# The emergence of comprehension:
# A decade of research 2000-2010

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### Abstract

This review of literature presents research about young children's (ages 2-8) early experiences with comprehension. Using a theoretical framework for emergent comprehension, the review demonstrates how each research study contributes to a holistic theory of emergent comprehension. Influences on emergent comprehension such as children's development, relationships and social interactions, and experiences with multiple texts and multimodal symbol systems are discussed. This review includes contemporary peer-reviewed research articles (spanning the decade from 2000-2010) involving multiple methodologies and representing multiple English-speaking countries.

**Keywords:** Emergent comprehension, emergent literacy, young children, narrative, literary meaning making, reader response

## Introduction

How does comprehension begin? When does a child begin to comprehend text? Ample evidence suggests that children make meaning with texts long before they are conventional "readers." This review of literature presents the theoretical connection between "emergent comprehension" and conventional reading comprehension. Conventional reading comprehension is considered to occur after a child learns to decode (e.g., Gogh & Tunmer, 1986); however, I propose here that comprehension emerges prior to decoding and continues to develop as a child learns to read. To explain the emergence of comprehension, this review highlights children's literary meaning making during early phases of reading development. Throughout this article, I use the terms comprehension, understanding, and meaning making to mean the same thing—to remind us all of the ultimate goal of reading and refrain from piecemeal treatment of comprehension as a set of "strategies" or "skills."

Comprehension, per se, is rarely the topic of study in early childhood literacy even though it is a particularly important topic given children's developmental path toward becoming literate (e.g., Kendou et al., 2005; Paris & Paris, 2003; van den Broek et al., 2005; Wyse & Styles, 2007). A recent meta-analysis by the U.S. National Early Literacy Panel (2008) "present[ed] strong evidence for instructional strategies that promote *code related skills*" (italics added)

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but noted the absence of oral language skills and other meaning-focused research (Lonigan & Shanahan, 2010, p. 344). Similarly, Wyse and Styles (2007) argue against a similar focus on code-related skills in the UK. In the past decade (2000-2010), however, an increasing number of studies have begun to investigate evidence of comprehension among young children, from ages 2 to 8. This review seeks to synthesize this emerging area of research.

*Theoretical Framework: Literary Meaning Making and Comprehension*

Literary meaning making provides a framework for considering emergent comprehension. Foundational to understanding literary meaning making, Rosenblatt's (1938/1965) transactional theory of reading explains how readers transact with texts to create meaning. Rosenblatt proposed that each reader approaches texts with unique qualities, knowledge, and purposes and strives to construct meanings with texts that may or may not adhere to an author's intended meaning. Rosenblatt suggested that readers seek meanings that are socially compatible—or, in other words, seem to adhere to some constellation of socially constructed meanings; however, no two readers will create exactly the same meaning with the same text. Rosenblatt's theory is now viewed as synonymous with comprehension.

*RAND Heuristic for Comprehension*

In 2002, the RAND reading study group (RAND Reading Study Group, 2002) defined comprehension by extending Rosenblatt's transactional theory of reading to include the socio-cultural context in which reading occurs. Thus, the RAND group created a heuristic for comprehension, shown below:
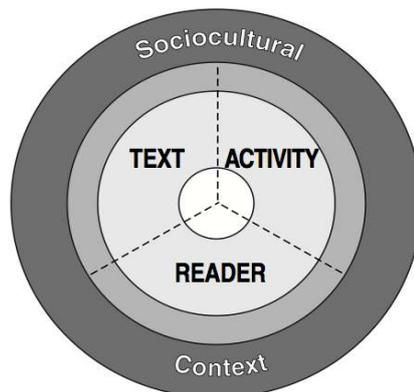


**Figure 1.** *RAND Heuristic for Reading Comprehension*

Similar to Rosenblatt, the RAND group explained that readers construct meanings in ways unique to their background knowledge, experiences, beliefs, motives, and dispositions. The RAND group also described how texts communicate messages only through readers' meaning making, yet different texts adhere to unique grammars, genres, and lexical qualities. The RAND group also identified the "activity" or purpose for the reading event, a dimension to the heuristic that provides insight into how the immediate context in which reading occurs can guide the purpose for how meaning is constructed. Finally, the RAND group and others have adapted Rosenblatt's theory to include more attention to the socio-cultural context of readers' responses (e.g., Beach, 2000). This added attention to context extends Rosenblatt's focus to include social and political elements that affect the "transaction" yet lie beyond the personal and textual. The RAND heuristic provides a fruitful framework for investigations of comprehension when considering conventional readers.

