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The Effect of Dramatic Play on Children's Graphic Representation of Emotion

Lynda Anne Kapsch

ACCEPTANCE

This dissertation, THE EFFECT OF DRAMATIC PLAY ON CHILDREN'S GRAPHIC REPRESENTATION OF EMOTION, by LYNDA ANNE KAPSCH, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree Doctor of Philosophy in the College of Education, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chair, as representation of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty. The Dean of the College concurs.

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THE EFFECT OF DRAMATIC PLAY ON CHILDREN'S GRAPHIC REPRESENTATION OF EMOTION

by

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Under the Direction of Ann Cale Kruger

ABSTRACT

Drawing is valued as a non-verbal assessment tool to measure children's conceptual development and emotional state. Drawing has also been described as a problem-solving activity and unique symbol system. Although drama has been known to facilitate learning in other symbol systems, such as reading and writing, and to bring about advances in perspective taking and understanding of emotion, its impact on drawing has not been previously examined. In this study Kindergarten and first grade children were instructed to draw a happy tree, sad tree, and angry tree before and after a 10-hour drama intervention. Half of the children participated in the intervention while the remaining children were members of a control group who participated in the regular school program. Consistent with expectations, children who participated in the drama program showed significantly greater improvement from pretest to posttest in drawing emotion compared to control children. Their drawings improved more in clearly depicting the emotion they were instructed to convey and in the use of higher

level drawing strategies. The results suggest that experience in emotional perspective taking of drama may generalize to the domain of drawing and enhance expression.

The Effect of Dramatic Play on Children's Graphic Representation of Emotion

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Dedication

This dissertation is dedicated to my mother and father, Helen and Theodore, who taught me to value knowledge. This is dedicated to Michael, who challenged me to be more than I believed I could be. And this is dedicated to my brother, the late Dr Donald Norman Kapsch, whom I wish could be here with us now.

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ABBREVIATIONS

UNM	Unreadable, No Match
HNM	Hard to read, No Match
HM	Hard to read, Match
RNM	Readable, No Match
RM	Readable Match

CHAPTER 1

Early Graphic Development and Children's Graphic Representation of Emotion

There are several theoretical avenues or schools of thought pertaining to graphic development: a) graphic development as Visual Realism, supporting and reflecting cognitive development (Case, 1993; Piaget & Inhelder, 1956); b) graphic development as a Problem-Solving Activity (Arnheim, 1974; Golomb, 1992); c) graphic development as a Visual Symbol System (Arnheim, 1974; Golomb, 1992; Lee & Karmiloff-Smith, 1996; Wolf, 1997; Wolf & Perry, 1988) or d) Semiotic Activity (Kindler, 1999; Kindler & Darras, 1997; Krampen, 1991); and e) graphic development as imitation of Cultural Models (Wilson & Wilson, 1977).

This article reviews these five theories of graphic development, comparing and contrasting perspectives with respect to recent research. Each theory places emphasis on a different aspect of drawing development. Models of graphic development supporting Visual Realism are stage-based. Development is attributed to natural processes, neural structures that must mature for cognitive development to occur (Piaget, 1962). The biological origin of development, manifested by children first expressing themselves "through their bodies" (Seitz, 1992, p. 37), is the basis of Piaget's theory of development. Piaget was not interested in drawing except as an illustration of Euclidean spatial perspective, so

he did not look for developmental precursors to explain how the phenomenon emerges (Piaget & Inhelder, 1956).

Examining drawing as a Problem-Solving Activity places the emphasis on process rather than on the final product. Child art is part invention and has its own intrinsic rules and developmental coherence (Arnheim, 1974). Drawing exhibits a natural progression influenced mainly by the artistic process and graphic logic rather than according to the child's cognitive stage of development. Each child attempts to create an 'equivalence' of form and this form does not represent all they know about the object. In contrast to Visual Realism, the Problem-Solving model does not consider children's representations as deficient perceptually or conceptually (Golomb, 2002). Some differences in representation, previously attributed to different developmental stages by adherents of the Visual Realism model, have since been traced to the effect of the medium (Gallo, Golomb, & Barossa, 2002) or to children's interpretation of the researcher's query (Bremner & Moore, 1984; Cox, 1992; Freeman & Janikoun, 1972; Taylor & Bacharach, 1982). The drawing elicited, or the solution to the problem, is dependent to some degree on how the researcher presents the problem to the child (Golomb, 1992).

Drawing as a Visual Symbol System places emphasis on the artifact (i.e., drawings) and the emergence of symbolism. Visual representation refers to lines and forms that can "stand" for the intended object (without confusing the symbol with its referent). Intention is an important part of this equation (Golomb, 2002). Once children develop a schema to represent an object or concept, their drawings become analogous to language in which the same words are used again and again

to convey established meanings (Lark-Horovitz, Lewis, & Luca, 1967). Children as young as three years old are capable of recognizing these symbols and providing consistent descriptions of them after a 3 month delay. Five- and 6-year-olds have recognized their drawings after a year delay, and accurately recognized and described drawings produced by other children (Gross & Hayne, 1999).

Drawing-as-Semiotic Activity, or the representation of meaning through the creation of signs, does not consider drawings meaningful separate from the context of the total activity. Pearson (2001) distinguished between drawing as social practice and artifacts, the visual product. More and more, children's art is influenced by peers in the classroom who negotiate the content of drawings and assign roles as if drawing were imaginative play (Thompson, 2003).

From observations of infants' behavior, in particular, their fascination with the traces left behind after manipulating food substances, Kindler (1999) proposed that kinesthetic activity is a precursor to drawing. Furthermore, Kindler proposed that drawing, as we know it, came into existence because adults reinforced this behavior by looking for meaningful representations of objects in scribbles. An outline of how sensorimotor activity develops into drawing is provided by illustrations of hypothetical pre-drawing developmental pathways or teleologies (Kindler & Darras, 1997), natural processes that are shaped toward a purpose (Merriam-Webster's Collegiate Dictionary, 1999). The teleologies represent an ageless, stageless system with a map-like structure that represents multiple pathways of artistic development. Unlike other theories that are hierarchical in

nature, a unilinear timeline is not provided. Therefore, comparing developmental perspectives is not always possible.

Adherents of drawing as imitation of Cultural Models object to the Visual Realism approach of measuring development through drawings because it neglects social and cultural influences that shape children's drawing development (Wilson & Wilson, 1977). Cultural models provide the child with the shared symbols and valued images of the culture. Social transmission, rather than developmental maturation, is thought to influence the child's direction and progress. Central to Cultural Model approaches to drawing development is the idea of mediated learning. From this perspective, drawing can not be examined in isolation, separate from the environment.

This review is a compilation of multiple perspectives on graphic development. The age range for graphic development varies depending on theoretical orientation and individual differences in children.

Visual Realism

Piaget's research focused on the evolution of knowledge, what he considered to be the processes of adaptation to reality. In his theory of child development, structures of knowledge are built conceptually through assimilation and accommodation. Assimilation refers to the integration of new information into an existing way of thinking, and accommodation refers to change in the way one thinks in order to adapt to new and conflicting experiences (Piaget & Inhelder, 1956; Siegler, 1998). Underlying structures qualitatively change in an individual's lifetime and these distinct qualitative changes are called stages

(Walsh, 2000). According to Piaget (1962), developmental processes are independent of, and a prerequisite for, learning.

Graphic representation became an area of interest to developmental psychologists because drawings could potentially be analyzed as indexes of cognitive processes (Silver, 2001). For example, drawing development has been examined to illustrate spatial reasoning (Piaget & Inhelder, 1956), the maturation of working memory (Bensur & Elliot, 1993; Bleiker, 1996; Case, Stephenson, Bleiker, & Okamoto, 1996; Dennis, 1987; Morra, 2005), and cognitive flexibility (Goodnow, 1978; Ives & Rovet, 1979; Karmiloff-Smith, 1990; Lee & Karmiloff-Smith, 1996; Spensley & Taylor, 1999).

Because child art was viewed as a reflection of cognitive development, graphic development was measured according to its correspondence with a standard of spatial-mathematical reasoning. Piaget (Piaget & Inhelder, 1956) adopted Luquet's (1913) classification system because its stages were congruent with his own conception of cognitive development (Golomb, 2002).

Preschematic period

The drawings of Kindergarten children and younger are called preschematic because their representational symbols are constantly changing (Lowenfeld & Brittain, 1970) and the schema is still fragmentary (Lark-Horovitz, Lewis, & Luca, 1967). According to Piaget, drawing begins during the prelogical period of early symbolic thought when the child is approximately three or four years old. Drawings from this period were viewed similarly: illogical, deficient,

and indicative of an inability to mentally visualize transformations of form that obey logical rules (Beilin, 1992; Piaget & Inhelder, 1956).

Similarly, Lowenfeld and Brittain (1970) believe that the "way in which a child portrays space is intimately tied up with his whole thinking process" (p. 125). They observed that stories written by the preschematic child are egocentric and lack logical sequence. During this period, children conceive of space as revolving around them. Known as the period of *topological relations*, children draw objects above, below, or beside each other with no apparent relationship established between them. These early drawings are similar to maps in that they appear to be two-dimensional (Piaget & Inhelder, 1956).

The closed shape emerges as children learn to differentiate between the inside and outside of figures (principles of *boundaries* and *enclosure*). The proper attachment of body parts (principle of *continuity*) may take years to master. The demonstration of principles of *proximity*, *separation*, and *ordering* within objects attests to the mental representation required if proximal parts of a figure are to be placed in the correct order (Piaget & Inhelder, 1956).

Piaget's Stage 2 of graphic development, the period of *synthetic incapacity*, portrays the child, approximately four years old, as unable to represent relations of proportion and distance (Piaget & Inhelder, 1956). Objects in space are depicted as 'up close and personal' rather than portrayed at a distance (Golomb, 1992). Unconcerned with perspective, children during this stage are likely to draw a large human figure next to a small house (Piaget & Inhelder, 1956). Drawings are personal representations in the same way that children's

earliest symbols during play are idiosyncratic, such as when they choose a Popsicle stick to represent a gun (Siegler, 1998). Drawings are not yet organized into a coherent whole (Luquet, 1913).

By Stage 3 of Piaget's model, children four to seven years old become focused on intricate details and become proficient at ordering the internal parts of figures (e.g., eyes positioned above mouth). Known as the period of *intellectual realism*, children were thought to draw what they knew, not what they saw (Luquet, 1913; Piaget & Inhelder, 1956). The use of a formula when drawing figures was believed to have provided evidence for the existence of an internal model or concept (Goodenough, 1926; Harris, 1963; Lowenfeld, 1957; Luquet, 1913; Piaget & Inhelder, 1956).

The period of intellectual realism also emerges during the preoperational stage (2- to 6-year-olds) and therefore children's thinking was still thought to be dominated by egocentrism, the inability to "decenter." One implication of Piagetian theory is that children during this period are unable to grasp concepts of space and perspective. The absence of occlusion (one object in front of another) in children's drawings, children's responses to queries about perspective, led Piaget to believe that children in the preschematic period are incapable of taking a cognitive point of view different from their own (Piaget, 1929/1979). Note that research has since demonstrated that children, as young as three years old, can display nonegocentric perspective taking (Borke, 1975).

Schemata

Children eventually develop a formula for drawing familiar objects, especially the human figure. The child uses this formula even when given a model. Once children are satisfied with their symbol for an object, they usually draw the object the same way from then on. Schemas for familiar objects and the human figure become well established by the time the child is seven years old (Golomb, 1992).

The graphic vocabulary of children increases during this phase of development in the form of added detail. Frances Goodenough (1926) noted that, as children matured developmentally, their drawings of the human figure exhibited increasing complexity and differentiation. She developed the Draw-a-Man scale to measure conceptual development and it has been used by researchers for eight decades because it reportedly correlated with standardized tests of cognitive development (Barrett & Eames, 1996; Bensur & Elliot, 1993; Dorn, 1999; Harris, 1963), but the validity of the Draw-a-Man test has also received criticism (Reisman & Yamokoski, 1973).

Goodenough's (1926) tool, unlike Piaget's theory, focuses on the "quantitative accumulation of detail as a model of development" (Kapsch & Kruger, 2000, p. 1). More details might be added to human figure drawings as children age because the human figure is drawn frequently and depiction has become routine (Kennedy, 1996).

By the schematic period, children have learned how to draw familiar objects and no longer need to focus solely on form or labor over the proper placement of body parts. Drawing familiar objects becomes almost automatic.

The benefit of this position is that children can now plan pictures and focus on context. Children less than seven years old might become so focused on drawing a figure's head that they do not consider its size in relation to the drawing space necessary to complete the human figure (Lee & Karmiloff-Smith, 1996).

Theorists differ as to whether schemata are a developmental accomplishment or constraint. Possessing a schema makes it possible to create a picture, but schemata also introduce limitations on the picture created (Thomas, 1995). Children's ability to modify their drawings diminishes as children enter the schematic period and are influenced by practice and culture. An example of loss of flexibility in image-making is children who are compelled to draw figures from perspectives that best portray their defining characteristics even when the experimenter requests that an object be drawn exactly as it appears. Canonical drawings, or drawings usually representing the frontal view of human figures and the side view of cars or horses (Ives & Rovet, 1979), are resistant to change.

