Children’s graphical representations and emergent writing: evidence from children’s drawings

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Previous research on children’s drawing and writing focused on children’s drawing and symbolization with syllabic languages, providing little information regarding young children’s symbolization in drawing with a logo language. This study investigated children’s emergent writing by examining qualitatively how children’s writing takes place as children are engaged in drawing and how children represent their experiences by means of symbols of different written languages in drawing. The subjects of the study were four girls and six boys aged from four to five in a Chinese class at Austin Chinese School. The data revealed that children’s symbolization with conventionally written symbols may take place first through object correspondence or a chain of object correspondence, and then through object correspondence within contextual correspondence toward a whole contextual representation with a mixture of symbolizations with conventionally written symbols and graphical representations, which can be equivalently represented completely with conventionally written symbols.

Keywords: contextual correspondence; drawing; object correspondence; writing

Introduction

With regard to human sign systems, Vygotsky (1978) asserted that one of the most important sign systems is speech, and drawing is graphic speech that arises on the basis of verbal speech. To examine children’s symbolization in drawing, Vygotsky observed experimentally how children’s drawing becomes real written language by giving them the task of symbolically depicting some more or less complex phrase. As found by Vygotsky in these experiments, there was a tendency on the part of school-age children to change from pure pictographic to ideographic writing; that is, to represent individual relations and meaning by abstract symbolic signs. As to children’s language development, Montessori felt that children’s explosion into writing precedes their learning to read and education of the senses is the basis of intellectual development, preparing children’s minds and hands for writing and for the ideas of quantity, identity, differences and gradation (as cited in Goffin & Wilson, 2001). Sulzby (1990) addressed assessment of emergent writing and children’s language while writing. As asserted by Sulzby, the transition of emergent writing into conventional writing illustrates both continuity and discontinuity. With regard to conventional writing, Sulzby (1990) mentioned that conventional writing is defined by the child’s production of text that another conventional literate person can read conventionally and the child himself or herself reads conventionally. Moreover, Sulzby asserted that when children hold

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onto drawing as a form of encoding meanings, they are learning how different symbol systems work.

Previous research on children’s drawing and writing focused on children’s drawing and symbolization with syllabic languages such as English and Italian, providing little information regarding young children’s symbolization in drawing with a logo language such as the Chinese language. Unlike a syllabic language, the Chinese language consists of not only a sound system but a character system as well. Like a syllabic language, the Chinese sound system is represented by a set of phonetic symbols called Zhuyin Fuhao, denoting 21 consonants, 16 vowels and four tones with a fifth tone, the slight tone, used to achieve a special intonation (Wu, 1993). Unlike a syllabic language, in addition to a sound system, the Chinese language includes a character system, consisting of groups of characters classified into six categories: Hsiang shin, huey yie, chih shi, shien shein, chuan chu and Chia chie (Forrest, 1948; Wieger, 1914). The Hsiang shin characters are mainly image shapes, consisting of simplified drawings of objects the characters represent. This group of characters includes the characters for mountain, river, sun and moon, and is consistent with young children’s perception of the visual world. In the study, the problem of understanding of children’s writing in drawing will be addressed by the following questions: How does children’s writing take place as children are engaged in drawing? and How do children represent their experiences by means of symbols of different written languages in drawing?

Children’s drawing and writing and their link are important topics that have been gaining increasing attention and discussed by researchers in different academic fields from a number of perspectives based on their understanding of drawing and writing and research interests. The perspectives taken in this line of research are not mutually exclusive, sometimes allowing for interdependence. In the perspective of drawing as a means of communication, it has been asserted that expression is one of the most important aspects of drawing for all drawings (Lowenfeld & Brittain, 1975; Goldstein, 1977; Smith et al., 1998). Children can use drawing and painting to sort out relationships, experiment with concepts and communicate what they think (Helm & Katz, 2001). With regard to drawing as one form of symbolic representation, it has been argued that the ability to create symbols allows humans to become familiar with their environment and to communicate their knowledge (Werner & Kaplan, 1963). Symbols are the means by which humans express mental representations and images, and the emergence of symbolic representation in children is an important step in the development of cognition (Escobedo & Bhargava, 1990). Drawing is an activity that may be undertaken not merely by an individual child, but also by a group of children under the guidance of adults. In the perspective of a drawing social context, drawing is regarded as a scaffold for emergent writers in the transition to writing, providing an appropriate drawing social context within which children’ writing can be appropriately nurtured in a culture that provides children with the advantage of an environment full of teachers and peers to encourage children to talk, observe, hypothesize, experiment, adjust, and ask for and offer help when they are drawing together with other children (Oken-Wright, 1998).