*Emergent Literacy and Emergent Comprehension*

As I engaged in research about children's comprehension prior to conventional reading, I found the RAND heuristic lacking. Theories related to emergent literacy helped me to understand that conventional reading frameworks, such as the RAND heuristic, may not fully explain young children's experience. While not all emergent literacy theorists agree on the common elements of children's experiences that inform later literacy, an idea that many emergent literacy theorists share—that literacy emerges over time and with experience—guided my thinking. Clay (1991), the maven of emergent literacy theory, proposed that pre-conventional expressions are not necessarily mimics of adult-like convention. Rather, children express meaning making with texts in ways unique to their development. Children may also engage with text—especially multimodal texts— differently from adult-like convention. In turn, in this literature review, I include studies involving aural, visual, and multimodal comprehension to demonstrate how young children begin to comprehend prior to (or in the beginning phases of) conventional reading.

My colleague Mona Matthews and I adapted the RAND heuristic to demonstrate how emergent literacy theory might inform a study of young children's comprehension. We were moved to do so to explain what we were seeing during a three-year longitudinal naturalistic study of children (ages 2-5) as they learned how to comprehend texts (for further details of this study, see Dooley, 2010; Dooley & Matthews, 2009; Dooley, Matthews, Matthews, & Champion, 2009b; Matthews, Dooley, & Czaplicki, 2011). Dooley and Matthews (2009) presented an adapted version of the RAND heuristic to make explicit how early meaning making extends to later comprehension (see figure below). We call this framework Emergent Comprehension.
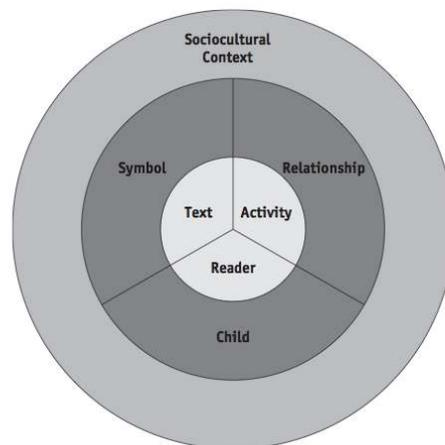


**Figure 2.** *Emergent Comprehension*

Attending to the uniqueness of early childhood development, this adapted framework identifies the child's cognitive, relational, and symbolic interactions from which meanings are made. The framework contends that (1) children's transactions with text are different from those of older children and adults; (2) young children's symbolic understanding develops across time; (3) meaning making begins at birth through relationships and experiences with important caregivers and peers. Dooley, Matthews, Matthews, and Champion (2009) describe how the youngest learners, from birth through age 2, engage with caregivers to interpret their intentions. As these relationships develop over time, they begin to include text objects (books, computers, phones, etc.) in interactions. Through

playful and caring interactions with caregivers and peers, children learn socially acceptable ways to interact with the objects and construct meaning with them (Dooley, 2010). Thus, in the case of printed texts (such as books), a child learns to construct meaning through shared interactions with the object (book) and a caregiver. Over time, the child learns the purpose (or intention) for the object through these shared experiences. If the purpose is to express meaning (such as the case with a book), the child eventually learns to expect that purpose and seek meaning (i.e., comprehend) with the text.

The Emergent Comprehension and RAND heuristic together provide a useful guide for considering early comprehension development as holistic, complex, and emerging with experiences. These frameworks have created an underlying organizational structure for this review. What follows is a brief discussion on the methods for the review and then each study is situated as it relates to the frameworks. In this way, the literature review informs a theory of emergent comprehension so that we can best consider comprehension among young children.

**Methods**

To conduct this literature review, I began with an online search of multiple ESBCO host databases using terms such as "comprehension," "emergent comprehension," "reader response," "young children," "meaning making," "elementary," and "early childhood." Although oral language is an important factor in comprehension development (Cain & Oakhill, 2007), I only used studies that addressed oral language in the context of "comprehension." After initially finding more than 500 publications, I limited the search results to publications that were written in English, published between 2000-2010, and from "peer reviewed" journal articles. After narrowing to 123 articles, I read titles, abstracts, and skimmed articles to get a summary of their content. I selected articles that involved research with children from ages 2 to 8. Then I categorized articles into groups to identify preliminary themes. I read each article and synthesized how it contributed to, and further developed, the themes. Then, for the purposes of writing this review, I outlined only the articles that seemed to move the field forward in some way. These themes (such as "text talk", "narrative", "multimodality" and others) were then regrouped as they related to the overarching theories of comprehension presented by the RAND and Emergent Comprehension models. After initial reviews of an earlier draft of this manuscript, I also sought particular articles mentioned by the reviewers as relevant to this topic and incorporated these articles in the review. These are the articles I describe here. They present findings from diverse methodological approaches and from international researchers.

