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ABSTRACT

Learning to read and write music should be as natural as learning to read and write the English language. Similar instructional models can be used for both. This was the premise for the investigation of 5-year-old Joel's musical development. Joel was the youngest of a four-member musical family. He was surrounded by musical literature and role models, a learning environment typically encouraged by language instructors. Joel was allowed to develop his musical ability naturally, and he learned to write music long before he learned to read music. This is in keeping with Graves' (1983) report that 90 percent of 6-year-olds believed they could write music, while only 15 percent believed they could read music. Many of Joel's first compositions were based on the black note pentatonic scale. Joel used a variety of standard and invented devices to indicate the number of events, pitch, duration, mood, register and tempo. At the end of the 8-month case study, Joel's writing ability exceeded his ability to read music notation. The intent of the case study was to understand the development and depth of one child's knowledge of music notation. (SM)

A CHILD'S DEVELOPMENT OF MUSIC NOTATION THROUGH COMPOSITION: A CASE STUDY

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Few children learn to read and write music during their elementary school years. Perhaps the most significant, and indeed, the most obvious reason for this widespread phenomenon is that music has traditionally played a minor role as a subject of study in our schools and in our culture. Partly as a result of this tendency to undervalue music, musicians and composers suffer under various false images. They are often regarded as providing "merely" an emotional or aesthetic experience for the masses, or as members of a talented and elite group of people holding some sort of mysterious musical powers which the rest of the population cannot hope to experience or understand. But to say that music has been misunderstood or unrecognized as a complex and beautiful discipline in its own right is to say nothing new. In order for music to achieve the status of its sister fields such as language and mathematics, it is critical that educators and researchers define the conditions which will ensure that children can actively make music a part of their lives, both in and out of school, and in doing so, gradually ease away from the situations which perpetuate a weak musical culture.

The central premise for the research reported here is that in order for children to become deeply engaged in music, they must become composers and performers. To do both, it is necessary for children to learn to read and write music so that they can record, manipulate, and share their musical ideas, and express the music composed by themselves and others.

In teaching English, educators provide conditions for children to learn the language and the symbolic notation system associated with the language. Further, children explore language through original work of their own, ranging from novel speech utterances (e.g., "Allgone milk") to early scribbles, to invented grammar and spelling, to sophisticated and fluent speech and prose. To have children learn English solely by repeating the speech and copying the text of others would be unheard of. Yet, this type of repetition is typically used for "teaching" children to read music. Children are provided with a standard notational system which they are expected to learn by performing works written by other composers. Rarely are children given the means to compose their own music and invent their own notational systems. It is no wonder that the notion of fluently reading and writing music is foreign to most children and adults.

REVIEW OF THE LITERATURE

In recent years, there has been an encouraging amount of research directed towards determining how children think about music and towards establishing ways of discussing and describing children's cognitive musical structures. Related research on the development of notational systems has been more limited. Bamberger (1982) and Hildebrandt (1984) have conducted several studies on how children represent rhythm without formal instruction on standard rhythm notation practices. In an extension of Bamberger's and Hildebrant's work, I described how children represent and make sense of rhythm notations from the ages of seven to twelve years (Upitis, 1986). In addition, I demonstrated how such a developmental viewpoint could be incorporated into classroom practices for teaching rhythm standard notation through composition and invented notations. However, this work was also incomplete in that it did not

address the problems of representing pitch, nor were developmental trends for learning the language of music prior to school-age considered. Music researchers have frequently looked to language research for models of music cognition, attempting to explain music cognition by adapting principles from linguistics (c.f., Lerdahl & Jackendoff, 1983). Besides using language models for describing musical capacities and growth, perhaps an even more important contribution of the language studies is to be gained by looking to the methods research in speech acquisition and reading and writing, to in turn learn about the parallel processes in music.

Holahan (1984) conducted a study on "music babble" which is very much in keeping with studies on the development of language babble. Holahan's study is commendable for several reasons. While he acknowledges similarities between language and music, he nevertheless focuses his analysis and theory of music babble on the musical data, rather than attempting to map a music syntax theory directly onto a theory for language syntax. More importantly, Holahan observed children in what he termed "informal music settings," where five-month to five year-old children sang songs, created melodies, and moved to music. At no time were children forced to participate. In this context, somewhat akin to settings where oral language "naturally" develops, Holahan observed the development of musical syntax which enabled the children to "comprehend familiar and unfamiliar music aurally, and to reproduce familiar music and create novel music orally" (Holahan, 1984, p. 6).

The present research provides a complementary study to that of Holahan by focusing on the development of written music. This paper describes the first eight months of such a study, where one child's development of music reading and music writing from the ages of five to ten years is documented and analyzed. The present research was modeled after a

longitudinal case study on language development by Bissex (1980). Bissex observed her son learning to read and write from age five through to eleven years. Like Holahan (1984), she did not conduct an intervention study. Rather, she observed her son's language growth in a "house that was full of print [and where] he frequently saw his parents reading and writing" (Bissex, 1980, p. 3). Bissex's analysis of the data was both of the separate processes of reading and writing and on the relationships between the two processes. Her analytic framework for analyzing the writing produced by her son included a major section on invented and conventional spellings. Similarly, in the present work, the emerging relationship between the child's invented music notation and standard music notation is explored.