As asserted by Vygotsky (1978), children solve practical tasks with the help of their speech, as well as their eyes and hands, and this unity of perception, speech and action ultimately produces internalization of the visual field. Increasing attention is being given to the issue of children’s drawing as a means of problem-solving (for example, Bodrova & Leong, 1996; Helm & Katz, 2001; Wu, 2004). In Bodrova and
Leong (1996), a child attempted to write ‘The cats were sitting at the table’. With the guidance of the teacher, the child solved the linguistic problem through drawing, in the problem-solving process of which the teacher helped the student first express what the sentence means in drawing. In Helm and Katz (2001), the authors provided an example of four-year-old Sarah’s work on shelves, in which Sarah drew her thinking process with an explanation of her thinking process as she made the shelves. Wu (2004) investigated children’s problem-solving with drawing by examining young children’s problem-solving strategies as they attempt to solve problems in a group setting where drawing is part of the context and the role drawing takes in this social problem-solving context. As suggested by her study, drawing would be an appropriate means for children to interpret and reveal their perceptions, to contribute to children’s sign operation, formation of complex thinking and concepts, planning, evaluation and behavioral responses, and to extend the operation of memory.

**Method**

**Subjects**

The subjects of the study were four girls and six boys aged from four to five in a Chinese class that the researcher taught at Austin Chinese School. This class met for only two hours every Sunday afternoon. One boy in the class was Caucasian and the other nine were Asian.

**Procedure**

In the Chinese class, drawing was a curricular activity, provided to the children in the class to promote their learning. In a drawing activity, each child took adequate time as needed, usually about 10 minutes, on doing his/her own drawing. Then they shared their drawings together by describing what they attempted to express in their drawings. In order for these subjects to express themselves freely in drawing, these children were told to draw ‘what they like to draw best’ on A4-size paper, and did their drawing on their own. The researcher as the teacher in the class was not involved in the drawing of any child. Their expressions were audiotaped and transcribed with the help of notes the researcher took in their expression.

In the phase of data analysis, the children’s graphical representations and writing productions were analyzed with the aid of the data of the subjects’ oral expressions. In order to examine the children’s productions of written representations related to conventionally written symbols and the relations of the children’s graphical representations to the written representations, the subjects’ drawings were decomposed into objects and relations among these objects. The objects of conventional written symbols in a child’s drawing, if any, were examined individually first and then in terms of their relations to the other objects as a whole context in the drawing to derive information with regard to the research questions.

**Findings**

Among the drawings of the children, four drawings contained conventionally written symbols. Conventional English written symbols appeared in two of the four drawings, with one drawing containing merely the child’s English name. In one of the other two
drawings, Chinese phonetic symbols, Chinese characters and Arabic numbers were produced simultaneously, but only Chinese characters were produced in the other drawing. As suggested by the evidence, children’s production of conventionally written symbols are influenced to a great extent by experiences children acquire within a social context. Young children may produce conventionally written symbols as supporting representations for their graphical representations. In this case, young children’s symbolization with conventionally written symbols is encouraged by graphical representations and functions as pure object correspondence, a correspondence from graphical representation to conventionally written symbolization. Furthermore, the evidence of the study suggests that young children’s symbolization with conventionally written symbols may interact with graphical representations to form a representation of a whole context and becomes an integral part of a contextual representation. In this case, young children’s symbolization with conventionally written symbols is encouraged by an intention of expressing integral parts of a whole context with the aid of graphical representations.

Object correspondence

As revealed by the evidence of the study, young children’s symbolization with conventionally written symbols may be encouraged by graphical representations and functions as pure object correspondence, a correspondence from graphical object representation to conventionally written symbolization. In Figure 1, a dragon was drawn by the child B4 with the Chinese character of 龍, meaning dragon, written on the left upper corner of the drawing. As expressed verbally by the child, ‘Chinese dragon. It can make everything frozen.’