Drawing inflexibility was once considered a procedural constraint that young children outgrow when, at a higher level of awareness, they are able to access and "re-describe" their own drawing procedures (Karmiloff-Smith, 1990). Subsequent research by Spensley and Taylor (1999) has demonstrated that almost all children vary the drawing order or sequence of forms and can modify drawings during the procedure.

Once children have a stable repertoire of schemata, a developmental increase in flexibility of human figure drawing appears (Goodnow, 1978) and is considered to be a positive development. Deviation from schemata demonstrates

that children are able to move more flexibly between different representational categories (Kapsch & Kruger, 2004; Lee & Karmiloff-Smith, 1996).

Examples of transparency and occlusion emerge during the schematic period and are considered an advance over canonical drawings because they are depictions of particular objects rather than representations of a class of objects. For example, when children draw a small person inside a woman to represent a pregnant woman, they are differentiating this woman from others by giving the viewer specific information about her (Lee & Karmiloff-Smith, 1996). Consideration of the perspective of the observer and the primacy of communication are most evident in these drawings.

Spensley and Taylor (1999) suggest that flexibility develops along with working memory; that is, flexibility requires more information to be held in awareness at any one time. Case (1987) proposed that increases in the capacity of working memory, or what Pascual-Leone (1969, 1970) called mental (M) power, form the basis of what we have come to know as object permanence (Johnson & Gilmore, 1996) and other developmental milestones. For each domain (e.g., math, language), children at various stages have a small set of central conceptual structures. Case altered developmental theory to accommodate research in working memory and neurobiological evidence of modularity, or specificity of brain function.

Change from a global approach to problems noted in 3 ½- to 5-year-olds to the more differentiated approach of 5- to 7-year-olds is thought to occur because increased available memory space allows for integration of central

conceptual structures. For example, younger children's (3 ½-5 years old) concept of magnitude allows them to understand that there is a difference between "smaller" and "larger," and they are able to count, yet they cannot tell you if a given number is smaller or larger than another. Younger children have one structure for solving problems of relative magnitude and another for problems of enumeration, but these two structures become integrated into a single structure at the next stage (Case, 1993).

There is research that confirms that changes in children's drawing performance parallel Case's 4-stage developmental model (Bensur & Elliot, 1993; Bleiker, 1996; Dennis, 1987). Scores on working memory correlate positively with age and a direct relationship can be found between drawings and a measure of visual-motor integration (Bensur & Elliot, 1993). In 1992, Dennis collaborated with Case on a research project comparing graphic development to Case's model of development. Dennis asked children of different ages to "Draw a picture of a mother and a father holding hands in a park, with their little baby on the grass in front of them, and a tree far off behind" (Case, Stephenson, Bleiker, & Okamoto, 1996, p. 106). This request resulted in four age-related, stage-like, progressions in drawing perspective: preaxial, uniaxial, biaxial, and integrated biaxial stage of development.

The youngest children (four years old) drew global features of objects. By 6 years of age, the children had further differentiated and integrated object-shape schemas and object-location schemas. Children drew figures on a baseline and placed the main object in a context or scene. This dimensional ability to

coordinate schemas with each other is attributed to the transition to a higher stage, the uniaxial mental reference stage of development (Case, Stephenson, Bleiker, & Okamoto, 1996).

Ingram (1985) suggests that young children possess two distinct coding processes, spatial coding which is viewer specific and symbolic coding which results in what has been called intellectual realism, or the formulaic drawings that children use as shorthand equivalents for the object they are drawing. It is thought that symbolic coding overrides spatial coding until the child is between five to seven years old when these processes become integrated (Lee & Karmiloff-Smith, 1996).

Beyond schemata

Visual realism, extending from the age of eight to twelve years (Luquet, 1913), is the fourth and final stage in Piaget's model of graphic development, paralleling concrete operations (Piaget & Inhelder, 1956). Other theorists describe schemata as continuing during Piaget's age range of visual realism, however. Lowenfeld (1957) describes the schematic period as just beginning at age six or seven. Because Piaget's view implies domain generality (Walsh, 2000), or a close link between advances in domains, visual realism implies that children's drawings begin to portray the external appearance of objects more faithfully. Drawings should portray dynamic dimensions of the physical environment; evidence that children are able to take the perspective of the observer is expected during this period (Piaget & Inhelder, 1956).

Eight-year-old children demonstrate their ability to reference objects in a rectangular grid (bi-axial) by drawing foreground and background. By the time children are ten years old, drawings include foreground, middle ground, and background so that space appears continuous. The integration of dimensions (integrated biaxial level) results in a coherent, unified picture (Case, Stephenson, Bleiker, & Okamoto, 1996; Dennis, 1992). The drawings requested by Dennis' (1992) undoubtedly posed several problems for the youngest children in the study because of the processing demands required by the complexity of her drawing problem. In addition, only a few adults develop beyond the schematic period to a level whereby perspective can be represented faithfully in drawings.

Facilitation from perceptual input, previous learning, awareness of task demands, and processing resources (M power) influence children's ability to modify their drawings. Morra (2005) conducted a series of studies with elementary school children looking at the effects of task order and the use of a model (photograph) on children's abilities to modify human figure drawings and to create a novel scheme. The effect of task order was not significant. The effect of age on drawing scores was significant, but when M capacity was a covariate, the effect of age on drawing scores dropped below significance. M capacity accounted for a large proportion of developmental differences, but a smaller proportion of individual differences (Morra, 2005).

Art as Problem-Solving

Arnheim (1966) viewed children's drawings as intelligent pictorial solutions. He considered Visual Realism to be a theory of replication. Instead,

Arnheim analyzed artistic thinking and saw art as the intentional abstraction of form. Art as Problem-Solving is a representational theory. Drawing is a creative act, children's invention of universally similar and meaningful graphic shapes (Golomb, 2002).

Although Arnheim viewed development as orderly and logical, developmental progress was not linked to a one-to-one correspondence. He thought that preschematic drawings reflect the problem-solving process best. Preschematic drawings are autonomous constructions by children who have not yet learned any rules about how the world should be represented (Golomb, 1992). The "tadpole," one of the first recognizable intentional figures drawn, is depicted simply by lines emerging from a circle. This thrifty shorthand symbol for 'person' has been observed in many cultures (Golomb, 1974).

Models of drawing development as Problem-Solving solutions acknowledge the intelligence required to invent two-dimensional solutions to graphic problems (Arnheim, 1974).

> Implicit in this position is the assumption that the drawing child does not have recourse to suitable "models" since our three-dimensional world does not directly provide children or naive adults with a graphic language that can be imitated. Drawing is an act of translation; it requires a radical transposition from the perception of a solid object extended in space to a representation that uses lines and dots on a two-dimensional surface….Unlike spoken language, which presents the child with a ready-made symbol system essential to his survival as a social being, early

> drawing requires an individual act of creative invention which most children between ages three and five years attempt in a fairly autonomous fashion (Golomb, 1992, p. 30).

It is now generally accepted that children's pictorial symbols, depicting global and more salient features of objects, do not reflect their knowledge of the objective world in its entirety because children's drawings of a man can differ enormously from one day to the next (Arnheim, 1966; Cox 1993; Golomb, 1992; Kellogg, 1969). Five-year-olds are capable of identifying most of the parts of the body (Golomb, 1992; Lowenfeld & Brittain, 1970) and can draw them when asked, yet they usually do not include these details in their spontaneous drawings because their simple forms are symbols. In addition, research with artistically gifted autistic savants brings into question the assumption that detailed, realistic figures is a reflection of cognitive development (Golomb, 1992).

According to Golomb (1992), the level of conceptual development portrayed in drawings depends on the task, the medium, and the instructions. Children make choices about how they want to portray an object depending on what they want to communicate (Wolf, 1997) or what they perceive is being asked of them. Canonical views are drawn because they are less ambiguous and indicate a concern with communicating the general classification of object to the observer (Ives & Rovet, 1979).

Children's goals when drawing may change from day to day and drawing to drawing. Representation is by nature partial and therefore some things are left out. Children select one property, such as shape, to be relevant, leaving other

properties to chance (e.g., a line's thickness or proportion). Kennedy (1996) describes drawing development as the ability to "control more and more features simultaneously" (p. 153).

In one study designed to examine children's compositional strategies, investigators demonstrated that young children understand three-dimensional spatial relations even though they did not incorporate this understanding in their drawings. The youngest children (five years old) were capable of representing occlusion by manipulating separate three-dimensional pieces on a Plexiglas board. When provided a different medium, such as felt appliqué, they were capable of creating a three-dimensional representation in a two-dimensional medium (Gallo, Golomb, & Barossa, 2002).

Long before children use perspective in drawings, they can correctly interpret perspective in pictures. Before children enter the schematic period they are already capable of describing and comparing the sizes of different objects, however they ignore their observations and 'tailor' their creations, not according to knowledge of the environment, but according to the 'flow' of their ideas and feelings (Lark-Horovitz, Lewis, & Luca, 1967). For example, the throwing arm of a baseball pitcher may be exaggerated way out of proportion to the player's body in order to emphasize the function of this arm. In other words, children are less focused on visual correctness than they are on symbolic emphasis.

Children's drawings reflect their understanding of the problem posed to them. Naming an object children are asked to draw significantly influences whether they draw a viewer-specific, realistic-appearing object. If asked to draw a

'cup,' children draw a cup that is recognizable by its bowl and handle configuration even if the model cup's handle is not in view (Bremner & Moore, 1984; Freeman & Janikoun, 1972; Taylor & Bacharach, 1982). They do this to diminish the chance of ambiguity in 'reading' the drawing (Cox, 1992). Even though children's inclination is to draw objects from the view that best illustrates their defining characteristics, if told that the model (who is only partially in view) is *hiding*, the child is less likely to interpret the problem as a request for a prototypical drawing of a person and is more likely to draw the person partially occluded (Golomb, 1992).

The schematic drawing can indicate spatial relations through symbolism alone. Children's spatial relationships may be represented by map-like layouts or bird's-eye views during the schematic period. These aerial perspectives, rarely actually seen by the children who draw them, are a sign of the rational and deliberate strategies children use to "extend the concept of space on the page" (Hubbard, 1989, p. 89). Golomb (1992) argues that children strive for a 'meaningful representation,' and may invent ways to represent the missing depth dimension (p. 106).

Golomb (1992) presented convincing empirical evidence that contradicted a correspondence between concrete operational reasoning and drawing. In contrast to Piaget's theory that maintains that first knowledge and then perceptual viewpoint determine the adoption of drawing systems, Golomb noted that orthographic projection, or representation of a table as a single horizontal line, is typical for children seven to twelve years old. This period, corresponding to

Piaget's (Piaget & Inhelder, 1956) concrete operational stage, is when visual realism and Euclidean perspective emerge in drawings. But orthographic projection does not represent visual realism or the prior stage, intellectual realism, because tables are not ordinarily viewed from eye-level nor does the single horizontal line drawn by children to represent a table correspond to known illustrations of table tops.

Individual differences in children's styles of drawing are also thought to make a difference in whether visual perspective is included in a picture. Lowenfeld (1982) found that pre-adolescent youth of the same developmental level, and who share much of the same environment, approach the same subject with a different focus and interpretation. This led to his theory of visual and non-visual (haptic) perception, two vastly different developmental pathways in graphic development. Some children are perceptually driven by visual input, that is, the visual appearance of the objective world. Haptic perception is subjective, less dependent on external models or visual cues. Haptic representations are driven by the value or significance of the drawing task. For instance, Picasso's drawings, in comparison to Rembrandt's drawings, were more a response to his subjective experience than according to how things looked.

Visual Symbol Systems

One of the important differences between theoretical models that focus on the symbolic form, or drawing as Visual Symbol System, and models that place emphasis on the function of signs (Semiotic Activity), is that Visual Symbols Systems have explicit rules for what can be considered symbolic behavior. For

example, to qualify as a graphic symbol, there must be a differentiation between symbol and referent and the symbol must sustain its meaning after the motor action has ceased. If a child reads meaning into scribbles after drawing, this does not qualify the marks as symbols because intention was absent. Visual Symbol Systems differentiate between drawing as pure action and drawing as representation (Golomb, 1992).

Scribbles, or icons of form, were meticulously studied by Kellogg (1969) who theorized that they were an abstract vocabulary, and a necessary precursor to representational form. Evidence from anthropological studies has since contradicted this theory. In cultures not exposed to graphic modes of art, children and adults were presented with pencils and paper and drew forms preceded by minimal or no scribbling (Golomb, 1974; Harris, 1971).

The late emergence of graphic symbol production (relative to verbal symbol production), appearing near the child's third birthday (Cox, 1992; Golomb, 1981), is thought to be partly due to the limited investment of Western cultures in facilitating the acquisition of this symbol system (Callaghan & Rankin, 2002). Callaghan (1999) demonstrated that, for 3- and 4-year olds, communication with symbols was facilitated by a game in which children used their drawings as symbols and responded to an experimenter's drawings. When children's drawings failed to communicate symbolic intent, negative feedback by the experimenter succeeded in eliciting significantly more refinements in children's drawings following this feedback.