METHOD

The Subject and Setting

At the beginning of the study, Joel was five years and three months of age. Joel lives in a "house full of music." He is the youngest in a family of four. Joel's mother takes piano lessons, playing a variety of classical and popular repertoire. During the time of the first eight month phase of the study described in the present paper, she was also enrolled in a university course on music history and analysis. Joel's sister also takes piano lessons, and Joel's father is an accomplished baritone. Music of a great variety is heard in the home, ranging from Medieval motets (a favorite of Joel's mother) to the Beatles. Simple musical instruments are readily found, including rhythm instruments, chime bells, and recorders. Joel started school at the neighborhood Kindergarten shortly after the study began. His sister is in Grade 6 at the same school. Six months into the study, Joel started weekly Orff music lessons with a few of his five-year-old friends.

Data Collection

I visit Joel's home once or twice a week. Just as in Holahan's (1984) music babble study, I do not "force" Joel to participate in any pre-determined musical activities. I also play a non-research role as a family friend. Sometimes Joel comes by to visit me in my office at the university on his way to Orff classes, stopping to say hello, introduce a young friend, or to play on one of the instruments in my office.

The directions for Joel's musical activities come from Joel. Although I meet with Joel somewhat regularly at least once a week, the time frame for each session varies according to Joel's interest. Thus, sessions might last for only a few minutes or for over an hour. On average, however, Joel usually spends a little over a half hour participating in a variety of musical activities with myself and any family members or friends in the near vicinity.

A typical session includes improvisation on an instrument, usually the piano, with Joel writing down a composition at some point based on the improvisatory material. Joel is encouraged to compose music and write it down "whenever [he] feels like it." Many of the techniques for encouraging music composition again come from a language model: the writing processes and classroom practices described by Graves (1983). In short, Joel is surrounded with musical literature, he sees myself and members of his family composing and reading music, he has his best pieces "published", he is allowed and encouraged to use invented notations, and standard notational practices come to be understood and used by Joel as his need to communicate his musical ideas expands.

All of Joel's compositions are collected. Many of them appear in a notebook he uses as a writing folder. I make notes during and after each visit with Joel, but I do not use video or audiotaping on a regular basis, since Joel expresses some apprehension about having his activities thusly

monitored. In addition, Joel's parents and sister report on any musical developments or anecdotes that they observe when I am not present.

PRELIMINARY FINDINGS

Like the child described by Bissex (1980), Joel learned to write music long before he learned to read music. This is also in keeping with Graves' (1983) report that most six-year-olds (90%) believe that they can write, while only 15% believe that they can read. Joel too began composing readily and eagerly, but certainly at the beginning, did not believe that he would ever be able to "read those notes that Mommy does." The development of Joel's notations are now discussed.

Counting Events

Many of Joel's first compositions were based on the black note pentatonic scale, taking inspiration from the question and answer improvisatory game we played on the black keys. For several weeks Joel carefully notated the number of notes in his piece, paying little attention to pitch. This is much like the first type of rhythm representation for non-pitched sequences identified by Bamberger (1982) and Upitis (1986). Joel also insisted on using conventional eighth notes and quarter note symbols (see Figure 1). At one point, he drew a picture of the black keys in response to my asking where the tune was to be played. Later, when I referred to the picture of the black keys as "notes", he emphatically stated, "Those aren't the notes. See, there's no ball. Those are just where you play." At this stage, Joel used conventional symbols only for counting, and not for pitch or duration This is illustrated further by his use of the eighth note pair for two distinctly different musical functions. He used the eighth note pair both to signify two notes playing at once and to show two notes played in sequence. I confronted Joel

with this ambiguity, asking him, "How can you tell they're different from your music?" He answered, "Well, it isn't different, but I just showed you." When I asked him what would happen if I wasn't there, Joel was frustrated and puzzled, since I clearly was there. The following interchange occurred:

Joel: You mean what happened if you weren't here and you wanted that thingie [meaning the two notes together]? And I was with them [i.e., the hypothetical person]?

Rena: No, you weren't with the person either. All the person had was your music.

Joel: You mean me and you and me were away and I was outside playing baseball?

Rena: Yes.

Joel: You mean how would they know not to do this [plays two C#s in a row]?

Rena: Yes.

Joel: You see, someone is obviously in the house.

Rena: What if there was no one in the house?

Joel: Well, I always come in for a drink, and I'd notice them. I'd come out of the kitchen with my cup full of juice and um, come in here with my glass, I mean my cup full of juice, and all I'll do it sort of like, and you know, watch and stuff and sit around and turn around and show them.

