language.

Introduction

The present study examined the relations between the use of emotional and informational aspects of language in populations that demonstrate developmental social-emotional and linguistic pathologies. We examined the ability of normal children and children with social and linguistic pathologies in a story telling task. We concentrated on the informational and emotional aspects of the stories in order to explore the position that the linguistic and social behaviors of individuals with Williams syndrome (WS) are the 'syndromic contrast' of autism on a continuum of such abilities (Bellugi, Wang, & Jernigan, 1994).

It has become increasingly apparent that the language problems of persons with autism are strongly related to their social deficits. Social abnormalities such as non-reciprocal speech are present even in autistic individuals of normal intelligence. Sophisticated linguistic tasks such as telling stories pose unusual challenges for the person with autism because they involve awareness of social context and cultural expectations. Tager-Flusberg and Sullivan (1995) investigated spontaneous narrative abilities and their relation to theory of mind (TOM) in autistic and mentally retarded participants. They found that when closely matched on language ability, there were no significant differences between the groups on measures of narrative length, use of lexical cohesion devices, and mental states terms. However, autistic participants had more difficulty than retarded individuals explaining emotional states correctly.

WS is a rare genetic condition (estimated to occur in 1/20,000 births) which causes medical and developmental problems. Behaviorally, individuals with WS have been described as having a very endearing personality, with relatively preserved expressive language, social, and face processing skills alongside fundamental deficiencies in other intellectual areas. Reilly, Klima, and Bellugi (1990) compared

WS adolescents with cognitively matched Downs Syndrome (DS) adolescents. The interaction between affect and language was examined through storytelling. In contrast to DS participants, the WS participants told coherent and complex narratives that made extensive use of affective prosody. Furthermore, stories told by the WS participants but not by the DS participants, were infused with lexically encoded narrative evaluative devices that enriched the referential content of the stories.

In the present experiment we attempted to unpack narrative ability into two main factors: an Informational Language component and an Emotional Language component. The former is based on the ability to build a coherent narrative with the appropriate structure and content. The latter is based on pragmatic abilities that employ rules of social discourse and emotional tone. The goal of the study was to explore the behavior of high functioning autistic (HFA) and WS participants on these different measures.

Method

Participants: Four groups of 13 participants each were tested. The WS individuals were diagnosed genetically (by a Fish test) and psychologically as having the unique cognitive profile of the syndrome (aged 8-21, M=14.39, 6 males and 7 females), The high-functioning autistic individuals were diagnosed according to the DSM-IV (aged 8-16, M=11.54, 12 males and 1 female). The two control groups were comprised of 13 second-graders (mean age of 7.36 years, 8 males and 5 females) and 13 fifth graders (mean age of 11.5 years, 8 males and 5 females) recruited from four local public schools. All of the children were given the verbal part and the Block-design of the WISC-R. The WS and HFA groups were matched according to Bannatyne's (1971) verbal comprehension measure. According to his factors, the verbal comprehension score is comprised of the Comprehension, Vocabulary, and

Similarities scores.

Stimuli and Procedure: We used a common procedure that has been used in the past for research of event memory: a short story composed of 27 color slides. The story describes an event in the life of a family: mother, father and their three daughters, who wanted to go out for a picnic. The family was delayed because the youngest daughter's cat climbed on an electricity pillar, having escaped from a dog that was chasing her, and then was afraid to come down. The story describes the manner in which the family saves their cat. The slides were photos of real humans and the story was very similar to a real event in everyday life. The slides were presented via a computerized program, showing each of the slides (one at a time) for 8 s (between slides there was 1 s of darkness), accompanied by short speech that tell a section relevant to the scenes. Participants were individually presented with the slide show. After the show, the children were asked to tell the experimenter the story. They were video and digital-tape recorded.

