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FIRST AND SECOND GRADERS' SPONTANEOUS USE OF PUNCTUATION MARKS WITHIN WRITTEN NUMERALS

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Recent research has begun to document the role that children ascribe to punctuation marks while they are in the process of learning written numbers and the use they make of these marks while they write numbers. To date, these marks have been neglected and overlooked in mathematics education research. The research questions underlying this study were: How and in what circumstances did children spontaneously use punctuation marks while they were writing numbers? What kinds of unconventional uses of punctuation marks did they generate? The sample for this two-year longitudinal study is 27 first grade (approximate age 6) children and 26 second grade children; 21 of the original 27 first grade children were also in the second grade group. In second grade there were 5 children who had not participated in the study in first grade. Table 1 displays the (conventional and unconventional) production of punctuation marks among the sample of children.

	Total number of numerals written	Total number of uses of punctuation marks	Total number of conventional uses	Total number of unconventional uses
Grade 1	629 (100%)	86 (14%)	76 (12%)	10 (2%)
Grade 2	683 (100%)	151 (22%)	93 (14%)	58 (8%)

Table 1. Number of times punctuation marks were used, both conventionally and unconventionally. Percentages are calculated over the total number of numerals written at each grade level

The following are the types of unconventional uses of punctuation marks made by children in the sample. Percentages are over total number of uses of numerical punctuation:

A. Respects reading of number: 90% of uses punctuation marks in Grade 1 and 82% in Grade 2 continued to respect how the number should be read. B. Respects "batches of digits" rule: none of the unconventional uses of punctuation marks respected the grouping of digits into sets of three. C. Omits zero after comma: 80% of uses of punctuation marks in Grade 1 and 17% of uses in Grade 2 omitted a zero immediately after writing a comma. D. Adds a zero at the end of the number: Only occurred once in first grade (10% of all punctuation marks made in Grade 1). E. Adds zeros within the number: this never occurred with numbers containing punctuation in first grade. 76% of numbers containing punctuation in Grade 2 added a zero within the number. F. Omits or adds a non-zero digit: In Grade 1, 10% of uses of punctuation marks omitted a digit and 0% added a digit in Grade 2, 10% omitted a digit and 17% added a digit.