The composition in Figure 1 also illustrates in yet another way how Joel used notation as a counting device. After I had shown Joel the more conventional way of indicating chords he used this new device, namely the vertical arrangement of "balls on a stick", to count groups of pitches which operated as figures. Thus, his first 'chord' was actually two sets of three sequential pitches, making six notes in total. When Joel was writing this piece, he accidentally drew seven circles, and commented, "Oops. Seven. I meant to say seven... This time maybe ten. Maybe twenty!" Joel's excitement about writing a "long song with twenty notes" is evidenced in the last figure of the piece. After Joel played

his piece (as notated at the bottom of Figure 1 in standard notation), I demonstrated how I would play from his music, leaning my arms over the keyboard and playing simultaneously the same twenty notes he had played sequentially. Joel's reaction was strongly negative, "No, no, no, no, no. You're not supposed to put your arm on there. You have to count them." Joel then added a large circle to the bottom of the twenty notes, a zero to "help" me count. He explained that the zero was not to be played, but was to be regarded as a "starting point." His final comment regarding this piece related to the interpretation of the two eighth note pairs. Recalling our earlier discussion regarding his ambiguous use of the symbol, Joel demonstrated and instructed, "You can play two notes here [meaning simultaneously] or two notes each time [meaning sequentially]. You can do it any way you want to."

Texture

The first example of Joel's need to move away from using standard symbols as counting devices came when he tried to represent the different moods or textures of the highest and lowest registers of the piano (see Figure 2). He drew a thick, dense figure for low music, and used a looping figure for notes in the upper registers. A modification of this notation can be seen in Figure 3, where Joel not only uses a loop-like symbol for part of his melody, but also adds the word 'LOW', and draws a picture of someone playing the piano, including a picture of a piano hammer striking the strings. This notation is clearly different from the earlier form in a number of ways. First, Joel has completely abandoned the notation symbols he used exclusively at the beginning. Second, his attention shifted away from individual notes to considerations of texture and register. Third, he used several devices (words, gestural marks, pictures) together in notating a single composition. Finally, Joel

returned to creating the piece at the piano first and then finding a way of notating it, as opposed to making the notation first and then playing from it to hear the result (as in the 20 notes in Figure 1).

The Return to Standard Notation Symbols

Joel became interested in conventional notation again at around the same time that he came home from Kindergarten frustrated because he had not been taught how to read ("I go to school every day and I still don't know how to read.") This frustration extended to his music reading and writing as well. He asked his mother to teach him to read text, and he asked me to teach him to read music. Neither were easy tasks. One day, after battling with two notes in the treble clef (C and F), Joel commented in disgust, "I'm not like you. I don't have that many brains in my head. And also I'm not like my Mom either." I asked him if he'd like to make up a song, to which he responded, "Sure! If I have a pen and paper!" I suggested that he try something on the piano first, but he refused, saying, "No. I want to do it in my brain on the paper. With Cs and Fs. And another C." Shortly after, Joel produced his version of Silent Night (see Figure 4). He insisted on printing the title (his mother wrote the title in dotted lines for him to trace), as well as insisting that his mother draw in a treble clef to make it "real music." He ended the piece with a double barline, so "people will know it's the end."

Letter Names

Joel briefly returned to using quarter and eighth notes as counters, without any indication of pitch or relative duration. Once, when his sister asked him what the notes were, and he told her "G", she indignantly responded with, "Well, how am I supposed to know that's a G?" Joel then added letters with each symbol. At some point he must have realized that he could dispense with the quarter and eighth note symbols altogether, and use only letter names. For several months, Joel's compositions were notated in the form shown in Figure 5. His notations invariably included letter names, occasionally the odd standard notation symbol, but never did he indicate duration or mood in this series of compositions. Some time later, about five months into the study, Joel notated a piece where durations were indicated through text and circles to show which notes operated together as a figure (see Figure 6). Hence, the instruction under the first E ('You Go TOREST eRe' means 'You got to rest here') indicated a long note. Similarly, the circled G, A, and G, along with the instruction 'CWIC' (quick) indicated these notes were to be played more quickly. (In fact, the last note of the figure is longer, but nevertheless seems short due to its relationship with the two notes preceeding it; c.f., Bamberger, 1982; Upitis, 1986).

The example in Figure 7 shows how Joel combined letter names and icons for black notes to indicate accidentals. The title of the piece, Vibrator, also neatly captures the mood of the piece and serves as a tempo marking.

Summary of Notations

To date, Joel has used a variety of standard and invented devices to indicate the number of events, pitch, duration, mood, register, and tempo. His choice of symbols is governed by a number of factors, including his approach to the piece (improvised and developed at the piano first versus developing a piece from the notation) and his perceived need to use conventional symbols to make his notations seem more like music, more "real". At the end of the eight month period described in the present paper, Joel's writing ability still exceeded his ability to read music notation. However, he seemed less concerned about his reading at that time than he was when he began Kindergarten. In fact, he once said, after writing and playing a piece that he was particularly pleased with, "You know Rena, I don't need you any more. I don't even need Mommy either." It is a remarkable thing for a five-year-old to feel such independence with regard to his musical abilities and development.

CONCLUDING REMARKS

As Bissex (1980) so aptly states, the case study is an attempt to understand one person, a look at an individual in the act of learning. Rather than providing general principles to apply to the teaching of music reading and writing to other children, it is the intent of this study to come to understand how Joel's knowledge of music notation develops, and to demonstrate the depth of Joel's musical knowledge achieved through his musical explorations and constructions. It is hoped that in future research, teachers and researchers will collectively attend to how individual children invent and make use of music notation in environments where children are expected to and provided with the means to engage in serious musical thought.