**Findings**

I present the findings in three main sections: (1) Child/Reader: Comprehension as it relates to children's development (2) Symbol/Text: Comprehension as it relates to symbols and texts presented to children, and (3) Relationship/Activity: Comprehension as it relates to the purpose of the social activity at hand. The organization of these findings are intended to provide theoretical groundwork for a holistic understanding of the development of comprehension. However, it is important to note that readers are known to develop at their own pace, in fits and spurts, often with overlapping proficiencies.

*Child/Reader: Comprehension as it relates to children's development*

When considering comprehension as emergent, we must attend to the uniqueness of children's development. Children's comprehension will look and sound different from adult comprehension. And children's unique cognitive, social, and emotional developmental patterns will inform their ability to comprehend. Research on children's earliest

engagements with texts suggest that their "theory of mind," narrative comprehension, and multimodal expressions for engagement are especially important for emergent comprehension.

*Theory of Mind.* One example of a unique socio-cognitive developmental pattern is a child's "theory of mind." Theory of mind, thought to develop around 2-3 years of age, is an important developmental theory for comprehension because it addresses how humans come to understand that another person can have ideas that differ from their own. For children who hear a story, their theory of mind can affect how they construct the story (and the characters in it). For example, to test whether children's theory of mind affects their interpretation of storybooks, Riggio and Cassidy (2009) presented 45 preschoolers (ages 3-5 years; average age 4:3) with picture books. These books presented characters with "false beliefs"—that is, a belief that was contrary to the reality presented in the book. For example, Little Red Riding Hood had a false belief about the wolf who lay in her grandmother's bed, thinking that it was, indeed, her grandmother. Children who understood the false belief were more likely to focus on the nature of the situation in their retellings (e.g., "she thought her grandmother was there, but really it was a wolf"); whereas, children who did not understand the false belief were more likely to focus on the reality of the situation (e.g., "there was a wolf in her bed") and ignored the false belief altogether. In another study of young children's cognitive development, O'Neill & Shultis (2007) found that children as young as age 3 can understand the differences between a character's physical location and their mental location (where they are thinking about being). These kinds of studies, which account for young children's cognitive development, could provide important details about how children respond to texts in ways unique to their earliest life phases.

*Narrative Knowledge.* Children's knowledge and understanding of narrative is also a cognitive development that informs comprehension. Considered a "top-down" skill, children's abilities to understand and retell stories, to recognize characters, and to identify causal elements within narrative have garnered recent attention from researchers. In their validation of a narrative comprehension assessment for children ages 4-6, Paris and Paris (2003) confirmed the developmental nature of children's ability to create narratives from pictures. Likewise, Lynch, van den Broek, Kremer, Kendeou, White, and Lorch (2008) demonstrated that between ages 4 to 6 years, children show increasing sensitivity to narrative elements (e.g., coherent episodes, character knowledge, and causal connections), thus supporting the hypothesis that narrative knowledge develops over time among young children. They also suggested that narrative knowledge correlated with the children's story recall, ability to identify overall causal structures (for age 4 only), word identification (age 6 only), and ability to answer comprehension questions about a text that was read to them or shown via video. Alternately, the researchers did not find any correlation between the children's narrative knowledge and phonological awareness or letter identification. Thus, the researchers theorize that narrative comprehension develops separately (although concurrently and complementarily) to other reading skills.