In the drawing, the pictorial representation of a dragon revealed an object correspondence from the object of a dragon as the child understood to a pictorial depiction of the object. As shown in the drawing, the child appeared to write down the Chinese character in a quite similar way as he produced the graphical representation; in particular, in that the left part of the Chinese character appeared to resemble graphically to some extent the body of the dragon in the drawing and the right part of the character took the form of spikes on the back of the dragon. The evidence sheds information with regard to how a young learner of Chinese characters transits from pure pictographic representation to representation by a Hsiang-shin character. Moreover, the Chinese character was a corresponding linguistic representation for the pictorial object representation and served as a supporting depiction of what the child intended to express graphically. The evidence of the child’s writing revealed a chain of object correspondence in the child’s drawing, first from a pictorial representation to a dragon and then from the corresponding linguistic representation by a character of a logo language to the pictorial representation.

The object correspondence chain in children’s representation as seen in the drawing of child B4 with written symbols of a logo language can be also found in the drawing of child B6 with written symbols of a syllabic language. In the drawing of child B6, the five-year-old boy identified all the objects in his drawing each with a corresponding English name produced beside (Figure 2). As verbally expressed by the child, the child mentioned ‘Ice cream, Bionicle, pokemon, shark’. The child’s representations by graphical depictions and names composed of English letters for the objects in the drawing conveyed the specific referents the boys attempted to identify. The English words as produced properly in the drawing of child B6 indicated that the
child understood the sequential relations of the letters within each word. Furthermore, the pictorial representations of the objects the boy attempted to identify as what he liked most revealed object correspondence from the pictorial depictions to these objects. The English names as produced each beside an object were corresponding linguistic representations for the graphical object representations and served as supporting depictions of the graphical representations, which suggests a chain of object correspondence in the child's drawing, first from pictorial depictions to the objects he liked most and then from corresponding linguistic depictions by symbols of a syllabic language to the pictorial object representations.

**Contextual correspondence**

With regard to children’s symbolic correspondence, as revealed by the data of the study the children of the study undertook correspondence not only among objects individually, but also among objects and their relations as a whole context. In the drawing of child B6, the child identified the objects in his drawing with conventionally English written symbols. All the graphical representations along with corresponding linguistic representations revealed a set of objects identified by the child as what he liked most and the child’s experience with objects within a social context. As revealed by the evidence of the study, children’s symbolization with conventionally written symbols may be encouraged by children’s graphical representations not only to represent individual objects by object correspondence or a chain of object correspondence, but also to represent objects and their relations as important elements of an event or a sequence.

Figure 1. The drawing of child B4 of a Chinese dragon.
of events taking place within a social context. In the drawing of child B5 (Figure 3), the objects the five-year-old boy drew included a bus, a car, a clock, two Chinese Phonetic symbols and a Chinese character. The relation between the bus and the car is ‘the bus was after the car in a line on the road’. As verbally expressed by the child with regard to his drawing, ‘This is a car. This is a bus. Then, the car stopped. The bus (pointing to the bus) stopped too. This is a clock.’

As shown in the drawing of child B5, the five-year-old boy used signs from three conventionally written sign systems: the number system, the Chinese phonetic symbol system and the Chinese character system. The numbers were from 1 to 12 on a clock. The hour hand and minute hand in the clock pointed to the time the child attempted to express and shed information regarding the child’s understanding of time. The boy wrote the Chinese character 阳, meaning the sun, in the upper middle part of his drawing along with the first two phonetic symbols ‘t’ and ‘x’ of the Chinese phonetic symbol system. As shown in the drawing, the child represented the sun by a Chinese Hsiang-
shin character rather than pictorial depiction. Furthermore, as suggested by the evidence, the first two phonetic symbols of ‘伱’ and ‘敟’ in the Chinese phonetic symbol system appeared to represent the curricular contents he learned at the Chinese school. All these written signs were properly drawn along with the pictorial representations of a car and a bus on a line, which appeared to represent the road. The pictorial representations of the contextual physical elements of two vehicles and a road, along with their relations represented as the two vehicles, in a line on a road depicted the event of a bus stopping behind a car on the road as mentioned in the verbal expression of the child. The arrow sign in the clock represented the moving of the clock hands and passing of time. The sun, as represented by the Chinese Hsiang-shin character of the sun, along with the two numbers 10 and 12 as pointed to by the hands of the clock suggested the child’s understanding of the contextual element of time as daytime. The child’s experience with the sequence of events encouraged the child’s symbolization with graphical representations, the number system, the Chinese phonetic symbol system and the Chinese character system at the same time.