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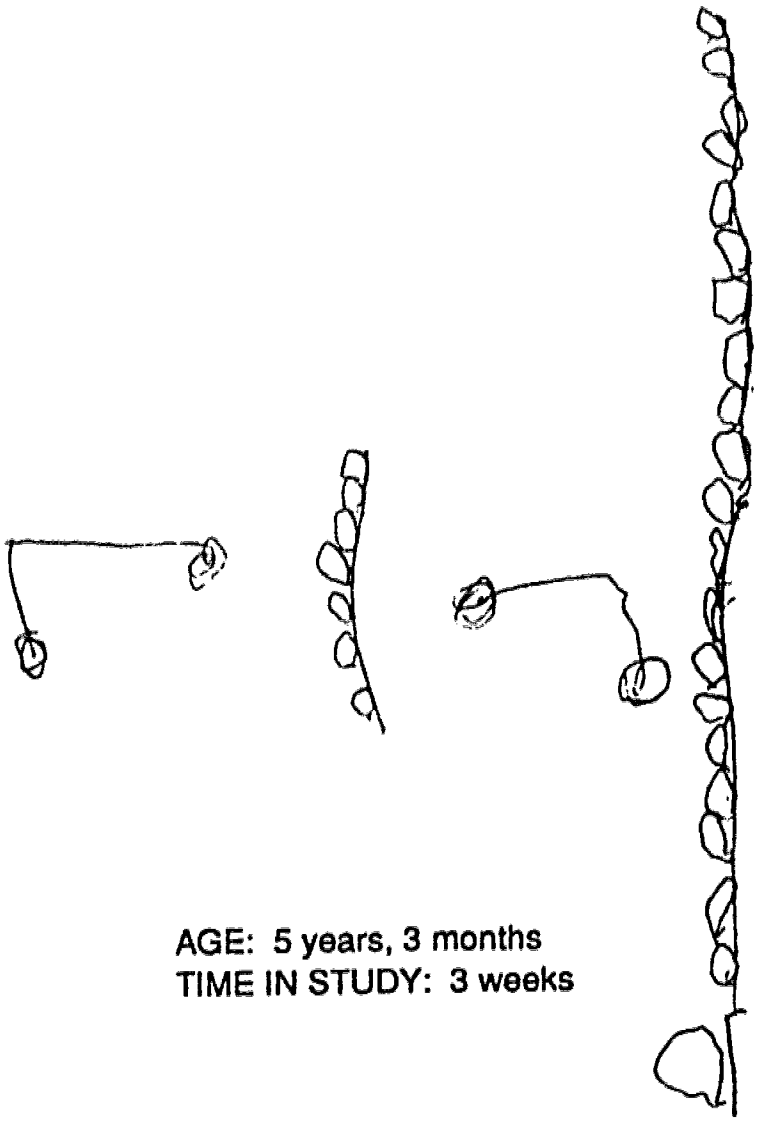
Figure 1. Use of Standard Duration Symbols as Counters