*Multimodal Expressions.* Attention to the uniqueness of children's development requires that researchers attend to young children's multimodal expressions and representations of story worlds (e.g., Dooley, 2010; Siegel, 2006; Siegel, Kontovourki, Schmeir, & Enriquez, 2008; Wohlwend, 2008a, 2008b, 2009a, 2009b, 2009c, 2011). This shift is both pragmatic, because the youngest learners may not yet be able to verbalize their understandings, and inclusive because attending to multimodal expressions provides an "enabling framework" (Flewitt, Nind, & Payler, 2009). After studying the classroom, home, and playgroup experiences of a four-year-old child with learning difficulties, Flewitt, Nind, and Paylor (2009) suggest that adults seek to understand children's idiosyncratic modes of communication as attempts at

intentional meaning making, regardless of ability/disability status. They describe the "politics of semiotic resources/modes, where the established priority given to the conventions of spoken and written language have an impact on what different settings offer [to children with learning disabilities]" (p. 231).

Attention to children's unique developmental patterns should inform research and practices that involve emergent comprehension. Young children's emergent comprehension experiences are likely to emerge from playful and/or caring experiences and will be influenced by their social, cognitive, and emotional qualities.

*Relationship/Activity: Comprehension as it relates to the social activity at hand*

In the past decade, researchers have tried to pinpoint what aspects of these activities are most influential, and the interactions, listening, and responsiveness of talk seems to be especially important. Thus, we can surmise that these are indicators of a responsive child-caregiver relationship that lays the foundation for comprehension.

*Importance of Relationship.* Most studies of children's earliest experiences with comprehension involve them listening to a caregiver's stories and talking about those stories. Interestingly, these stories do not have to come from storybooks at all to be beneficial, they simply can be elaborative stories told by the caregiver (Reese, Leyva, Sparks, & Grolnick, 2010). This begs the question: How important is it that the storyteller is a caring adult? Does a caring relationship matter? Studies demonstrating very young children's (ages 0-2) inability to learn from television suggest that caring adult-child relationships and responsiveness do matter for very young children's meaning making (American Academy of Pediatrics, 2011). Dooley, Matthews, Matthews, & Champion (2009) suggest that through caring relationships early in a child's life, the child becomes cognizant of the meaning making affordances of texts. Because young children have a strong need to belong (called the "basic affiliative need"), they are likely to engage in activities and learn how to make meaning in ways promoted by the caring adult. Eventually, these early adult-child relationships extend to include talk, texts, and other symbols and objects. Such is the case in Reese, Leyva, Sparks, and Grolnick's (2010) study: As their mothers reminisced, the children gained important knowledge about narratives.

*Adult-Child Talk.* A majority of investigations of emergent comprehension have become attentive to specific characteristics of adult-child talk. Studies of literary meaning making with preschool children suggest that children benefit from adults' skillful orchestration of talk, turn-taking, and timing. The cognitive "level" of talk (e.g., Price, van Kleeck, &Huberty, 2009), the number and length of utterances (e.g., Taylor & Pearson, 2004), and narrative qualities such as the coherence of sequenced events, characterization, macrostructural devices such as theme development, and microstructural devices such as story-narration language (e.g., "once upon a time…", "suddenly") (e.g., Epstein & Phillips, 2009) have become part of detailed analyses of children's responses to texts. Adult talk is analyzed mostly for its interactivity, thus researchers are most attentive to the number of conversational turns, the types of questions or prompts adults pose, and the types of children's responses elicited (e.g., Zimmerman, Gilkerson, Richards, Chistakis, Xu, Gray, & Yapanel, 2009). These in-depth descriptions allow us to witness the child/caregiver talk through a complex lens.

We can conclude that children mimic the type of talk that adults model; however, more is not always better when it comes to adult-child talk. Price, van Kleeck, and Huberty (2009) compared the talk between 62 dyads of parents and their 3-4 year-old children. They looked at the amount of talk, syntactic complexity and vocabulary of that talk, the content of the talk across two types of text genres: expository and narrative. They found that expository texts elicited more extratextual talk by children and adults, and when adults talked more,

children did as well. However, the content of the vocabulary and concepts did not rise with more talk. Alternatively, Zimmerman, Gilkerson, Richards, Christakis, Xu, Gray, and Yapanel (2009) studied 71 families with children ages 2-4 over an 18-month period. After studying extratextual talk between children and adults, they found that the adult's ability *to listen* to a child's response and respond conversationally does indeed increase the amount and quality of children's talk.