Discussion

In the study, the data from the subjects’ drawings shed information about children’s symbolization with graphical representations and linguistic symbols of the syllabic language of English and the logo language of Chinese with regard to the research questions. The evidence has provided informative findings with regard to how change from pure pictographic to ideographic writing may take place in young children in learning different types of languages and enriched the results from previous research.
on children’s drawing and writing development (for example, Vygotsky, 1978; Sulzby, 1990). In Vygotsky (1978), children were given the task of symbolically depicting some more or less complex phrase to observe experimentally how children’s drawing becomes real written language. Sulzby (1990) addressed assessment of emergent writing and children’s language while writing in the syllabic language of English. As asserted by Sulzby, when children hold onto drawing as a form of encoding meanings, they are learning how different symbol systems work. In this study, children with different cultural heritages were given drawing opportunities of representing what they liked most on their own to observe how children’s writing may take place in drawing. The findings have provided important information with regard to how children’s writing and formation of thinking and concepts may take place as children are engaged in drawing and how children represent their experiences by means of different types of written languages in drawing.

As suggested by the findings of this study, children’s symbolization with conventionally written symbols are influenced to a great extent by experiences children acquire within a social context. In this study, the children produced conventionally written symbols along with graphical representations to represent their experiences. As revealed by the evidence, drawing encourages children’s symbolization with conventionally written symbols by providing children with opportunities of undertaking object correspondence, which may take place in the form of a single object correspondence or a chain of object correspondence, and paves a path for young children to transit from pure pictographic to ideographic writing. In drawing, young children tend to undertake object correspondence by representing physical objects by pictorial representations first and then undertake a higher-order object correspondence by representing the pictorial representation by conventionally written symbols. In this case, young children’s symbolization with conventionally written symbols is encouraged by graphical representations and functions as pure object correspondence, a correspondence from graphical representation to representation by conventionally written symbols. The finding suggests that young children’s symbolization with conventionally written symbols may take place through the mechanism of an object correspondence chain no matter what type of written language children may use in symbolization in their drawings. This finding furthers our understanding of the assertion proposed by Sulzby (1990) that when children hold onto drawing as a form of encoding meanings, they are learning how different symbol systems work.

Furthermore, in a chain of object correspondence in drawing, children’s formation of thinking and concepts takes place when young children are undertaking object correspondence by representing physical objects by pictorial representations first and then a higher-order object correspondence by representing the pictorial representation by conventionally written symbols. In the chain of correspondence, children develop the complex thinking of association in associating physical objects to their pictorial representations by their shapes in children’s visual perception and their pictorial representations to conventionally written symbols based on children’s understanding of inherited cultural conceptions. Moreover, as asserted by Vygotsky (1986), in the child’s practical experience, collections of complementary things often form a set or whole and experience teaches the child certain forms of functioning grouping. In this study, the children’s collections of pictorial representations and corresponding conventionally written symbols in drawings form a set of representations of an identical referent and reveal the children’s experience of certain forms of functioning grouping, which furthers our understanding of how children’s writing and formation
of thinking and concepts may take place as children are engaged in drawing and how children represent their experiences by means of different types of written languages in drawing.