Symbols, in and of themselves, do not always convey meaning. The alphabet, a ready-made symbol system, takes years to learn. In contrast, graphic symbolism often conveys meaning even if self-created and not yet influenced by culture (Golomb, 1994). If training and social support is provided for graphic development as a symbol system independent of language support, children will alter their drawings to improve communication (Callaghan, 1999; Callaghan & Rankin, 2002). Children understand the representational value of drawings early on (Adi-Japha, Levin, & Solomon, 1998) and even 3- and 4-year-olds are capable of interpreting symbolic information in their own and other children's drawings.

From the perspective of the Visual Symbol System, children ignore perspective and 'tailor' their creations, not according to knowledge of the environment, but according to the 'flow' of their ideas and feelings. For example, the throwing arm of a baseball pitcher may be exaggerated way out of proportion to the player's body in order to emphasize the function of this arm (Lark-Horovitz, Lewis, & Luca, 1967, p.59). In other words, children are less focused on visual correctness than they are on symbolic emphasis.

Semiotic Activity

The semiotic approach, or the treatment of drawing as the representation of meaning through the creation of signs and symbols, places importance on their *function* (Kindler & Darras, 1997). Drawings are not analyzed separately from the context of the total activity. Drawing-as-social-practice is distinguished from artifact. A drawing is not meaningful in and of itself (Pearson, 2001). More and more, children's art is influenced by peers in the classroom who negotiate the

content of drawings and assign roles as if drawing were imaginative play (Thompson, 2003).

Recent theories on pictorial production have reexamined our conceptualizations of drawing development. There is growing evidence to support graphic development as diverse mental representational skills rather than a unilinear phenomenon culminating in visual realism. Building on the work of Varela (1989), who proposed that sensory-motor activities and central nervous system activity interact to create its own structure of organization, Kindler and Darras (1997) developed a taxonomy of teleologies to explain how graphic representation emerged from this interaction.

The age of the child when representation emerges has not been an important consideration because the manifestation of drawing is not characterized as a unilinear stage-like process, but as a repertoire of choices for visual meaning-making (Kindler, 1999; Kindler & Darras, 1997; Wolf, 1997; Wolf & Perry, 1988). For example, parents often look at the marks their children unintentionally make and say, “What have you drawn here?” Children soon realize that their marks are expected to represent some ‘thing.’ If the child then attempts to draw something recognizable to the adult, it is not a reflection of development but of social reinforcement.

Teleologies

As described in the introduction, teleologies are natural processes that are shaped toward a purpose. The following teleologies represent drawing and pre-

drawing developmental pathways. They represent an ageless, stageless system with a map-like structure and therefore a unilinear timeline is not provided.

The teleology of identity, similarity, and difference.

From the infant's recognition of similarity, three cognitive teleologies evolve that guide pictorial behavior: the teleology of *identity*, the teleology of *similarity*, and the teleology of *difference*. These teleologies are biologically-based developments that occur in infancy. For example, newborn infants have wired-in abilities to discriminate between objects, events, and situations, but this primitive ability is greatly enhanced, elaborated, differentiated, and integrated into a very functional repertoire that becomes a part of our personal-social intelligence (Dupont, 1994). One way that infants demonstrate recognition of similarity and difference in objects is by habituating to like stimuli and alerting to new stimuli. Ekman & Friesen's (1972) research on infants' recognition of facial emotions supports the idea that infants recognize basic emotions, and they demonstrate differentiation between unlike emotions by changes in autonomic regulation (e.g., heart rate increase).

The reproduction of simple gestures and movements by infants, evidence of identity, memory, and recognition of similarity allows for classification and production of new gestures integrated within a cognitive domain. Although Kindler and Darras (1997) did not specify age or order, research has demonstrated that infants less than one year (9 months old) can recognize what they have experienced before and reproduce simple movements (Meltzoff, 1988). Classification of gestures probably occurs around 12 to 13 months, when infants

using objects in play can be seen imitating the actions of adults. The ability to go beyond recognition to produce new categories according to conceptual differences and correspondences occurs near the end of infancy (30 months) (Sugarman, 1983).

The teleology of resemblance and figuration.

Although movement is the salient attribute of the teleology of *representation*, iconic gesture is thought to lead to the earliest graphic productions of children through the universal teleology of *resemblance* (Kindler & Darras, 1997). The teleology of resemblance may first be manifested when the toddler manipulates food and other substances and suddenly notices that his or her gesture produced a trace. The trace that gesture accidentally produces shifts the infant's attention from movement to the static properties of this phenomenon. From the figurative aspects of gesture's trajectory emerges the teleology of *figuration*, that is, the mark or imprint left behind (Kindler & Darras, 1997).

Another entre to figuration is through early mark-making that accompanies narrative (Kindler, 1999; Matthews, 1983). Traces arise out of the gestures of an animated child dramatizing a story, wielding a marker as a vehicle for animation. The marks become a record of the activity (Freeman, 1993).

The age range reported for the emergence of scribbling varies between the age of one and four years old (Lark-Horowitz, Lewis, & Luca, 1967), however adherents of the semiotic theory of drawing development do not focus on age per se and do not focus on scribbling as a stage or important development. "Action representation," or the fusion of motor action and representational gesture, has

been considered as symbolic behavior by some (Matthews, 1983) and by others, as a primitive stage of development where space, object, sound, and child-as-actor are undifferentiated (Werner & Kaplan, 1963).

The teleology of autonomy.

Even though their trace is not considered a *conscious* creation (Lowenfeld & Brittain, 1970), scribbling is a process through which children can discover graphic representation unintentionally (Freeman, 1993). The teleology of autonomy is characterized by icons of forms (Kindler & Darras, 1997). By autonomy, I believe Kindler and Darras intended to emphasize how the trace (e.g., permanent mark, scribble, form), or the material evidence of gesture became separate and autonomous from gesture.

Kindler and Darras (1997) hypothesized that children's representations of objects occur because adults look for recognizable substitutions of objects in children's drawings. Closed shapes separate segments of space and "begin to invite adult interpretations and consequently invite a child to dialogue about his or her work" (p. 154). Children begin to identify their scribbled marks "after the fact," a process aptly named "romancing." These scribbles are usually not recognizable as symbols to others (Golomb, 1992).

The teleology of description and communication.

Appearing as early as 2 years old and lasting until the child is 4 to 6 years old, preschemata are not so much an expression of individuality as the creation of efficient symbols that function as "carriers of intended meaning" (Kindler & Darras, 1997, p. 34). The desire to create graphic equivalences of objects, the

"need to communicate, and the concern to achieve a desirable level of correspondence between the intention and interpretation of the image" make up the teleology of description and prompt the abundant use of verbal and gestural commentary. Visual imagery highlights the teleology of communication when storytelling is manifested in pictorial icons of actions (Kindler & Darras, 1997, p. 157).

According to Freeman (1993), an analysis of drawing development necessarily needs to include the process whereby children come to realize that their marks need to "trigger particular recognitions in the minds of others, and how they discover ways of organizing their depictions so that recognitions will get triggered" (p.113). The first representational attempt to turn circular and longitudinal motions into recognizable forms is the beginning of symbol-making. The viewer may be unable to distinguish between children's drawings of humans and animals, but images increasingly correspond to the objects represented (Lowenfeld & Brittain, 1970).

The teleology of organization.

Some theorists regard this period as the expansion of a repertoire. Pictures depict increasing numbers of graphic elements accompanied by spatial organization, evidence of icons of rhythm, and an illustration of the teleology of organization (Kindler & Darras, 1997). Icons of rhythm are like adult doodles: rhythmic marks begin to take on different shapes and directions during the process but the overall appearance of these marks have integrity or organization.

The teleology of description and narration, and narration and description.

According to Kindler and Darras (1997), the impulse to tell stories leads to the placement, spatial organization, and relationships between elements of an image that make up the teleology of description and narration. The static initial imagery of this teleology is in contrast with the teleology of narration and description that is dominated by narrative.

Perhaps the best example of pictorial narration and description is Kindler's (1999) description of a young hockey player's repertoire that includes action maps and drawings illustrating hockey rules. The young man can not describe hockey with words; iconic gesture is his pictorial representation ("I am the picture"). Antoni is likened to a performance artist when he talks, gestures, and draws to illustrate an action sequence of a hockey game. Kindler allows us to see the blurring of the lines between drawing and pictorial systems that are a dynamic interplay of visual, gestural, and vocal cues in the act of representation.

Cultural Models

Learning to draw is a cultural process (Wilson, 2000; Wilson & Wilson, 1977). The cultural-context perspective shares Piaget's belief that development occurs through active interaction with the environment. An emphasis is placed on the role of the family, community, and the cultural history of the social group in contributing to children's development. Hilliard (1976) noted that individuals have a psychological style and that it is possible to generalize about culture groups. Culture-specific variations shape development. Some cultural theorists

distinguish between early and later development; innate factors are thought to constrain drawing tendencies until middle childhood when cultural factors predominate (Golomb, 1992).

Cultural background influences children's drawings in several ways (Brown, 1992; Budge, 1998; Wilson & Wilson, 1977). Culture provides models that children imitate. Studies of drawings by children from different cultures suggest that children's art in Western cultures may demonstrate increasing pictorial realism as children develop because that is what is valued and expected by the culture (Pufall, 1997; Wilson & Wilson 1984, 1985). Culture influences the size of figures portrayed and the number of details included (LaVoy, Pederson, Reitz, Brauch, Luxenburg, & Nofsinger, 2001) as well as depth perception perceived and depicted (Toku, 1998), differences thought to reflect cultural values. The source of advanced visual narrative drawings of young Japanese during the middle childhood years was traced to popular comic books, identified as salient visual models in Japan (Wilson & Wilson, 1976).

At one end of the Cultural Model spectrum, drawing is viewed as mediated learning. At the other end of the spectrum, cultural extremists view artforms as "social conventions, arbitrary signs that do not stand in any compelling relationship either to the subject of the drawing, that is, to the phenomenal object, or the organizational principles underlying human perception" (Golomb, 1992).

An implication of the cultural-context perspective is that cultures provide people with a framework for interpreting their experiences that influence their

world-view. From this perspective, models of graphic development that place visual realism as the universal culmination of graphic development (Milbrath, 1998; Piaget & Inhelder, 1956; Willats, 1977) are considered outmoded because visual realism in drawings is not considered the culmination of graphic development in all cultures. And even within Western cultures, many individuals regard abstract art as more desirable and more advanced than visually realistic pictures.

Summary

Piaget's theory of drawing development reads like a twist of an old novel, *Portrait of the Artist as a Young Scientist*. How well does Piaget's metaphor of cognitive development, "child-as-scientist" (Beilin, 1992), fit the domain of art? Piagetian epistemological theory constitutes an integrated and coherent system that need not be proven true or false, but examined for the factors that are not taken into account by the theory (Garcia, 1992). Piaget's history of drawing development is inseparable from his influential theory of child development. Dominant theories "become reified. They become part of the air a culture breathes, the world it knows, how it thinks, who it is" (Grave & Walsh, 1998, p.29).

Newer perspectives of children's drawings are efforts to uncover the identity of a domain represented in terms of a radically different epistemology. Now multiple pathways, or repertoires, of graphic development, are being studied (Wolf & Perry, 1988). Deserving to be examined "in its own right" (Golomb,

1992, p.2), child art becomes then, not a reflection of cognitive development, but part and parcel of the child's construction of reality.

Modern explanations attribute children's simple forms and unusual depictions in the preschematic period to children's use of symbols as referents, their intelligent pictorial solutions to problems posed to them (Arnheim, 1966; Golomb, 1992), task demands of the drawing situation (Barrett, 1983; Golomb, 1992), and limitations of younger children's memory capacities (Case, 1993; Milbrath, 1998). A common thread through most literature on early drawing development, despite different theoretical stands, is that sensorimotor activity is a precursor to drawing (Kindler & Darras, 1997).

Experimentation during this early period is reminiscent of Piaget's description of circular operations in infancy. Piaget demonstrated how knowledge is derived from active manipulation of objects in the spatial environment (Piaget & Inhelder, 1956). He believed that "actions rather than perceptions comprise the essential vehicle for developmental progress" (Flavell, 1963, p. 328). Piaget's theory of representation as a dynamic process was not applied to graphic development, however.

Once the child begins to scribble, theoretical perspectives depart according to the relative importance given to social influences and theoretical differences in the use of the terms, symbol and representation. Visual Symbol System theories usually are very strict in their distinction between prerepresentational sensory-motor actions and truly intentional and enduring symbolic representations. From this perspective, mere gestures or words, as in symbolic play, or infant cognitive

research that indicates early forms of memory or perceptual analysis do not qualify as representation in its restricted meaning (Golomb, 2002)

Socio-cultural influences on graphic development range from cultural models (e.g., peers, comics) to cultural tradition (e.g., technique, impressionistic or visually realistic) to historical influences (e.g., children's drawings in response to the Holocaust). Vygotsky (1978) viewed knowledge as emerging from social interaction and addressed the role of society and the functional role of drawing in the overall development of the child. Vygotsky emphasized process, and many theorists in art education believe that in art, the "final product is subordinated to the creative process. It is the child's process, his thinking, his feelings, his perceiving, in fact, his reactions to his environment, that is important" (Lowenfeld & Brittain, 1970, p. 8).