Coding of the stories: Two independent highly experienced raters analyzed the tapes. The generated stories were transcribed verbatim. The narratives were separated into main and subordinate clauses and then categorized into story components. This procedure was input bound: the experimenters watched the original slide show and decided in advance what kind of items go into each of the categories. We used Stein and Glenn's (1979) story grammar method to analyze the narratives. This method utilizes a set of six story components, listed in Table 1.

Story Element	Number of items	Description
Settings	8	Characters, locations, or habitual contexts or states.
Initiating Events	9	Actions, events, changes in the physical environment, or a character's internal perception of an event.
Internal Response	12	A character's emotions, goals, desires, intentions, or thoughts leading to a plan sequence.
Attempts	10	Actions towards resolving a situation, or achieving a goal.
Direct Consequence	7	Actions, natural occurrences, or end states representing the character's attainment or non-attainment of a goal.
Reactions	1	How the character feels, thinks, or acts relative to the direct consequence.

Table 1: The six Stein and Glenn's (1979) story grammar components, used for the analysis in the present study.

In addition, we used Reilly's (1992) affective expression analysis and tallied instances of affective expression. Those are: (a) Quoted, or Direct Speech - the child's speaking for one of the characters; and (b) Evaluative Comments -These were classified as General (such as summarizing statements), or Specific-Emotional, where the child inferred the emotions of the character, using labels for emotional states and behaviors.

For each participant two kinds of measures were generated: indexes of emotional use of language, and indexes of the use of language to transfer information. The elements included in each measure are listed in Table 2. We divided the sum of the relevant elements by the number of words in the story, in order to normalize it. This gave us the proportion of Emotional vs. Informational Language elements of each child's story.

Language Measure	Component Elements
Emotional Language	(Internal Responses+Reactions+Direct Speech+Specific Emotional Evaluative Comments)/number of words in the story.
Informational Language	(Settings+ Initiating Events+ Attempts+Direct Consequences+ General Evaluative Comments)/number of words in the story.

Table 2: Emotional and Informational language components.

Results

The ratings for each story element were used to compute a score for emotional language use and a score for informational language use. The mean ratings of two raters for each story were used. The correlations between the raters were $r(50)=.88$ for Emotional Language, and $r(50)=.94$ for Informational Language. The ratings of the two raters were therefore pooled and used as the dependent variable in subsequent analyses.

The data were analyzed with a mixed ANOVA using Group as a between groups factor and Language Type (emotional vs. informational) as a within-groups factor. This analysis revealed a significant interaction, $F(3,48)=3.85$, $p<.05$, and two

main effects (for Group: F(3,48)=8.15, p<.005; for Language Type, F(1,48)=236.25, p<.0001). These are illustrated in panels A and B of Figure 1.

Planned comparisons revealed the simple effects indicated in the Figure. Specifically, for Emotional Language elements, the children with WS were performed like the controls, while the HFA group received significantly lower scores. For Informational Language elements, the children with WS were grouped with the HFA children, and both differed from the control groups.
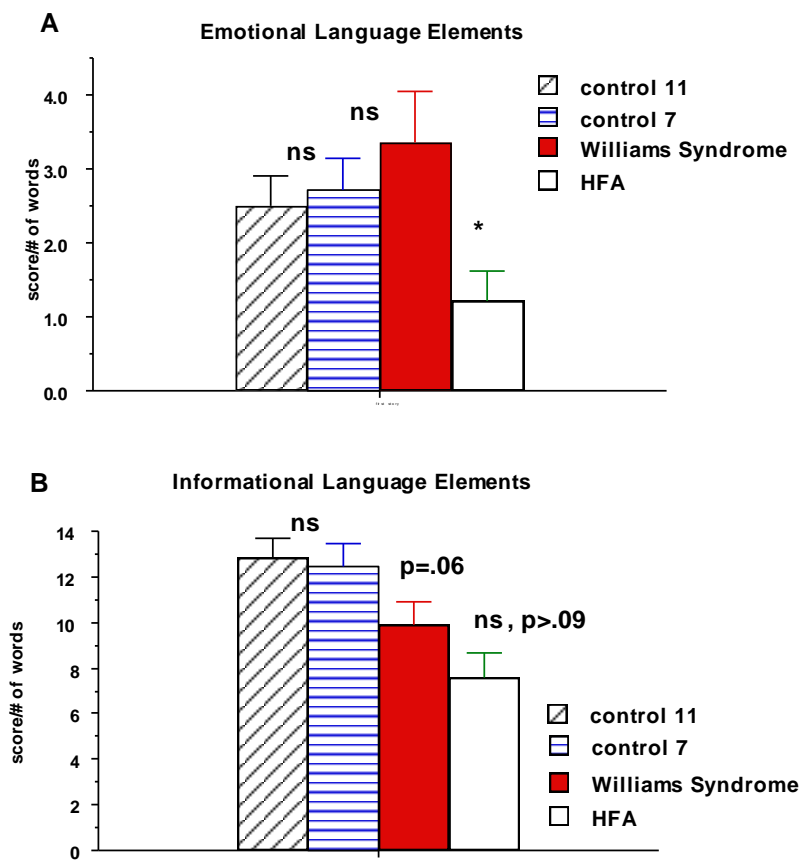