The usefulness of adult/child interactions and talk for insight into children's comprehension continues into the early elementary grades. As researchers grapple with how to distinguish primary-grade children's ability to comprehend prior to (or in the earliest phases of) conventional reading, they also have attempted to categorize text talk and responsive interactions. McKeown and Beck (2006) suggest that teachers need to follow-up read alouds with "prompts for elaboration and completion" (p. 286) and ask "open questions" that stretch children's responses (as opposed to "constrained questions" that allow for single-word responses like yes or no). Sipe has been an influential guide to defining how primary-grade children express their own literary understanding (Sipe, 2000; 2008). Sipe presented a grounded theory that includes five aspects of literary understanding: (1) Analytical (children analyze the single text as a cultural object); (2) intertextual (children relate across texts); (3) personal (children relate texts to their own lives); (4) transparent (children engage in the story world presented in a text); and (5) performative (children manipulate story for their own purposes, usually playful; also described in detail by Adomat, 2010). Sipe (2006) added another aspect: resistance. Children expressed opposition to texts because of conflicts between their known stories and the stories presented, objections to the author's craft, and evocation of painful realities. These categories have provided a useful framework for understanding young children's complex approaches to comprehending stories. And while other researchers have also categorized children's talk around books, we seemed to have hit a point of saturation in this kind of categorical research. Researchers are now seeking to explain how different aspects of meaning making might be elicited.

*Interactive Play.* In addition to the quality of talk, the importance of interactive play cannot be underestimated as inquiry about young children's meaning making stretches to include young children. Landry and Smith (2006) argue that although research evidence suggests that parents' interactive strategies assist with language development, "less is known about relations between the home literacy environment and aspects of early literacy skills other than language" (p. 136). This is an area ripe for research. For example, Matthews, Dooley, and Czaplicki (2011) have demonstrated that parent/child interactions involving play can inform emergent comprehension. Likewise, Roskos, Christie, Widman, and Holding (2010) summarized three decades of research (192 studies) that connects early play experiences to literacy learning. Sixty-seven percent of the studies showed modest to large effects between play and the "early literacy comprehension domain" (p. 74). They concluded that pretend play was an essential pathway for children to attain "theory of mind," an essential understanding undergirding literacy development. Recently, Wohlwend (2008, 2009a, 2009b, 2011) has researched how children construct, respond to, and represent story worlds through interactive play. Wohlwend's studies extend our understandings by demonstrating how children's early attempts at literary meaning making are mediated by their social relationships. These studies demonstrate how interactive play support literary meaning making and are essential to emergent comprehension. Indeed, there is a need for research on interactions that extend literary meaning making to play and other modalities.

*Symbol/Text: Comprehension as it relates to symbol systems and texts presented*

Over the past decade, perhaps the most striking new direction in research on comprehension is about the growing diversity of texts. An emergent comprehension framework suggests that printed texts rely on one kind of symbol system: Print. There are other symbol systems such as images and oral language that come from modes besides print. Kress (2010) proposes that a semiotic theory of comprehension is especially timely because of the increased accessibility of multimodal texts and the increase in global communication. A semiotic view of comprehension requires attention to multiple modes and symbol (or sign) systems, printed text being just one symbol system of many. Thus, the term "symbol" is used in Emergent Comprehension to allow for multiple systems, including but not limited to printed text.

Palinscar and Duke (2004) suggest that the "explosion of texts" (p. 183) now accessible via the web, the availability of hypertext and hypermedia, and a renewed attention to non-fiction in the early grades have changed the ways in which researchers investigate young children's meaning making. Likewise, Bearne (2003) suggests that the field of literacy studies is undergoing a "paradigm shift" because children today are exposed to an environment full of multimodal digital texts. These newly accessible texts have created a greater array of genres to choose from, blurred genre boundaries, and prompted new questions about how teachers and families can mediate young children's learning. Researchers increasingly have documented how children construct meaning with multimodal texts, informational texts, e-texts, and postmodern picture books. Each text type elicits unique conclusions about emergent comprehension, described here.

*Multimodality and Symbol Systems.* Comprehension emerges via exposure to multiple kinds of texts, not just printed texts; thus, we can use the term "symbol systems" to describe the differences in texts. Symbol systems are meaning making systems. They include images or printed text or animation or sound or aural language or gesture (to name a few). Or symbol systems can incorporate and synchronize across these modes. One could argue that the picturebook has been a long-standing multimodal text; however, only recently have researchers been attuned to the uniqueness of multimodal texts as a means for early comprehension development.

The Simple View of Reading (Gough & Tumner, 1986) was perhaps one of the first multimodal theories of comprehension. The Simple View proposed that children's oral language skills (plus their decoding skills) influenced comprehension. Oral language has been shown to independently predict children's (ages 4-6) reading comprehension two years later (Cain & Oakhill, 2007; Kendeou, Savage, & van den Broek, 2009; Kendeou, van den Broek, White, & Lynch, 2009).