Cultural Models of drawing development do not subscribe to stage theories (Wilson & Wilson, 1984, 1985), but this account has received criticism because it does not take into consideration the similarities of early graphic symbols when cultural models are nowhere to be found (Golomb, 1992). The cultural perspective exposes a major flaw in Piagetian theory (Piaget & Inhelder, 1956) of graphic development. The central constructs in Piaget's system were defined in universal terms and researchers began to question universalism when anthropological studies reported that children in different cultures pass Piagetian tasks at different ages and reach different terminal levels (Case, 1992).

Piaget's (Piaget & Inhelder, 1956) history of graphic development is an illustration of one of many pathways of graphic development. When Western

logic becomes only *one* of many cultural forms of modeling children's thought, various forms of artistic endeavor are placed on an equal footing with those of a more analytical nature. The way is then open for examining its historical evolution "in a fashion that does not conflate the level of historical development of a system for representing the world (e.g., for rendering spatial perspective) with the level of intellectual activity that is required for applying or contributing to the evolution of that system" (Case, 1992, p. 94).

'Piagetically' speaking, theorists in art education experienced disequilibrium due to the incompatibility of the concept of universalism and the findings of cross-cultural research (Wilson & Wilson, 1985). There is a new metaphor of the child artist on the horizon. In fact, it is very Piagetian that the conceptually immature child-scientist should become the innovative creator of graphic solutions to problems posed by the self or others (Arnheim, 1966), one who constructs meaning visually.

Dewey (1934) once said "science states meanings; art expresses them" (p.84). Half a century ago, Arnheim (1952) advised us that the psychologist needs more than scientific method to study art; the researcher needs intuition and "a keen anticipation of the truth to be verified" (p. 311). Reclaiming the domain of graphic development requires theory-guided research and inquiry from an emic perspective. In ethnography, an emic perspective is an insider's view. In the present context it refers both to domain knowledge and to an understanding of the internal structure of the domain, its principles, how it functions, its laws, motives (Winner, 1988), and the perspective of the child and his or her culture.

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CHAPTER 2

The Effect of Dramatic Play on Children's Graphic Representation of Emotion

The inclusion of the arts in educational curricula has a controversial history. Research efforts to find a link between arts education and success in school have been fueled by the elevated status of academic achievement which entitles it to the lion's share of the educational budget (Luftig, 2000). Educational programs enhanced by the arts have been credited with improving performance in creative thinking (Luftig, 1993, 1994) and having an indirect impact in other areas, such as mathematics, by improving student attitudes toward learning (Forseth, 1980). Results of earlier studies that suggested a direct causal relationship between the arts and academic achievement were questioned because the positive relationship was correlational, and on closer examination was deemed to be unfounded (Winner & Cooper, 2000). Research into how the arts might improve academic achievement has received criticism from some art educators who believe that art should be valued for its unique contribution to the individual: self-knowledge (Eisner, 1998).

A meta-analysis of both published and unpublished empirical studies to investigate the connection between the arts and overall academic achievement found no evidence that "arts-rich educational environments" lead to improved academic achievement. Winner & Hetland (2000) reported that many studies

focused too narrowly on general test scores and grades as outcomes. In more focused studies, a positive relationship between particular art forms and specific outcomes emerged. The relationship between drama and academic as well as socioemotional outcomes has been found in a variety of experimental studies. Drama is thought to influence children's capacities by enhancing perspective-taking skills (Kruger, 2005). Thus far, we have evidence that a relationship exists between drama and understanding of emotions (Brown, Donelan-McCall, & Dunn, 1996; Hughes & Dunn, 1998; Kruger, 2005; Youngblade & Dunn, 1995), drama and theory of mind (Astington & Jenkins, 1995; Kruger, 2005), and between drama and reading achievement, writing and language skills (DuPont, 1992; Kruger, 2005; Podlozny, 2000; Smilansky, 1968; Wagner, 2002). Drama experience not only improves students' story understanding and recall, but comprehension has been found to generalize to new text (Podlozny, 2000). . In her study of the effects of drama on disadvantaged preschool children, Smilansky (1968) observed that disadvantaged children, "left alone to form (their) concepts accidentally" (p.3), typically lack perspective-taking and demonstrate a discontinuity in thought. Through drama, her research participants learned to relate past experience and isolated concepts with new conceptual constructions that they had not directly experienced.

The mechanism through which drama has these effects on thinking in general and thinking about emotion in particular may reside in the interplay between imagination and perspective-taking (replication of others' mental or emotional states) and representation (expression of understanding). Wagner

argues that one of the outcomes of participating in collaborative pretense (i.e., drama) may be a reciprocal relation between representation and perspective-taking (1998). Research on processes similar to drama may illuminate the mechanisms involved.

Symbolic play, imaginative play, and dramatic play are a few of the terms that have been used interchangeably to refer to play that includes the components of role playing (Davidson, 1996) and development of a theme. Role play allows children to "try on" the feelings of others in context and improves children's inferences about others (Wagner, 2002). Individual differences in emotion understanding, defined as the process by which inferences are made about one's own and others' feelings and behaviors (Nannis, 1988), have been related to differences in the quantity and quality of pretend play (Astington & Jenkins, 1995; Dunn & Brown, 1991; Hughes & Dunn, 1998; Lindsay & Colwell, 2003; Youngblade & Dunn, 1995).

Research shows that pretend play allows children to connect with another's experience and understand other people's mental states (Zahn-Waxler & Radke-Yarrow, 1992). Children's imaginative understanding is linked to perspective-taking (Bergen & Mauer, 2000; Kavanaugh & Engel, 1998). It is important that children's construction and reconstruction of emotion eventually lead to shared meanings and shared emotion understanding (Dupont, 1994). Thus, the development of emotion understanding relies on general symbolic development. The process of representing one's own and others' emotion states

and situations leads to more flexible and controlled understanding of emotional experiences.

The effects of drama in these studies are found in a range of activities that all rely on verbal expression, including emotion understanding, theory of mind, reading, and writing. This suggests the alternative explanation that drama affects children's language skills, and improved communication is what underlies all these accomplishments. Thus, it is an empirical question whether drama in fact affects the understanding of self, others, and emotion independent of the use of language. However, a few studies point to this possibility. Callaghan (1999) investigated 3- and 4-year olds' participation in a game in which children used their drawings as symbols and responded with them to an experimenter's drawings. When children's drawings failed to communicate symbolic intent, negative feedback by the experimenter (in drawing format) succeeded in eliciting significantly more refinements in children's drawings. In another study Callaghan and Rankin (2002) compared symbolic functioning in three domains (graphic, play, and language). A relationship among the different symbol systems was established through various tests over multiple time periods.

Drama and other art forms that are specially designed to engage children in enactive learning may provide more salient and meaningful experiences, leading to representational flexibility. As part of a study to explore different teaching methods with children who were considered kinesthetic learners and who performed below their grade level, children were given a battery of tests before and after a planned intervention. The intervention was a dance program designed

to improve children's understanding of language by enactment of poetry through movement and gesture. One of the assessments required the children to draw self-portraits before the intervention, and to draw pictures of themselves and the artist following the intervention. In posttest drawings, a significant number of drawings appeared less mature than pretest drawings. Children who drew detailed self-portraits before the intervention, had "regressed" to drawing stick figures in an effort to depict rhythm and movement. A nonverbal art form (dance) had an unexpected impact on another nonverbal art form, drawing (Kapsch & Kruger, 2004).

Because preschool children think in visual images (Hubbard, 1989), and children's graphic representations make emerging thought forms visible (Goodnow, 1978), children's drawings may illustrate more about their understanding of emotion than is possible through verbal accounts (Gordon, 1989). A representation in two-dimensional space may be what is required to meet the child's "narrative needs that language alone does not fulfill" (Kindler, 1999, p.339). This suggests the possibility that the effects of drama on a nonverbal domain such as drawing may be even more significant than previously established with language-based tasks.

In a Japanese study (Koike, 1997) that asked children, ages 5 to 11, to draw a series of trees depicting different emotions, older children used more strategies to represent emotion. Koike's study was cross-sectional, looking at the relationship of age to strategies. The younger children (aged 5-7) in Koike's study used few strategies, and the strategies were literal. The purpose of the present

quasi-experimental study was to examine the changes in young children's graphic depiction of emotions longitudinally. Although brief, based on prior studies (Kapsch & Kruger, 2004; Kruger, 2005; Podlozny, 2000; Smilansky, 1968), the drama intervention was expected to enhance children's representations. Drawings will be examined pre- and post-intervention, comparing their use of strategies to represent emotion.

From a sociohistorical perspective, the child grows into culture (Walsh, 2000) and symbolic representations become less idiosyncratic and more culturally-shared. Stipulations become unnecessary as children learn to co-construct social-symbolic graphic languages (i.e. drawings understood by one's social group). Children in the present study are five to seven years old, a time when many children's social environments change and their idiosyncratic representations become transformed into more culturally-shared symbols. Although limited, this age range is identified as the period of symbolization (Gardner & Wolf, 1987). This period also represents a pivotal developmental period for graphic development, the change from preschematic to schematic drawing.

African American students of lower socioeconomic status (SES) are represented in this study. Half of the students participated in drama during language arts instruction over 10 days while peers of comparable age and socioeconomic status in a local school received standard language arts instruction and served as a control group. Lower SES students may be especially benefited by

such an intervention, as earlier studies have suggested (Kruger, Flanigan, Kapsch, Samuelson, & Harris, 2002; Podlozny, 2000; Smilansky, 1968).

Research Questions

Participation in the dramatic arts has been shown to facilitate performance in a range of activities that rely on verbal communication. However the effect of drama on the graphic symbol system has not been studied. In the present quasi-experimental study, young children's graphic depiction of emotion in drawings will be examined pre- and post-intervention. The independent variable of this study is participation in a planned dramatic arts program. This study addresses two questions:

Question 1. Does participation in the dramatic arts result in a significant increase in congruence between teacher-instructed emotion type (i.e., the emotion the children were told to draw) and coder-identified emotion type in participants' drawings? Talking about inner states has been known to predict individual differences in emotion understanding (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991), and drama instruction includes discussion about characters' inner states and how their feelings and thoughts are related to the circumstances of the play.

Culturally-shared meanings of emotion are learned throughout life (Dupont, 1994), and drama is one way to introduce children to the shared meanings of emotion in which events take place. Therefore I hypothesized that participation in the dramatic arts would result in more readable depictions of

emotion and an increase in matches between teacher-instructed emotion type and coder-identified emotion type in drama participants' drawings.

Question 2. Does participation in the dramatic arts result in more strategies to depict emotion? Strategies refer to elements of the drawing, such as line, image, color, and the like, that contribute to the coder's recognition of emotions depicted in drawings. I hypothesized that participation in drama would result in more strategies to depict emotion (and more sophisticated strategies) because representational thought becomes more flexible through dramatic play (Yawkey, 1984).

Research shows that older children use more strategies to represent emotion when drawing trees depicting different emotions (Koike, 1997). Yet research also shows that children the same age but with more experience with others' and one's own emotions develop a more thorough emotion understanding (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991). Since drama provides experience with others' and one's own emotions, it was hypothesized that participants in dramatic play would produce more strategies (and more sophisticated strategies) post intervention to depict emotion.

Method

There were a total of 138 children who contributed drawings, either at pretest, posttest, or both time periods. Sixty of the original 138 children contributed both pretest drawings and posttest drawings. Only the drawings of this subsample of 60 children were considered for hypothesis testing. Children who contributed drawings at pretest only, "drop-outs," (N=60; 35 intervention and 25

control) were lost to the study either due to absence during the three days of posttesting or relocation. Children who contributed drawings at posttest only, "drop-ins," (N=18; 9 intervention and 9 control) were unavailable for pretesting for similar reasons. The drop-outs and final sample were compared on the outcome measures to gain a fuller picture of any differences between them. These analyses are reported in Note A1.

Participants

In the final sample, 60 children (39 Kindergarten children, *M* = 5.08 years, *SD* = 0.01; and 21 first grade children, *M* = 6.03 years, *SD* = 0.02) from intact public school classes participated in the study. Children were enrolled in two public schools in a major metropolitan area. Students in one school participated in the intervention because the principal at that school elected to spend some of the discretionary budget on a program in drama. Students in the other school did not experience drama in the classroom because their principal elected to spend money on other programming. The schools were located in the same neighborhood and school district and had comparable budgets. The majority of the students at the two schools were members of ethnic minorities and qualified for Title I benefits due to low income.

Table B1 provides data comparing the two schools on demographic and achievement variables for the year during which data were collected. Table B2 presents data on the demographic breakdown of the two samples: children who participated in the present study and the larger sample without complete data. The

number of drawings by grade and intervention group for the entire sample (N = 138) is included in Table B3.

Procedure

A local professional theatre company employed teaching artists to deliver educational programs in the public schools. “The Wolf Trap Early Learning Program” was delivered to Kindergarten classes, and a similar program, “Curtain Call,” was delivered to First grade classes. The local county arts council in partnership with the county school board contracted with this educational program to provide drama instruction to Kindergarten and first grade students in several schools.

The instruction centered on the professional production of a play based on the book, Lilly’s Purple Plastic Purse (Henkes, 1996). Children in the program read the book (or had it read to them), saw the play, and spent approximately 10 hours in their classrooms creating new versions of the story through drama. Their new versions were elaborations on the story themes that they identified. Students discussed the themes, brainstormed new characters and plots, and role-played their new creations.