AGE: 5 years, 3 months
TIME IN STUDY: 3 weeks

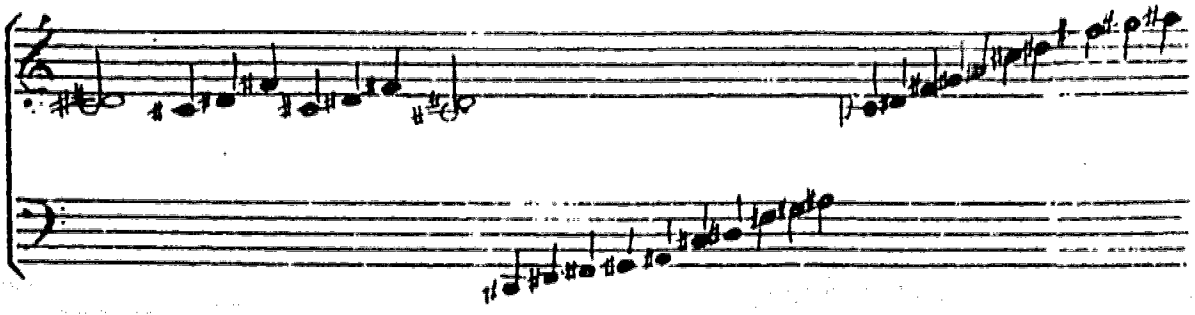
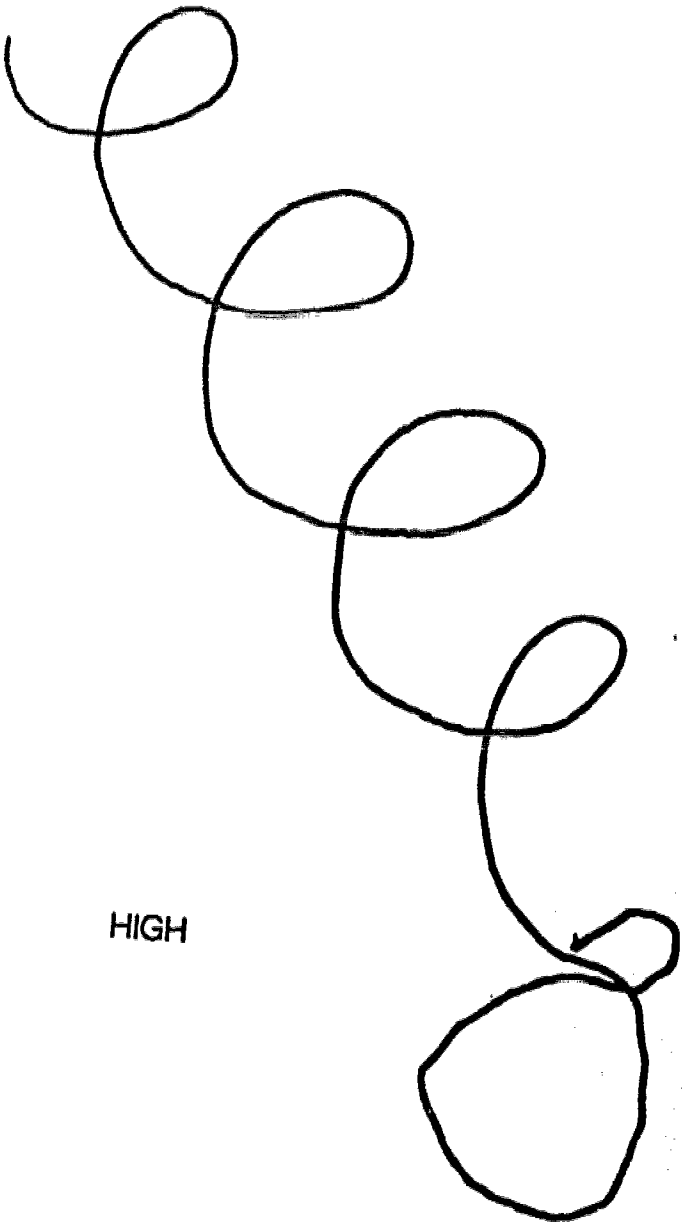