Yet current research takes the Simple View further to suggest that not only oral language can contribute to comprehension, but also that exposure to other modes can contribute, such as looking at pictures and television viewing/listening (Evans, 2009; Kendou, Lynch, van den Broek, Espin, White, & Kremer, 2005; Lynch, van den Broek, Kremer, Kendeou, White, & Lorch, 2008). In addition, over the past decade, researchers are questioning the seemingly sequential perspective of the Simple View (i.e., that a child needs language skills before comprehension can ensue). For example, Lynch et al. (2008) propose that comprehension skills, such as inference making, identifying causal relationships, and sequencing, can emerge from children's experiences with aural and visual texts. Indeed, "comprehension skills develop simultaneously with, rather than following, basic language skills" (Kendou et al., 2005, p. 91). Likewise, Paris and Paris (2003) confirmed (in their validation of a narrative comprehension assessment for children ages 4-6) that the children's comprehension of

narratives was consistent with their comprehension in other media (e.g., videos). Comprehension seems to emerge with language as well as other modes for meaning making.

Walsh (2010) contends that multiple modes create different cognitive pathways and processes. Walsh's research compares how children in early primary grades "read" print-based texts and multimodal texts. She found that children reading visual texts in kindergarten (ages 5-6) are more likely to observe, label, and comment. Whereas, in Year One (ages 6-7) children reading visual texts are more likely to create intertextual connections and offer personal opinions that are more evaluative. Investigating how children in primary grades (Year One [ages 6-7] and Year Three [ages 8-9]) read digital texts, Walsh (2007) found that children engaged in different patterns of response. They were less likely to engage in critical reading, evaluating, or inferring. Walsh questions whether children's reading practices for one mode transfer completely to another mode. Thus, we are left to wonder whether and how comprehension skills might generalize across modes (as Kendeou, Bohn-Gettler, White, and van den Broek [2008] suggest) and when transfer of comprehension from one mode to another is unlikely (as Walsh [2007] suggests).

*Postmodern Picturebooks.* Children's literary meaning making with postmodern picture books may be important windows to understanding how they navigate the intricacies of multimodal texts. Postmodern picture books present stories that are often comprised of multistranded narratives (from different characters' perspectives and/or from different points in time). They are often non-linear, with non-sequential plots. The narrators of these stories often address the reader directly and comment on their own narration. Intertextuality—a combination of narratives within a text—is common to postmodern literature. And parody—mimicking conventional texts but including a critical difference—often characterizes postmodern literature (Pantaleo, 2004; Galda & Cullinan, 2002). Postmodern children's literature presents unique opportunities for children's responses because of its complexity.

Two important studies demonstrate children's responses to postmodern literature (Arizpe, 2001; Pantaleo, 2004). The youngest children studied (ages 6-7) responded to Anthony Browne's *Voices in the Park* (2001) (Pantaleo, 2004). Browne's picture storybook presents four intertextual narratives from the perspective of four visitors to a city park. The trajectory of events is non-linear and non-sequential. And the perspectives narrated present a critical view of economic and other social boundaries that segregate the characters. One of nine books used over 10 weeks in Pantaleo's study, *Voices in the Park* was shared with the first grade class over seven read-aloud sessions. Pantaleo found that the children strived to make intratextual connections, or "text-within-the-same-text connections" (p. 220). Yet the children mostly did not notice or comment on the parodies or allusions within the text (e.g., the human mother's wolf-shaped shadow; the beggar dressed as Santa Claus). They engaged in interpreting the synergy between images and text presented in the book, often beginning a read aloud session by searching the images for "secrets" or visual jokes prior to allowing Pantaleo to begin reading. Pantaleo used Sipe's (2000) categories to characterize the children's responses and found that they fit well.

Arizpe (2001) studied the responses of children (ages 8-9) to Anthony Browne's *The Tunnel* (1990/1997). This book presents vivid images and scant text to tell a story of Rose, a bookish girl, who crawled through a tunnel to follow her brother, only to find him turned to stone. When she hugs him and her tears fall upon him, he is brought back to life. Arizpe (2001) shared the book with 72 children from three schools in London and Cambridge, UK. She found that the children searched for narrative structure among the pictures. And their familiarity with the text (after repeated readings) increased the depth and dimension to their

responses. Interestingly, however, Azripe analyzed children's responses to the visual images and found that children searched for meaning or reference for any perceived symbol. In other words, they sought to interpret visual referents, even unconventional referents, as they searched for narrative structure. She also used background knowledge of fairytale genre to piece together the events created through image into a fairy tale. This macro-structural genre knowledge enabled their literary meaning making.