An example of an activity at the beginning of the intervention is story creations using basket objects. For this activity, the children choose objects that they want in their story from a basket that contains a variety of objects. The teaching artist then engages the students in answering open-ended questions that set up the elements of a story (e.g., character, setting, story structure). The

students might be asked, “How does our story begin?” Evidence of story structure includes stories created by children with characters that have relationships and stories that contain a clear beginning, middle, and ending.

A more advanced activity would include questioning students about their understanding of stories and story structure. Students might be asked, “Did our story have a resolution?” Voluntarily contribution to the discussion by students, and the depth of the discussion, are important elements of the evaluation component (see www.wolf-trap.org).

Before and after this intervention, children in both schools were instructed by their classroom teacher to draw a person, a self-portrait, a “happy” tree, “sad” tree, and “angry” tree sequentially over five days. This paper focuses on the drawings of emotions. Data were collected in spring of 2002. Testing was roughly 2 months apart for all students in order to accommodate the time needed for the intervention. The researcher asked the teachers to instruct their class to simply “Draw a happy tree” on the third day of testing, “Draw a sad tree” on the fourth day of testing and “Draw an angry tree” on the fifth day of testing. Teachers were not restricted to any particular materials for this assignment as the researcher wanted the teachers to conduct the assignment in as typical a way as they would for any other assignment.

After the completion of the first set of drawings, they were collected and labeled as pre-intervention, “K” or “1st” grade, instructions (happy, sad, or angry) and by teacher and school. Children were given identification numbers, and these were written on each drawing. All other identifying information (beside the

identification number) was then covered by two layers of paper stapled on top. A similar procedure was followed for the drawings collected after the intervention.

The independent variable was intervention status (intervention, control). Dependent variables were 1) a measure of clarity of emotion (readability) and congruence (match) between emotion identified by scorer and teacher-instructed emotion, and 2) strategies for depicting emotion.

Coding Procedure

Drawings were coded by adult coders (graduate research assistants) blind to the emotion children were instructed to draw, intervention status, grade, and ethnicity of the child artist and as to whether the drawing was pre- or post-intervention. Once identifying information was covered, drawings were randomly ordered and coded. Each drawing was coded for the categories outlined below.

A). Emotion. This category's codes are mutually exclusive and exhaustive. Thus, only one code from this category is assigned to a drawing. Coders determined the emotion being conveyed by the child's drawing.

1. Uncertain, other
2. Happy
3. Sad
4. Angry

B.) Readability. Each drawing was coded as belonging to one of the following mutually exclusive and exhaustive categories. These categories denote the effort required for coders to read the emotion in the drawing.

1. Unreadable (U). The coder could not determine an emotion (see Figure C1).

2. Hard to Read (H). Conflicting or vague strategies were used to convey emotion (see Figure C2).

3. Readable (R). Clear and consistent strategies made the emotion readily understandable.

C.) Match. After each drawing was completely coded, the Principal Investigator un-blinded the drawings to determine whether or not the coded emotion matched the emotion the teacher instructed the children to draw. Thus, each drawing was coded as one of the following.

1. Match (M)

2. No Match. (NM).

D) Readability/Match. It is theoretically possible for a child to produce a readable drawing that does not match the instructions, either because the child did not have sufficient emotion understanding, did not have the capacity to represent the emotion in symbols that the coders could interpret, or did not follow the instructions. Similarly, it is possible that a hard to read drawing may match the emotion instructed. For these reasons, the following codes were constructed; they are all possible combinations of the Match and Readability codes, and they were designed to more fully describe the drawings. Each drawing was recoded by combining its Readability and Match code into a single category, that is, as one of the following mutually exclusive and exhaustive categories.

1. Unreadable and therefore No Match (UNM)

2. Hard to read and No Match (HNM)

3. Hard to read and a Match (HM)

4. Readable and No Match (RNM)

5. Readable and a Match (RM)

E.) Strategy types. Each drawing was coded for the strategies used to convey emotion. A strategy is an element of the drawing that the coder used to decipher the emotion represented. Strategies were coded on all drawings, if present, even if those drawings indicated ambiguous or mixed emotions.

The coding scheme was created in the following manner. The strategies proposed in the preliminary scheme were based on a review of the research literature on graphic representation of emotion. These strategies are: facial expression (Golomb, 1992; Koike, 1997), line techniques (Jolley & Thomas, 1995), gesture (Ives, 1984; Jolley & Thomas, 1995; Koike, 1997), literal indices (Golomb, 1992; Ives, 1984), color (Burkitt, Barrett, & Davis, 2003), environmental content (Ives, 1984), image scheme (Koike, 1997), and symbolism (Koike, 1997). From a preliminary examination of the children's drawings, all the above strategies were noted as well as the additional strategy of written story line, which was added to the list of strategies to be coded.

Representative drawings were then used to test the practicality and potential reliability of the coding system (>80% reliability for each code). This test was successful, and the coding scheme was thus established. The total corpus of drawings was then coded.

The coders searched for the following strategies in each drawing:

1. Facial expression. Expression was determined by the shape and curve of mouths and brows (see Figures C3-4).

2. Color. All use of color was recorded, however, to be considered as a strategy, coders looked either for the deliberate use of non-canonical colors or use of color symbolically (e.g., red trees or crowns for “angry”). Note that most children used crayons (N = 44; 73.3%), but because there were some children who used pencils (N = 16; 26.7%), the strategy of color was later dropped from consideration.

3. Line. Both line type (e.g., jagged lines for angry) and intensity (e.g., dark lines for angry) were considered (see Figures C5-9).

4. Gesture. Gesture referred to form that resembles physical gestures in such a way as to evoke an emotion (e.g., a Weeping Willow tree to represent sad) (see Figures C11-14).

5. Literal indices. Literal indices referred to literal strategies that were in addition to facial expression (e.g., tears) (see Figure C10).

6. Environmental cues/Content. This category referred to the child’s attempt to integrate objects, people, or animals in a composition to evoke an emotion (see Figures C15-18).

7. Written narration. Some drawings contained narration to explain why the tree depicted a particular emotion (see Figure C19).

8. Image scheme. This category referred to the size or appearance of the tree that contributed to the coder’s decision (e.g., a huge tree could be happy or angry, depending on the presence of other clues) (see Figures C20-24).

9. Symbolism. This category was seldom used. It was reserved for those instances when the coder thought there was sufficient evidence that the use of symbolism was deliberate. For instance, a blue sky and sunshine might be symbolic strategies for the emotion, "happy." However, because children often draw blue skies and sunshine when they draw trees, and the coders were naïve to the artist's intentionality when drawing, this category was reserved for those strategies that were, to the coder, unambiguously symbolic (see Figures C25-27).

Coders noted each strategy type present. Coders could identify more than one strategy type in a given drawing, but did not count the number of instances within one type (e.g., two line strategies). Therefore there was theoretically a maximum score of 9 per drawing (9 possible strategy types). The total number of strategy types employed per drawing was recorded as the outcome variable (quantitative measure). Note that each of the drawings included in Appendix C are included to illustrate a particular strategy, but more than one strategy may be observed since multiple strategies can be assigned to any one drawing.

As a secondary classification, coders noted whether the strategies present in the drawing were

1. Consistent with each other – expressing the same emotion or
2. Conflicting with each other – expressing different emotions.

F.) Strategy quality. In the research literature, there is a consensus that young children most commonly represent emotion by facial expression and additional literal techniques. Some aspects of facial expression, such as brows, are uncommonly used by young children. Older children and adults are more likely to

use content and abstract strategies (Ives, 1984). A preliminary review of the drawings in the present study confirmed that a significant minority of the students used either no strategies or conflicting strategies in their work. The use of any strategy other than a literal one was rare. Therefore, to attain a general indication of quality, each drawing was simply re-classified as belonging to one of the following mutually exclusive and exhaustive categories.

1. Low level strategies. Low level strategies were coded when one of the two characteristics below was noted.

a. No strategy. The coder was unable to find any indication of emotion.

b. Conflicting strategies. Conflicting strategies describe drawings in which there were two or more opposing strategies (e.g., a tree with a smile and a frown or a tree with broken branches, but smiling).

2. High level strategies. Any single clear strategy or consistent use of more than one strategy was considered high level for this population. These strategies could range in sophistication from literal to content to abstract or symbolic.

Symbolic strategies would be rare in children this age, and content strategies were not expected to be common. Literal strategies are considered an accomplishment for children this age as it indicates a beginning knowledge of emotion and the ability to differentiate between emotions.

Coding and counting strategies produced three outcome variables:

1. The total number of strategies in a drawing.
2. The number of drawings coded as having low level strategies.

3. The number of drawings coded as having high level strategies.

Two raters independently coded 20 % of the drawings. Interrater reliability was excellent and the results were as follows. Cohen's kappa for emotion types (4 categories) was .87. Note that reliability for these categories depended to some degree on the clarity and accuracy of the child's depiction of the teacher-instructed emotion. Some children did not have sufficient emotion understanding or did not have the representational capacities to depict emotion unambiguously. Cohen's kappa for readability (3 categories) was .93. Agreement for strategy types, using nine codes, was .92. The data from one rater were used in the analyses.

Results

General Description

In the final sample of complete data, 60 children produced a total of 311 drawings (157 pretest, 154 posttest). The numbers of drawings completed pretest and posttest by children in response to the instruction to draw a "happy" tree, "sad" tree, and "angry" tree are listed in Table B4. Pretest, 43 students (71.7%) completed 3 drawings, 11 students (18.3%) completed 2 drawings, and 6 students (10%) completed only 1 drawing. Prior to the intervention, 79% of the drawings were readable and a match (RM), 10% were coded as readable but not a match (RNM), 1% was difficult to read but a match (HM), 8% were difficult to read and not a match (HNM), and 2% were coded as unreadable (UNM). Posttest, 42 students (70%) completed 3 drawings, 10 students (16.7%) completed 2 drawings, and 8 students (13.3%) completed 1 drawing.

Since some children created fewer than 3 drawings on each occasion, all data hereafter are represented as proportions; that is, the number of a child's drawings that received a particular code was divided by the total number of drawings made by the child during that time period (pretest or posttest). For example, if a child made 3 pretest drawings and 2 were coded as RM and 1 as U, that child's data record for pretest would indicate proportional scores of RM=0.67, U=0.33 and all other Readability/Match categories=0.

To assess age differences, a series of ANOVAs was conducted comparing the pretest drawings of Kindergarten and first grade children on the readability (U, H, R), match (M, NM), readability/match (UNM, HNM, HM, RNM, RM) strategy quantity, and strategy quality. The only significant differences between age groups were as follows. Kindergarten children produced fewer drawings that were readable (R) than did first grade children, F (1, 58) = 5.19, p = .03, eta^2 = .082, observed power = .610. Kindergarten children also produced more drawings that were difficult to read and not a match (HNM), F (1, 58) = 4.15, p = .05, eta^2 = .067, observed power = .517. Relevant means and standard deviations for readability/match are presented in Table B5.

These differences between Kindergarten and first grade children are interesting but not crucial to the hypotheses being tested. Since the hypotheses will be tested using analyses of covariance, each child will serve as his or her own control when investigating the effects of the intervention on pretest to posttest change. The age groups will be combined for these purposes to increase the sample size and statistical power.

Hypothesis Testing

The hypothesis testing analyses in this study focused on the questions raised in the Introduction: 1) Does participation in the dramatic arts result in more readable drawings and in an increased level of correspondence between the teacher's instruction and the coders' interpretation of the emotion depicted? 2) Does participation in the dramatic arts result in more strategies, and more advanced strategies, to depict emotion?

Readability. A series of Analyses of Covariance (ANCOVA) was conducted comparing the intervention group to the control group on proportion of drawings coded as unreadable (U), hard to read (H) and readable (R) at posttest, controlling for the appropriate pretest. Compared to the control group, the drama participants' drawings showed significantly fewer unreadable drawings posttest, F (2, 57) = 4.14, p = .05, eta = .068, observed power = .516. Compared to the control group, the drama participants' drawings showed significantly fewer hard to read (H) drawings posttest, F (2, 57) = 8.12, p = .006, eta^2 = .125, observed power = .800. As predicted, compared to the control group, drama participants' drawings showed significantly more readable (R) drawings posttest, F (2, 57) = 14.38, p = .000, eta^2 = .201, observed power = .961. The relevant means and standard deviations for readability are presented in Table B6. See Figure D1 for a graphic depiction of the change over time.

Match. Compared to controls' drawings, the drama participants' drawings showed significantly more improvement from pre-intervention to post-intervention in the matches between teacher instruction of emotion type to draw

and the emotion identified by the coders. The change over time is illustrated in Figure D2. As predicted, an Analysis of Covariance (ANCOVA) comparing the intervention group to the control group on proportion of postmatches, with prematches as the covariant, demonstrated that participation in dramatic play resulted in significantly more improvement in matches between scored emotion and teacher-instructed emotion, F (1, 57) = 7.43, p= .008, eta^2 = .115, observed power=.764. See Table B7 for the relevant means and standard deviations of children's drawings that matched or did not match with the teacher-instructed emotion.

Readability/Match**.** A series of ANCOVAs was conducted on the proportion of drawings coded as belonging to each of the Readability/Match categories, that is, UNM, HNM, HM, RNM, and RM. Relevant means and standard deviations for readability/match are presented in Table B8. For the category of unreadable and not a match ("UNM"), pretest to posttest change was significantly greater in the control group compared to the intervention group. The change over time is illustrated in Figure D3. The control group had more drawings over time coded as "UNM," F (2, 57) = 4.14, p = .046, eta^2 = .068, observed power = .516. Note that this is the same data and the same analysis reported above under readability for "U."