Figure 2. Text and Different Registers

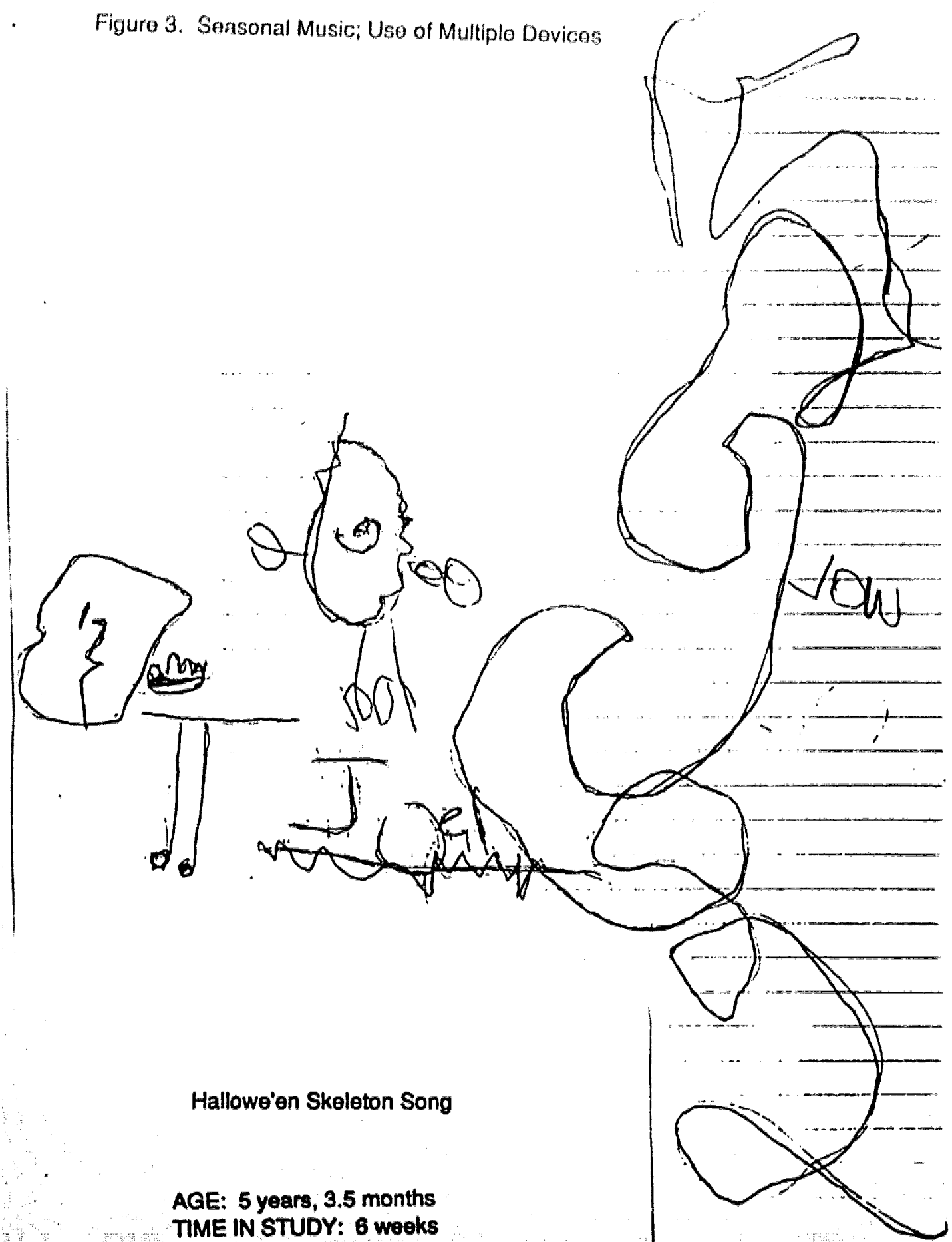
LOW



HIGH

AGE: 5 years, 3 months
TIME IN STUDY: 1 month

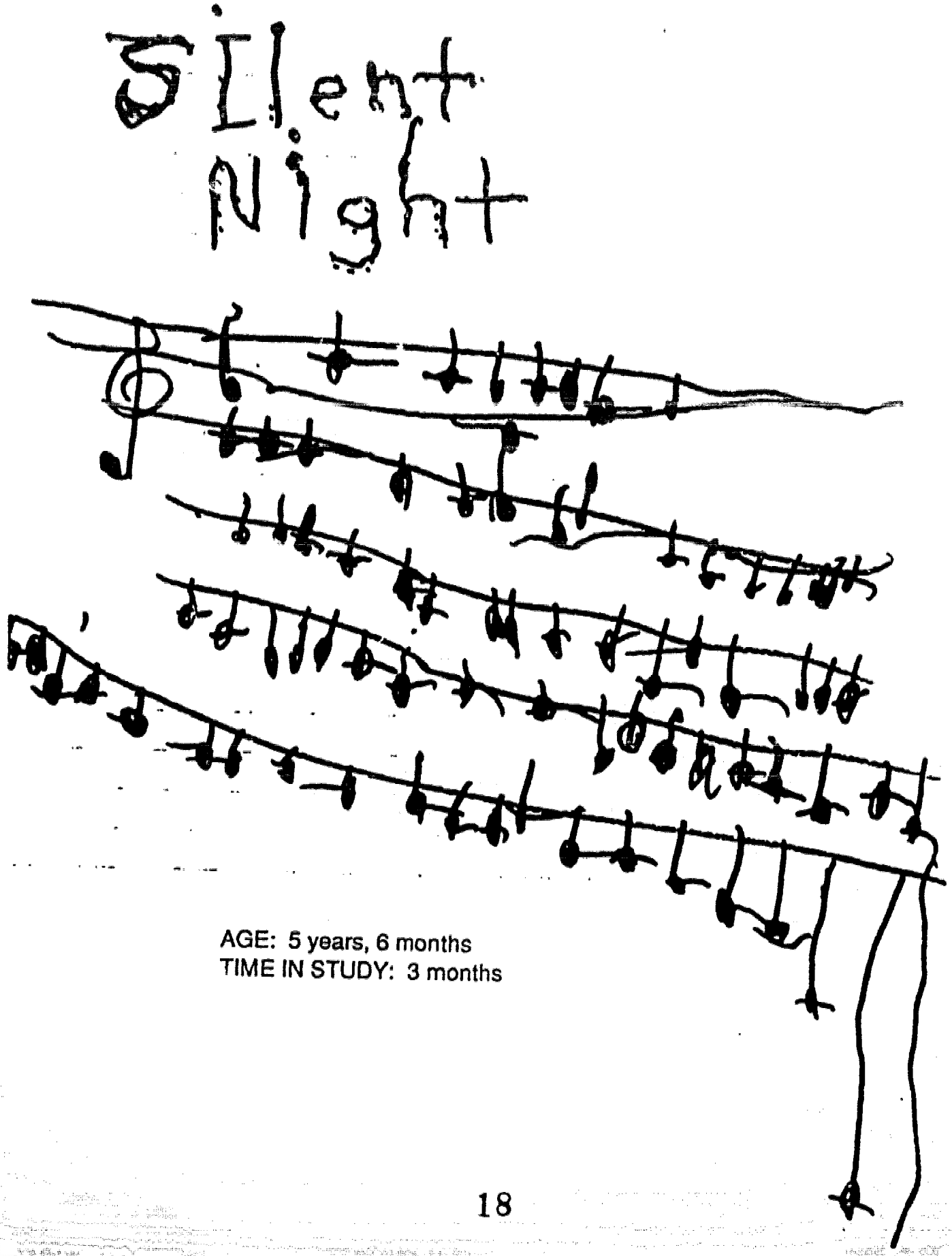
Figure 3. Seasonal Music; Use of Multiple Devices