Multimodal (and postmodern) texts necessitate an expansion of interpretive repertoires. Pantaleo suggested that the "synergy among the various metafictive devices in *Voices in the Park* creates an overarching indeterminacy in the text and positions the readers in a co-authoring role" (p. 226). Her point is well-taken with respect to postmodern and multimodal texts. As children, and other readers, search for converging meanings among multiple modes and intertextual narratives, they are positioned more and more as active meaning makers. Serafini (2010) suggests that these dynamic texts require new research and pedagogy to explore how to broaden the methods and perspectives to guide young readers to stitch together meaning.

*Informational Texts.* Informational texts have gotten much attention lately, perhaps in response to Duke and colleagues' eye-opening study of the lack of such texts, especially in early elementary classrooms serving low-income communities (Duke, 2000). Since then, Duke and colleagues designed a quasi-experimental study to determine whether access to informational texts was beneficial to first graders. They found that "there was no harm, and some modest benefit…in including more informational texts in children's classroom environment and reading and writing activities" (Palinscar & Duke, 2004, p. 189). Duke and colleagues also found that access to informational texts did not impede children's attitudes toward narrative texts and they were just as able as the comparison group to write narrative texts. These results suggest that children's interactions involving informational texts *benefit* literary meaning making. Additionally, Smolkin and Donovan (2001) reviewed teacher-student discourse in a first grade class (ages 6-7) over two years. Eighty-three percent of that talk was "meaning oriented" when students were using informational texts. Only 16% of the talk was "meaning oriented" when they were using storybooks (in contrast to, for example, procedural statements like "turn the page" or "I can't see"). Thus, interactions around informational texts may provide opportunities for children to work on comprehending text meanings. Intuitively, we believe that improved comprehension would strengthen children's literary meaning making, because they are different dimensions of the same construct (i.e., meaning making with texts). Future investigations could explore what combination of informational and storybook texts is most useful for children as they learn to make literary meanings as well as efferent meanings.

*E-Texts.* The newest multimodal text-types available to young children are e-texts (also called digital texts), such as e-books available on computers, digital reading devices, and other platforms. Digital texts can transform reading, and thus, meaning making, because of their capacity to integrate multiple modes by which a reader will construct meaning (Korat & Shamir, 2006). These texts often feature special tools that allow for inserting notes, highlighting and bookmarking text options, retrieving of dictionary meanings, adjusting font size, translating text-to-speech, and following hyperlinks to related texts. Korat and Shamir (2006) compared children's (ages 5-6) emergent literacy levels before and after engaging with e-books. They varied the activity modes accessible to the children: "read story only," "read with dictionary," and "read and play." Examination of pre- and post-intervention measures showed that children in the "read with dictionary" and "read and play" activity modes improved more emergent literacy skills than the "read story only" mode. Thus, it

seems that exposure to digital integration of multiple modes on an e-book can result in greater understanding of the story.

Perhaps because of their newness, technologies related to early childhood literacy development are vastly under-researched. A review of the four English-language journals with the highest circulation rates in language and literacy studies (*Reading Research Quarterly*, *Journal of Literacy Research*, *Written Communication*, and *Research in the Teaching of English*) revealed "extreme marginalization" of research on digital tools in early childhood education (Lankshear & Knobel, 2003, p. 64). Lankshear and Knobel point out that of the studies that exist, most present digital tools that emphasize stand-alone, non-interactive media (i.e., not networked) and focus on decoding skills and basic writing/handwriting skills. Rarely do studies of digital tools focus on interpretive forms of meaning making. Thus, this is truly a "great frontier" for research on literary meaning making.

Most relevant to young children's literary meaning making, CD-ROM talking books have been investigated as potentially beneficial texts for reader response. Labbo and Kuhn (2000) investigated a young child's understanding of story after interacting with a CD-ROM storybook and found that the multimodal features could become "inconsiderate" to young readers. These features distracted children when they were incongruent or incidental to the story. Their findings converge with Bus & Neuman's (2009) recommendation that digital texts present stories in coherent ways so that children can retell the story and respond to the text as a story. They warn that the "extra" games and animations that accompany "Living Books" sometimes fragment the story simply through gadgetry and cause children to become passive witnesses to these text-like novelties rather than engage them in the story world.