Figure 1: Emotional and informational language use in the four experimental groups.

Discussion

In this study high functioning autistic participants performed at a lower level than the control groups in both informational and emotional aspects of a story telling

task. Although they were matched to the HFA participants on a verbal comprehension measure, the WS participants revealed a dissociation between the two aspects of the story telling task. In measures of the emotional elements of the story, they did not differ from the normal control groups, and performed significantly better than the HFA participants. However, in measures of informational elements of the story, the WS were not significantly different from the HFA group, and were nearly significantly different from the control groups.

The performance on both measures of the HFA participants is consistent with previous reports of impoverished narratives. The performance of the WS participants replicate the findings of Reilly et al. (1990) as far as the Emotional Language measure is concerned. It is probable that it is pattern that has driven the definition of WS and autism as opposing ends on a continuum of linguistic abilities. However, our findings diverge from the findings and conclusions of Reilly et al. with respect to the Informational Language measure. The point made here is that the syndromic contrast suggested Reilly et al. between autism and HFA, is descriptive only for the emotional aspects of language use, not for instrumental, or informational aspects of language use.

We would like to emphasize that in terms of informational content, the stories of the WS participants were as impoverished as those of the HFA participants. However, the small amount of information that was produced, was embedded in a context rich with pragmatic devices and emotional tone. An important theoretical issue that arises from these results is that it is misleading to conflate the emotional and informational aspects of language use when assessing language behavior in atypically developing populations.

References

Bannatyne, A. (1971). Language, reading, and learning disabilities. Springfield Ill: Charles Thomas.

Bellugi, U., Wang, P. P., & Jernigan, T. L. (1994). Williams syndrome: An unusual neuropsychological profile. In S. H. Broman, & J. Grafman (Eds.), Atypical cognitive deficits in developmental disorders: Implications for brain function (pp. 23-56.) Hillsdale, N.J.: Lawrence Erlbaum Associates.

Reilly, J. S. (1992). How to tell a good story: The intersection of language and affect in children's narratives. Journal of Narrative and Life History, 2(4), 355-377.

Reilly, J., Klima, E. S., & Bellugi, U. (1990). Once more with feeling: Affect and language in atypical populations. Development and Psychopathology, 2, 367-391

Stein, N.L., & Glenn, C.G. (1979). An analysis of story comprehension in elementary school children. In R.O. Freedle (Ed.), New directions in discourse processing (pp. 53-120). Norwood, NJ: Ablex.

Tager-Flusberg, H., & Sullivan, K. (1995). Attributing mental states to story characters: A comparison of narratives produced by autistic and mentally retarded individuals. Applied Psycholinguistics, 16, 241-256.

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