Hallowe'en Skeleton Song

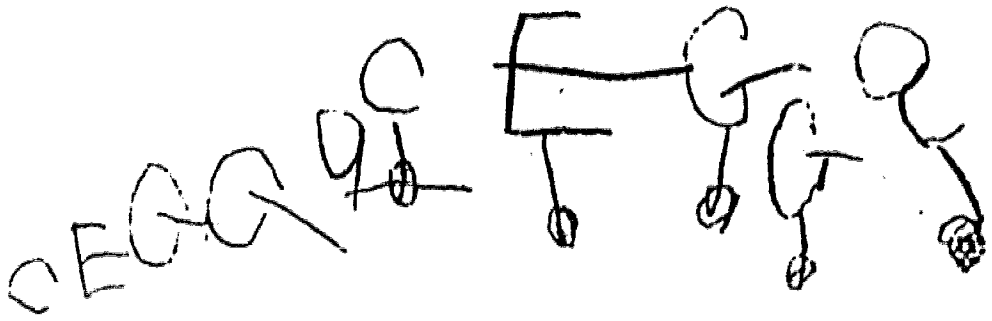
AGE: 5 years, 3.5 months
TIME IN STUDY: 6 weeks

Figure 4. The Emergence of Standard Notation Symbols



AGE: 5 years, 6 months
TIME IN STUDY: 3 months

Figure 5. Use of Letter Names



AGE: 5 years, 7 months
TIME IN STUDY: 4 months

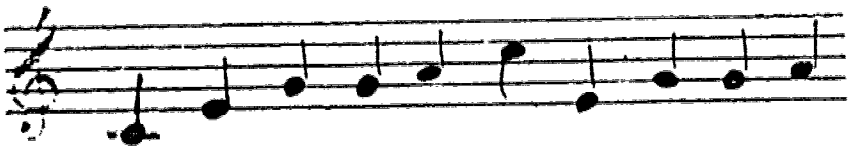
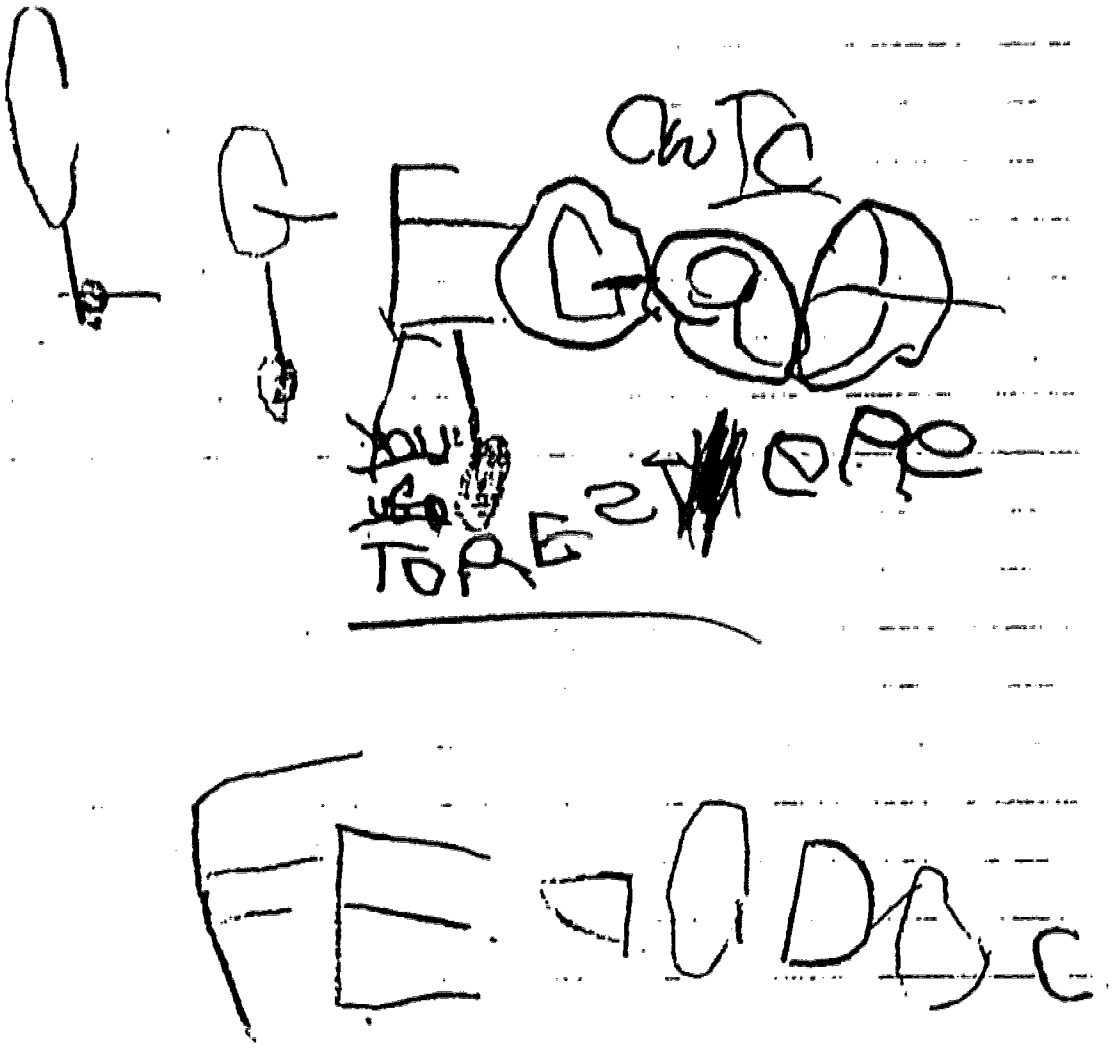