A second ANCOVA was conducted on the mean proportion of drawings that were hard to read and not a match (HNM). The control group had significantly more HNM drawings over time than did the intervention group, F (2, 57) = 7.24, p= .009, eta^2 = .113, observed power = .754. There was a very low

frequency of drawings that were hard to read and a match (HM) and thus the third ANCOVA revealed no differences between groups, F (2, 57) =.79, p = .38. eta^2 = .014, observed power =.140.

A fourth ANCOVA was conducted on the mean proportion of drawings that were readable and not a match (RNM), and there was no significant difference between the groups, F (2, 57) = 1.84, p = .18, eta^2 = .031, observed power = .266. A fifth ANCOVA was conducted on the mean proportion of drawings that were readable and a match (RM) and there was a significant difference between the groups, F (2, 57) = 5.33, p = .03, eta^2 = .086, observed power = .622. As predicted, the drama participants improved significantly more than the students in the control group in the proportion of drawings coded as RM. See Figure D3 for an illustration of group differences over time in the readability/match categories.

Looking at Table B4, compared to the intervention group, the control group drew fewer “angry” tree drawings at pretest. Although the distribution of drawings across the three emotion types is not significantly different between the groups at pretest, X^2 (2; n = 311) = 1.466, p > .05, the pattern is worthy of investigation. Theoretically, it is considered more difficult to distinguish between different types of negative emotion (Borke, 1971; Manstead, 1993). This difference between the groups in the number of “angry” drawings may explain the pattern of higher pretest than posttest scores in the control group. Therefore, to explore this possibility, several ANCOVAs were conducted on the mean proportion of drawings in the Readability/Match categories looking at depictions

of “happy” and “sad” trees only, since the number of drawings in these categories was equal for intervention and control groups. There was insufficient power to analyze any category of the Readability/match codes except Readable and a Match (RM). There was no significant difference between the groups for pretest-to-posttest change on RM (intervention $M = 0.86$, $SD = 0.23$; control $M = 0.86$, $SD = 0.23$), F (53,2) = .379, $p = .541$, $eta^2 = .008$, observed power = .093. Due to the number of codes (5) and the smaller sample of drawings of only “happy” and “sad” depictions of trees, the observed power was minimal. So, to conserve power, Readability and Match codes were examined separately.

First, a series of ANOVAs was conducted to look at differences between groups pretest. An ANOVA was conducted on the mean proportion of “happy” and “sad” drawings coded readable pretest and the result was not significant, F (1, 58) = 1.02, $p = .32$. An ANOVA was conducted on the mean proportion of “happy” and “sad” drawings coded as matching pretest and the result was not significant, F (1, 58) = 2.33, $p = .13$.

An ANCOVA was conducted on pretest-to-posttest change on the mean proportion of drawings coded readable for both “happy” and “sad” drawings. Controlling for pretest, a significantly greater mean proportion of intervention drawings ($M = 0.96$, $SD = 0.04$) was readable posttest, F (2, 57) = 7.39, $p = .009$, $eta^2 = .12$, observed power = .76, compared to the control group ($M = 0.81$, $SD = 0.04$). An ANCOVA was conducted on pretest-to-posttest change in the proportion of drawings coded “happy” posttest that matched the instructed emotion. Controlled for pretest, a significantly greater mean proportion of

intervention “happy” drawings (*M* = .99, *SD* = .05) matched the teacher’s instructed emotion posttest, *F* (2, 49) = 6.82, *p* = .01, eta$^{2 =}$ .13, observed power = .73, than the control group (*M* = 0.80, *SD* = 0.05).

An ANCOVA was conducted on pretest-to-posttest change in depictions of trees coded “sad” that matched the instructed emotion. The mean proportion of “sad” trees drawn by the intervention group that matched with the instructed emotion (*M* = 0.75, *SD* = 0.09) was higher than that of the control group (*M* = 0.69, *SD* = 0.09). The difference was not significant, however, *F* (2, 47) = 0.17, *p* = .68, eta^2 = .004, observed power = 0.07.

These secondary analyses of readability and matching in “happy” and “sad” drawings suggest that, when sufficient power was available, there was not a detectable difference between the groups at pretest, but there was evidence of greater intervention group improvement from pretest to posttest. Thus, the smaller number of “angry” drawings at pretest by control group participants does not appear to have affected the general results reported above.

Quantity of Strategies

An ANCOVA on the posttest mean proportion of total strategies in a drawing (that is, the number of strategies per drawing divided by the number of drawings produced) was conducted, controlling for pretest. There was not a significant difference between the two groups, *F* (1,57)= 2.88, *p*= .095, eta^2 = .048, observed power=.385. That is, both control and intervention groups showed similar patterns from pre to post on this variable. Group differences over time in quantity of strategies are illustrated in Figure D4.

Quality of Strategies

Group differences on pretest-to-posttest change in the proportion of low level strategies (no strategy or conflicting strategies) were analyzed by ANCOVA. Group differences over time in quality of strategies are illustrated in Figure D5. Compared to the control group's drawings, the drama participants' drawings showed significantly fewer low level strategies employed after the intervention, F (1,57)= 7.14, p<.01, eta^2 = .111, observed power = .747.

An ANCOVA was conducted on posttest mean proportion of high level strategies, controlling for pretest. Participation in dramatic play resulted in a greater mean proportion of advanced strategies employed to depict emotion compared to the control group, F(1,57) = 5.83, p= .019, eta^2 = .093, observed power = .660. The change over time is illustrated in Figure D5. The relevant means and standard deviations for both groups in quantity and quality of strategy use at pretest and posttest are presented in Table B9.

Summary of Results

As predicted, emotions depicted by children who participated in the dramatic arts intervention were more readable over time, and they were more likely to match the teacher-instructed emotion over time. Compared to controls, the dramatic arts participants decreased their use of low level strategies and increased their use of higher level strategies over time.

Discussion

The results of the present study demonstrate that some children as young as five years old have the ability to represent emotion in a way that can be

understood or “read” by others. It was hypothesized that coders would be better able to interpret the emotions drawn by intervention participants posttest (compared to the control group). This hypothesis was supported. Representation involves active and constructive effort in the selection of salient literal or symbolic features to refer to what one knows through experience, observation, and learning.

The ability to understand the psychological states of persons is uniquely human and part of the process of enculturation (Tomaselo & Rakoczy, 2003). While social experience (e.g., social class and gender) determines individuals’ exposure and influences their interpretation of experience, it is also an interactional process that can be influenced and enhanced (Schutz & DeCuir, 2002). Culturally-shared meanings of emotion are learned throughout life (Dupont, 1994), but dramatic play is one way to introduce children to the shared meanings of emotion that they may not have experienced in other arenas of their life.

A related hypothesis was that intervention participants, compared to controls, would be better able over time to depict the emotion the teachers instructed them to draw. This was expected because of the enhanced experience with emotion and its representation in drama. This hypothesis was also supported. From prior research we know that when given a specific request, children are capable of producing graphic products that symbolize the objects and events they have in mind, and these drawings have highly stable, representational content (Gross & Hayne, 1999). Dramatic play may enhance this ability to represent in

several different ways. Drama instruction includes discussion about characters' inner states and how their feelings and thoughts are related to the circumstances of the play. Available research shows that children with more experience with others' and one's own emotions develop a more thorough emotion understanding (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991).

Another hypothesis was that, compared to controls, intervention participants would increasingly use more advanced strategies to depict emotion. This hypothesis was also supported. Dramatic play helps children make connections between emotions and the gestures and facial expressions that depict these emotions. There is evidence that the graphic symbol system is built on gesture (Kindler, 1999) and that gesture leads to iconic images (Bruner, 1986; Wagner, 2002). Gesture is one aspect of dramatic play that children learn, and this learning may transfer to use of gesture pictorially.

Role-playing hones children's perspective-taking skills (Kruger, 2005). Anticipating audience reception may transfer to drawing by making the child artist more aware of the viewer when drawing. Experience with, and sensitivity to, others' viewpoints may transfer to the graphic portrayal of emotion understanding. In a study that looked at the effect of a dramatic arts residency on empathy, a greater maturity in empathy by drama participants compared to the control group was attributed to improvement in critical skills in perspective-taking that the participants experienced (Kruger, Samuelson, Kapsch, Flanigan, & Love, 2002).

We are beginning to see significant relationships between dramatic play and other symbolic domains. Perhaps the reason that empirical findings thus far support the significant effect of dramatic play on child development, in contrast to other art forms, is because it provides a psycho-cultural approach to learning (Bruner, 1996). Dramatic play scaffolds learning in a socially meaningful context (Walsh, 2000).

Participation in the dramatic arts enhances emergent writing skills, especially for lower SES children (Kruger, 2005). Children who participated in a drama intervention demonstrated enhanced story themes, emotion understanding, perspective, and vocabulary. Kruger proposed that this effect may be due to "more sophisticated symbol use" that develops when children role-play and participate in creating dramatic narrative.

If dramatic play enhances story themes, then the story qualities and themes of drawings may be enhanced as well. Some of the drawing strategies used by children to depict emotion in this study (e.g., narrative, goals, relationships, conflict) are indicative of an understanding of story themes. A dynamic process exists among symbol systems which creates new and "more powerful ways of representing, conceptualizing, and communicating about the world" (Amsel & Byrnes, 2002, p. 253).

In the present study, it was hypothesized that participation in dramatic play would result in more strategies to depict emotion. Contrary to this hypothesis, participants in dramatic play did not produce more strategies overall but did produce significantly more advanced level strategies to depict emotion.

Participants in dramatic play also used fewer ineffective and conflicting strategies post-intervention. Improved readability in the drawings of the intervention group over time could be due to more use of higher level strategies.

In a study of play development, advances in symbolic mastery were evidenced by integration, greater complexity, and the ability to plan pretend play sequences (McCune-Nicolich & Fenson, 1984). The extensive planning, rehearsal and reflection involved in dramatic play may lead to improved planning and reflection (metacognitive skills) and improved pictorial representation (metacommunicative skills). In this study, evidence of greater complexity included bare branches, falling leaves or apples, trees in the rain, and trees bent over with branches reaching the ground to represent "sad."

Greater complexity in strategy use provides coders ("visual translators") with more information needed to make an unambiguous call. An upturned line for a mouth suffices to illustrate the emotion, "happy," however a down-turned line for a mouth, drawn by many children in this study to represent both "sad" and "angry," was insufficient information for the coders to make an accurate determination. These findings correspond to other research endeavors in emotion understanding. Younger children have greater difficulty in distinguishing between different types of negative emotions (Borke, 1971; Manstead, 1993), are less accurate when making finer distinctions within positive and negative emotion categories, and have broader conceptions of emotion categories (Bullock & Russell, 1985, 1986). Emotion understanding, the process by which inferences are

made about one's own and others' feelings and behaviors (Nannis, 1988), is an important skill that may have been enhanced by experience in drama.

Children's ability to link affective states to their causes is the crucial step in the transformation of affective states into feelings, and this process is thought to be a vital step in children's language and emotional development. Words for feelings label and categorize affective states, introduce the child to the shared meaning of emotion in their culture, and provide structure for emotional life (Dupont, 1994). The implications of research suggest that some children incorrectly interpret their peers' intentions thereby leading to inappropriate aggressive behavior (Dodge, 1991). It is important that children's construction and reconstruction of emotion eventually lead to shared meanings and shared emotion understanding (Dupont, 1994). Thus, the development of emotion understanding relies on general symbolic development; representing one's own and others' emotion states and situations leads to more flexible and controlled understanding of emotional experiences.

This study suggests that enriched experience in structured pretend play (drama) affects a different domain of expression. For participants, this structured dramatic play provided them with experience in creating alternative story endings and other-representation, or role play. The ability to represent "what ifs," to engage in subjunctive thought, is enhanced by dramatic play (Bretherton, 1984) and may increase cognitive flexibility. An indication of advanced symbolic functioning understanding is a growing ability to dissociate the symbol from what it symbolizes, and this ability increases even further "when the child begins to

assume another person's role" (Bretherton, 1984, p. 5) as is done in dramatic play. Pictures may foster understanding of the dual nature of symbols (Lange-Kuttner & Reith, 1995).

Symbolic understanding may be a central conceptual structure shared by different domains similar to the mental reference line or axis shared by different domains, as suggested by Case (Case, 1993; Case, Stephenson, Bleiker, & Okamoto, 1996). A mental reference line aids in the acquisition of concepts in different domains by providing a visual conceptual structure. Just as context aids in learning language (i.e., syntactic bootstrapping), a general understanding of referential relationships provides needed connections between the senses and abstract ideas. In the domain of language, preschoolers extend meanings through metaphor; they bring to mind one thing by referring to salient aspects of another. A referential relationship is one that points to something that is associated with another in a shared context (Winner, 1988).

Dramatic play may indirectly affect student and teacher motivation. Winner and Cooper (2000) identified motivation as one of the theoretically possible mechanisms that could account for a causal link between the arts and academic achievement. Motivational aspects of the arts include increased self-confidence, which can lead to greater effort, attention, and participation.