As mentioned previously, young children’s symbolization with conventionally written symbols may take place through the mechanism of object correspondence chain no matter whether children may use the syllabic language of English or the logo language of Chinese in symbolization in their drawings. With respect to the language of Chinese, the group of Chinese Hsiang-shin characters are main imaging shapes (Forrest, 1948; Wieger, 1914) and consist of simplified drawings of objects the characters denote (Wu, 1993). However, there is a phonetic symbol system for the character system and there is no link between each Chinese character and its sound. In object correspondence or a chain of object correspondence, the children of this study tended to use Chinese characters, in particular Hsiang-shin characters, rather than the corresponding phonetic symbols. As suggested by the drawing of child B5, the child might find the Chinese Hsiang-shin character more appropriate to use to represent the sun in the perspective of the shape of the sun or as part of the whole context of the drawing than the proper phonetic combination as formed by the individual phonetic symbols of and . Similarly, as revealed in the drawing of child B4, the Chinese character as produced by the child resembled to a great extent the child’s pictorial representation of the object of a dragon. As implied by the finding, Chinese characters, in particular Hsiang-shin, are appropriate conventionally written symbols for young children to use in representing objects and may be adopted as a first set of characters for young learners of Chinese characters to use in a drawing setting along with instruction of the Chinese phonetic symbol system. Moreover, in the drawing of child B6 the English words as produced properly in the drawing of child B6 indicated that the child understood the sequential relations of the letters within each word. The finding demonstrates how children’s object correspondence in drawing may encourage children’s symbolization with conventionally written symbols of a syllabic language. As implied by the finding with regard to young learners of the Chinese language, young children may be encouraged to use the Chinese phonetic symbol system through object correspondence to represent ideas conveyed by those Chinese characters that may be difficult for young children to produce at the beginning learning stage. All of the findings regarding children’s symbolization with different symbol systems in drawing shed formative information to help understand how children represent their experiences by means of different types of written languages in drawing. For practice in early childhood education, teachers of young children may use drawing as a means of nurturing children’s symbolization with English alphabet, Chinese phonetic symbols, and Chinese Hsiang-shin characters through object correspondence or a chain of object correspondence.

As revealed by the evidence of this study with regard to children’s symbolization with conventionally written symbols in drawing, graphical representations may encourage children not only to represent individual objects by object correspondence or a chain of object correspondence with conventionally written symbols, but also to represent objects as important elements of an event or a sequence of events taking place within a social context. As mentioned by Wu (2005), children’s representations of their experiences with events are formed by operations of components of relation on unions of components of a social context. The important components of a social context include cultures, physical objects and time, with their relations categorized into two types of relations, physical relations and social relations. As revealed in the
study, in contextual correspondence in drawing children tend to represent important
elements of a context both with graphical representations and with conventionally
written symbols by undertaking correspondence not only in an individual object, but
also among objects within a social context as a whole. As revealed by these findings,
young children as beginners of using conventionally written symbols appear to tend
to use conventionally written symbols when they represent components of a social
context such as a physical object or time, as the sun was represented in the drawing of
child B5 by the Chinese character of the sun through object correspondence within
contextual correspondence as a whole. Relationships among the components of a
whole context appear to be depicted graphically by the graphical contextual relation-
ships among the graphical representations of the components in drawings. As shown
in the drawing of child B5, the pictorial representations of the contextual physical
elements of two vehicles in a line represented the relationship of the two vehicles
being in a line on a road, depicting the event of a bus stopping behind a car on the
road. The child’s experience with the contextual element of time as daytime was
represented by the Chinese character of the sun along with the two numbers of 10 and
12 as pointed to by the hands of the clock, with an arrow sign in the clock representing
the moving of the clock hands and passing of time. In the drawing of the child, the
child’s symbolization with the Chinese phonetic symbol system, the Chinese character
system and the Arabic number system interacts with his symbolization with graphical
representations in contextual correspondence to represent the child’s experience with
the events taking place within a social context. As implied by these findings, chil-
dren’s symbolization with conventionally written symbols may take place first
through object correspondence or a chain of object correspondence, and then through
object correspondence within contextual correspondence toward a whole contextual
representation with a mixture of symbolizations with conventionally written symbols
and graphical representations, which can be equivalently represented completely with
conventionally written symbols. In contextual correspondence, young children’s
graphical representations encourage production of conventionally written symbols
and pave a path for young children to transit from pure pictographic to ideographic
writing. The evidence of the study extends our understanding of the assertion of
Vygotsky (1978) about children’s symbolism in drawing, with a tendency to change
from pure pictographic to ideographic writing.

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