More recently, Larson (2010) studied how 17 children in a second grade classroom (ages 7-8) responded to reading using a Kindle digital reading device. She focused her analysis on observations of two girls who partnered to read *Friendship According to Humphrey* by Betty G. Birney (2006) for 40 minutes daily. Larson found that both girls enjoyed using the digital devices to read and the digital note-taking devices prompted their responses to reading. Larson categorized their responses as: (1) understanding of story (e.g., retelling); (2) personal meaning making; (3) questioning; (4) answering questions posed in the text; and (5) response to literary features/literary evaluation. Both girls engaged in all types of responses. Most of their responses were in categories 1 (understanding the story) and 2 (personal meaning making). Both girls reported that they enjoyed reading the Kindle e-book more than hard-copy books. Neither liked the "text-to-speech" feature because of the computer-like voice. However, the student described as having a lower reading ability used the dictionary and text-to-speech feature to help her decode words and difficult passages. Larson noted that this student and her parent also reported that she felt more confident as a reader when using the Kindle.

Larson's study prompts us to wonder what e-books offer that hard-back books do not? Does digital integration within a text make a difference for comprehension? Are the devices that carry these texts just as important as the digital nature of the texts? Each platform presents different affordances and constraints, yet none are yet so widely available in schools that they have transformed reading. Indeed, many children are still hoping for access to *20th Century* literacy tools—books—much less 21st Century tools. Yet, we hope that tools such as the iPad, Nook, Kindle, SonyReader, or even the FisherPriceiXL Learning System become more readily available to classrooms simply because of the "coolness" factor. Perhaps digital books could entice kids to read more and better, much like word processors have enticed them to write more and better (e.g., Shamir, 2009).

## Discussion

Literary meaning making is indeed one of the most important experiences contributing to emergent comprehension (Dooley, 2010; Dooley, Martinez, & Roser, in press; Dooley & Matthews, 2009a). In many countries, children engage with stories and informational texts early in life, on the laps and by the sides of caring adults. These repeated engagements build familiarity of narrative while also enticing children into the "story world" that will continue to engage their interests and build their knowledge about the world. From the time a child begins hearing and seeing stories, whether told from a family member or viewed on television or stitched from images, that child begins to construct narratives. Children's responses to those stories, whether represented through play, or talk, or image, both demonstrate their understanding while also strengthening the child's meaning making. Over the past decade, research on comprehension among very young children has demonstrated that children not only *can* understand texts but that these understandings endure. Future investigations might inquire how children's unique social, emotional, and cognitive developmental patterns inform their comprehension. And, following the lead of Wohlwend (2011) and others, we might ask: If we know that play and close relationships enhance emergent comprehension, how can we leverage these understandings to improve family support, child care, and early childhood education?

Research on children's multimodal responses as well as their transactions with multimodal texts such as postmodern picture books, television shows, and digital texts suggest that comprehension can be constructed with media beyond print. Thus, we can conclude that emergent comprehension is a learning process that occurs prior to (and during) beginning conventional reading. While there is some indication that children generalize across modes as they learn to comprehend (e.g., Kendeou, Bohn-Getter, White, & van den Broek, 2008), there is also indication that comprehension is likely to be influenced by one mode more than another at different phases of development (Tilstra, McMaster, van den Broek, Kendeou, & Rapp, 2009; Walsh, 2010). The question remains: In what ways do multiple modes contribute to comprehension as a child becomes a more conventional reader? And how might emergent comprehension (and expressions of comprehension) via multiple modes enhance children's conventional reading comprehension? Are some modes more informative than others? Do the contributions of different modes vary with time and development?

The next decade promises improvements in research, pedagogy, and practice. We hope for improved understandings of the effects of early development on young children's progress as literary meaning makers; improved access to various text types for children in schools and homes, especially for low-income communities; improved performance assessments that teachers can use to gauge instruction and student progress; and improved understandings about how families and teachers might construct experiences that best facilitate children's literary meaning making, through talk, play, and other modalities; improved digital tools that elicit young children's literary meaning making; and improved research and pedagogy, especially for children who are English language learners and/or have disabilities.

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