Figure 6. Use of Letter Names and Indicators of Duration



AGE: 5 years, 8 months
TIME IN STUDY: 5 months

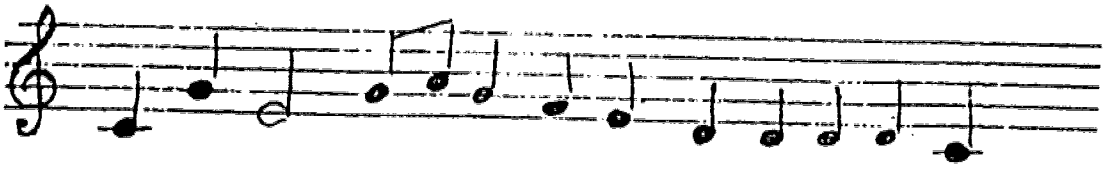
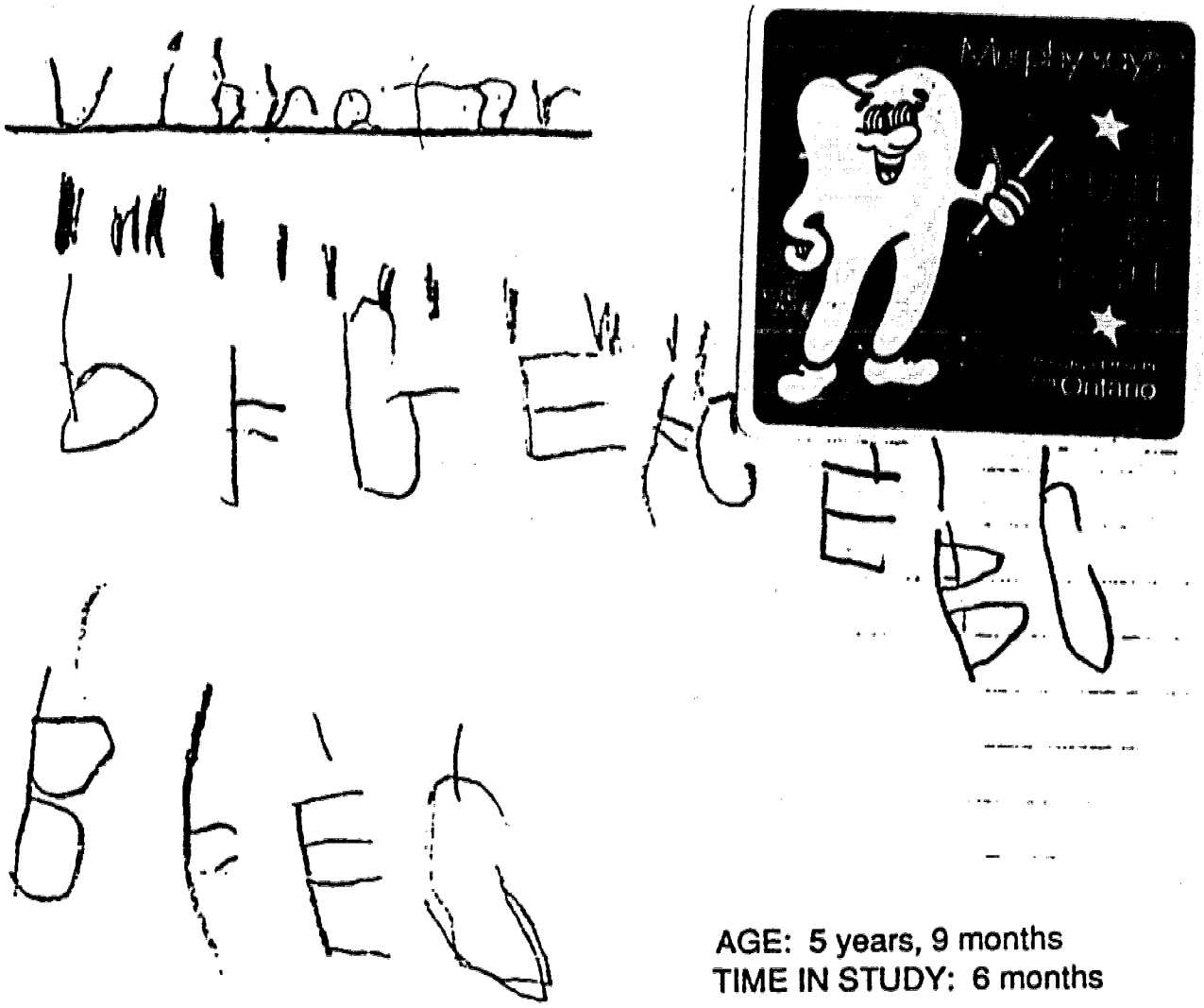


Figure 7. A Typical Composition after Six Months



AGE: 5 years, 9 months
TIME IN STUDY: 6 months