"The underlying intent of the school curriculum, which orders the spatial and temporal lives of children, is to ensure that schools are inhabited by 'docile bodies' (Simpson, 2000, p. 63). In addition, the formal learning opportunities in our schools are said to be divorced from children's intuitive, informal

understandings (Case, 1993). Dramatic play provides an experimental and experiential approach to learning, and therefore may change the way that students relate to their teachers and peers. Knowledge taught in science, math, and history is a given for novices, knowledge to be rediscovered. The arts, however, require the active involvement of even the novice in the creation of personal knowledge. What domain can provide one with the self-efficacy that art does?

Alternatively, schools that host innovative ways of learning through the arts may attract more motivated teachers. Winner and Cooper (2000) suggested that positive correlation between the arts and academic achievement could be due to an epiphenomenon: schools that value the arts might attract the best kinds of academic teachers (e.g., energetic, innovative, imaginative). An administration that welcomes innovative teaching methods may foster a special learning environment. This alternative explanation of the results has less power, however, because the change in participants took place during a specific period of time that coincided with the intervention. There is also no reason to believe that even if the intervention schools are special, that this factor would affect drawing since the faculty did not address drawing in their instruction.

Vygotsky (1966, 1978) considered gesture to be the earliest symbolic behavior. There is general agreement that symbol systems are built on prior sensorimotor knowledge and activity, and gesture in particular. Presymbolic gestures are thought to be the developmental base of the hierarchical structures of play and language (McCune, 1995). Art, as well, has been described as a visual language that emerges from gesture (Gardner & Wolf, 1987; Kindler, 1999;

Kindler & Darras, 1994, 1997, 1998). Thus, in the earliest years, theorists and researchers view the processes of gesture and pretend play (both foundational to drama) as mechanisms of development promoting more advanced symbolic functioning.

If dramatic play changes children's graphic symbols, in keeping with a Vygotskian (1981) perspective, then we need to seek to understand how the social psychological processes that first appear between people become intrapsychological processes within the child. More research is warranted to be able to understand what changed as a result of the intervention. It is also important to relate drawing to other symbolic processes (Stetsenko, 1995). If the way in which children portray emotion is intimately tied up with their whole thinking process, then we should see some relationship between their drawings and their stories. I would like to collaborate with another researcher and compare these drawings with other research conducted during the same time period, looking at children's stories and assessments of theory of mind.

One of the limitations of this study is that there is no record of the children's intentionality in picture-production. The coders were naive. A future study of children's representation of emotion would benefit by attending to children's art-making process (Kindler, 1999). As noted by Freeman (1993), representation is asymmetrical. A record of process has helped research in other symbol systems. In symbolic play, roles are *stipulated* by the child, props are named. There is no established shared vocabulary of graphic symbols between child artist and coder. Graphic symbols are often verbally stipulated by narration

during drawing. In this study, the researcher did not have the benefit of context or an opportunity to “eavesdrop” on self-talk or talk with peers during the drawing task.

For now, the present study has made a contribution by demonstrating that many young children (Kindergarteners and first graders) are capable of representing emotion graphically, and that this ability can be enhanced through a brief, structured intervention in dramatic play. Readability in depiction of emotion in drawings significantly improved post intervention as did the use of more sophisticated graphic representational strategies.

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Appendix A

Author Note

To determine if there were relevant differences between the subjects who were lost to the study after the pretest and those who were retained, comparisons of the two groups were made. These analyses provide in some respect a picture of who the children in the final sample are in the context of their schools. Low - income schools often report high transience rates. Students who were retained in the study may be different than those who were lost, and this difference may affect the generalizability of the findings.

Those who contributed drawings only at pretest (N=60), "dropouts," were compared with those who contributed drawings at both time points, the final sample (N=60), on each of the readability/match codes, the mean number of strategies, and high level strategies. All data were based on proportions. Drawings of "dropouts" were less frequently coded as Readable and a Match (RM) at pretest (M=0.73, SD=0.04) than those of the final sample (M= 0.84, SD=0.04), F (1, 118) = 4.05, p = .046, eta^2=.033, observed power=.515. Furthermore, drawings of "dropouts" contained significantly fewer high level strategies at pretest (M=0.73, SD=0.04) than did those of the final sample (M= 0.86, SD=0.04), F (1, 118) = 5.05, p = .03, eta^2= .041, observed power =.606. No

other comparisons revealed group differences. Thus, the "dropout" group appears to have been performing at a less sophisticated level than the final sample before the intervention began.

To further explore this group, the "dropout" students in the intervention group were compared to the "dropout" students in the control group on all the pretest measures described above. There were no differences between these groups. Although the members of the dropout group were not as advanced as the final sample, there was no difference at pretest between those who were enrolled in the control school and those enrolled at the intervention school.

Appendix B

Table B1

Georgia Report Card Data for the Experimental and Control Schools, 2001-2002.

2001-2002	Experimental School	Control School
% African American	82	92
% Hispanic	17	2
% Multiracial	1	4
% White	0	1
% Title 1	98	78
% Below standards 1st Grade in reading*	18	16
% Below standards 1st Grade in language arts*	19	21
% Below standards 1st Grade in math*	21	25
% Below standards 5th Grade in reading*	33	18
% Below standards 5th Grade in language arts*	31	21
% Below standards 5th Grade in math*	40	32

* Measured by the Georgia Criterion Referenced Competency Tests

(reference: Retrieved from http://reportcard.gaosa.org/yr2002/K12)

Table B2

Demographics for All Participants (N=138) and for Final Sample (N=60)

	All participants (N=138)	Final sample (N = 60)
Kindergartners	94 (68%)	39 (65%)
First graders	44 (32%)	21 (35%)
Females	63 (46%)	23 (38.3%)
Males	75 (54%)	37 (61.7%)
African American	126 (91%)	57 (95%)
Latin American	10 (7%)	2 (3.3%)
Caucasian American	2 (2%)	1 (1.7%)

Table B5

Proportion of Pretest Drawings Coded According to Readability and Matching Status

	UNM Unreadable No match	HNM Hard to read No match	HM Hard to read Match	RNM Readable No match	RM Readable Match
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Kindergarten	.03 (.10)	.09 (.16)	.00 (.00)	.06 (.15)	.81 (.22)
First grade	.00 (.00)	.02 (.07)	.02 (.07)	.09 (.16)	.88 (.21)

Appendix C

Figure C1. Example of Unreadable (U) Drawing

Figure C 2. Example of Hard to Read (H) Drawing.

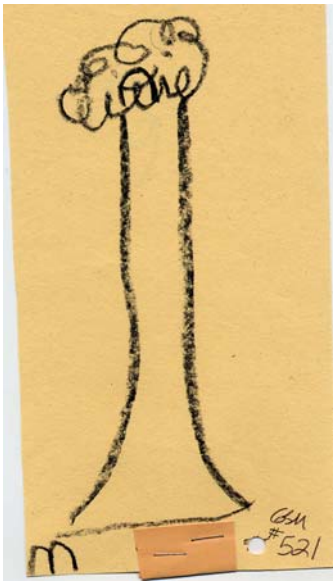


Figure C 3. Example of Strategy: Facial Expression

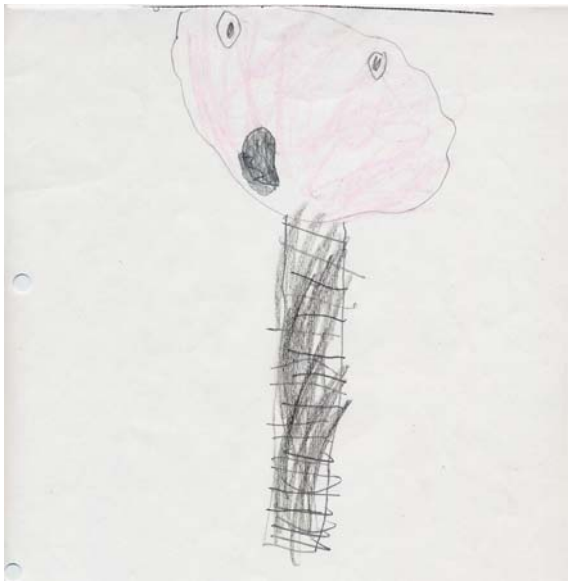


Figure C 4. Strategy: facial expression.

Figure C 5. Line Technique

Figure C 6. Line Technique, Intensity

Figure C7. Strategy: Line Technique

Figure C 8. Strategy: Line Technique

Figure C9. Strategy: Line Technique

Figure C10. Strategy: Literal Indices

Figure C11. Strategy: Gesture

Figure C12. Strategy: Gesture

Figure C 13. Strategy: Gesture

Figure C 14. Strategy: Gesture

Figure C15. Strategy: Environmental Content

Figure C 16. Strategy: Environmental Content

Figure C17. Strategy: Environmental Content

Figure C18. Strategy: Environmental Content

Figure C 19. Strategy: Written Narrative

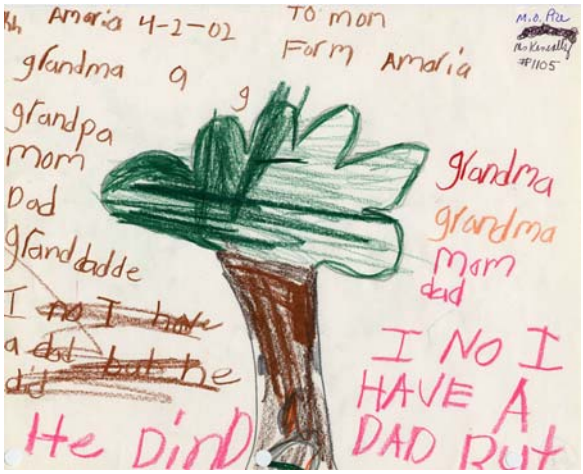


Figure C 20. Strategy: Image Scheme

Figure C 21. Strategy: Image Scheme

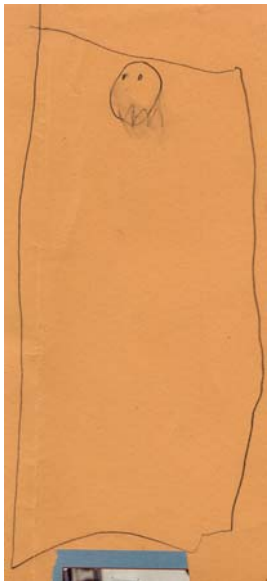


Figure C 22. Strategy: Image Scheme

Figure C 23. Strategy: Image Scheme

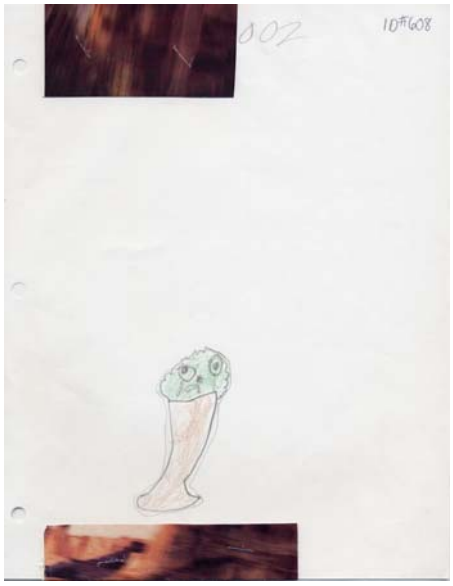


Figure C 24. Strategy: Image Scheme

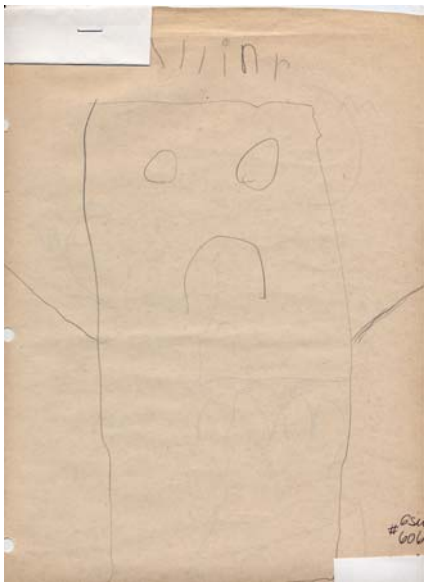


Figure C 25. Strategy: Symbolism

Figure C 26. Strategy: Symbolism

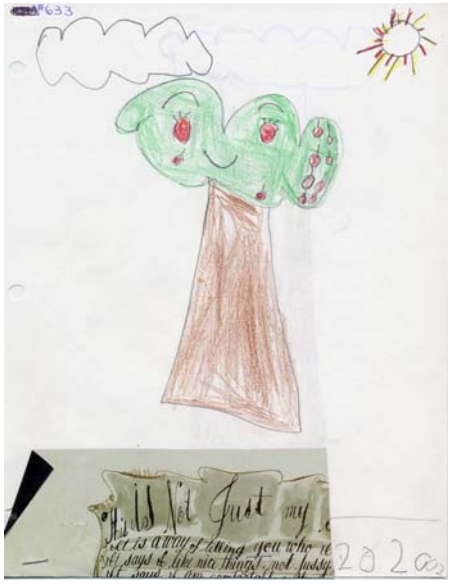
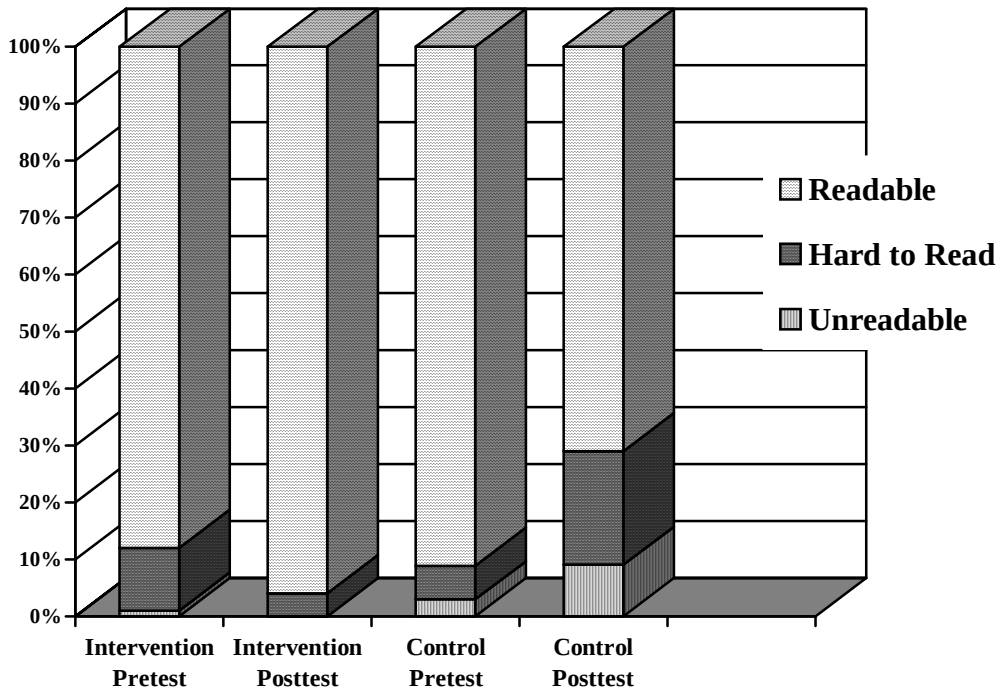


Figure C 27. Strategy: Symbolism

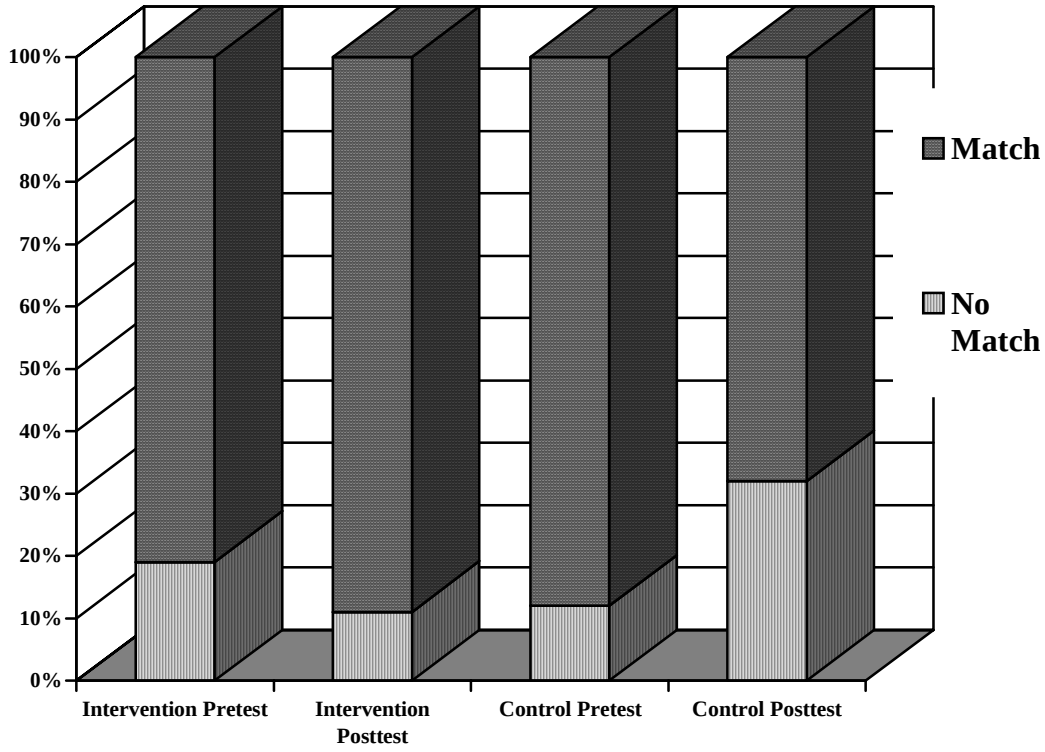
Appendix D

Figure 1.



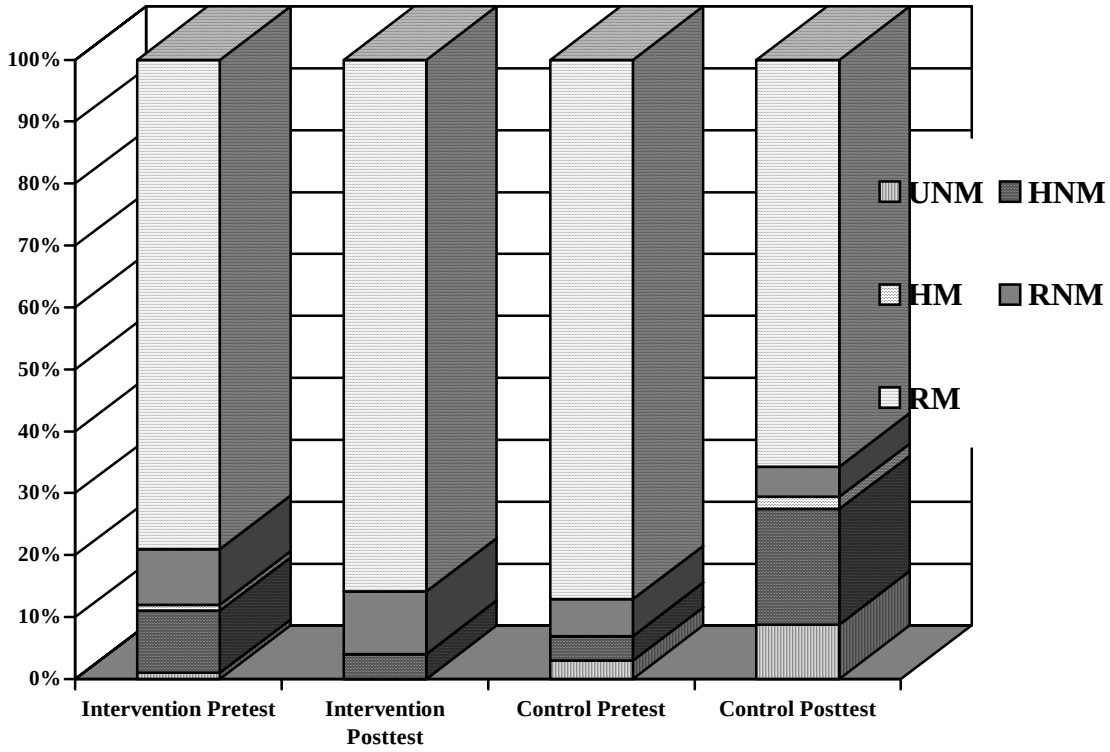
Group Differences Over Time in Readability

Figure 2.



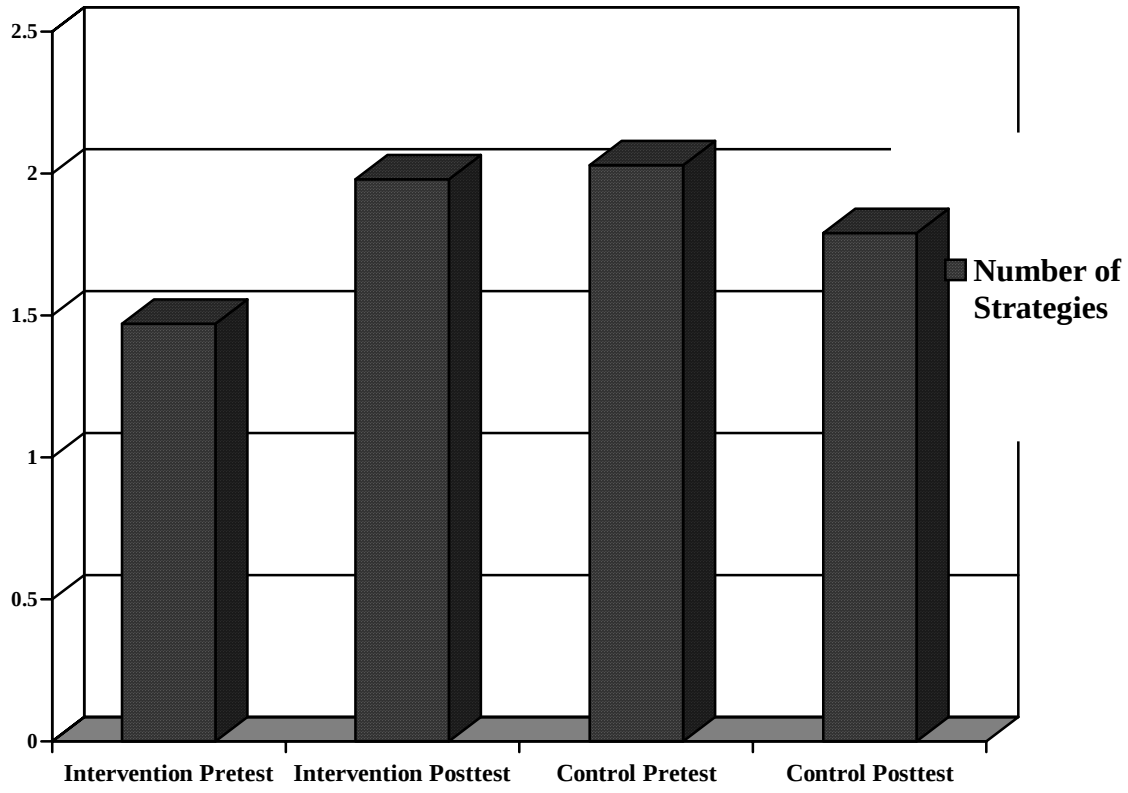
Group Differences Over Time in the Match between Instruction and Coded Emotion

Figure 3.



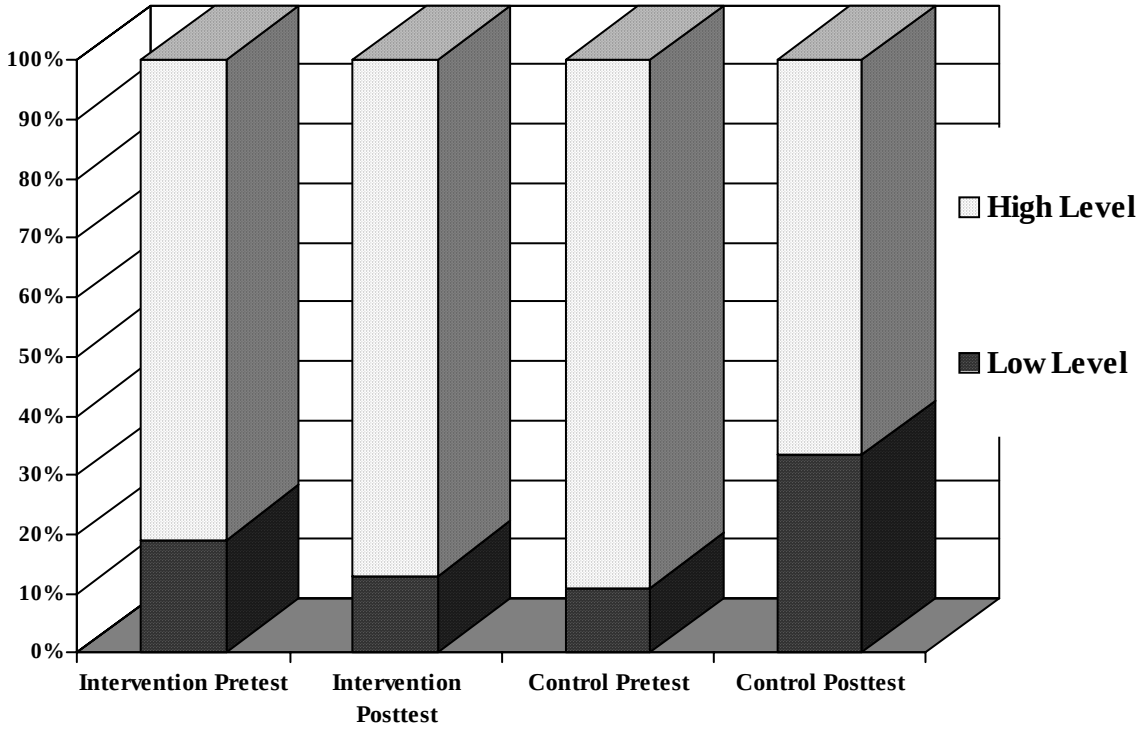
Group Differences Over Time in Readability/Match

Figure 4.



Group Differences
Over Time
in Strategy Quantity

Figure 5.



Group Differences Over Time in Strategy Quality