Peer collaboration and narrative development in a preschool classroom

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Peer Collaboration and Narrative Development in a Preschool Classroom

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Peer Collaboration and Narrative Development in a Preschool Classroom

By

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Abstract

This study examined the effects of peer collaboration in promoting preschoolers’ narrative development. Research in the field of narrative development has mainly focused on adult-child interaction. Peer influence, which is different from adult-child interaction in terms of the nature of partners’ support and challenges, has been under estimation. At the same time, most of the studies on the role of peer interactions in promoting children’s narrative development did not compare collaborative conditions to individual conditions directly (except for one) before they drew the conclusions on the process of peer collaboration. This study aims to conduct this comparison and examine the effects of peer collaboration in facilitating preschoolers’ narrative competency.

Seventeen preschoolers in a classroom participated in this study. Two hundred and eighty eight stories (including single- and group-authored stories) told in the practice of story-telling and story-acting during one academic year were analyzed based on five indices. We hypothesized that in comparison to single-authored stories, group-authored stories would be longer, have more elaborations and characters, and be more likely to use higher level connectors and character representations. And such advantage of group-authored stories should keep stable over time. In addition, boys and girls, 3-year-olds and 4-year-olds might influence the two types of stories in distinct ways over time.

The results showed that group-authored stories were not always superior to single-authored stories. Instead, the advantage of group-authored stories did not become significant until the second half of the year. And such advantage was only found in girls of both 3- and 4-year-old. Thus, we suggested that boys’ and girls’ different narrative styles in group work influence the process of their co-narration. In addition, the
occurrence of peer collaboration is gradual, and children need to learn perspective taking before they cooperate with one another.
Peer Collaboration and Narrative Development in a Preschool Classroom

To examine the role of peer collaboration in promoting young children’s narrative development, this study compares stories told by groups of children to stories told by individual children. In previous studies on facilitating young children’s narrative competence, adult-child interaction has been the main focus. Adults serve as more skillful partners and support children’s narrative development in adult-child interactions (Eisenberg, 1985; Fivush & Fromhoff, 1988; Haden, Haine, & Fivush, 1997; McCabe & Peterson, 1991; Magee & Sutton-Smith, 1983). From interacting with adults, children gradually pick up the form and content of stories, which they can use later on when narrating independently.

However, children are not always guaranteed to interact with more skillful partners. When they communicate with their peers of equal knowledge and status, the help and pressure from skilled partners may be missing. At the same time, children are freer to support and challenge each other than in adult-child interactions. In peer narrative interactions, children have to hold the conversation floor to insert their own contribution. They also need to learn how to take other children’s perspective in negotiations with one another. Some researchers have suggested this type of peer interaction promotes young children’s narrative development (Aviezer, in press; Kuntay & Senay, 2003; Nicolopoulou, 1996; 2002; Nicolopoulou & Richner, in press-a; Nicolopoulou & Richner, in press-b; Preece, 1992; Umiker-Sebeok, 1979).

However, the available studies on peer collaboration in promoting children’s narrative development rarely compare collaborative conditions with individual conditions.
The differences between these two conditions determine whether group story telling is superior to telling stories alone. Only after answering this question, can we further investigate what types of benefits peer collaboration can bring to children’s narrative development and how this process actually happens. So far there is only one study on differences between stories told by groups of children versus those told by individual children (Nicolopoulou & Richner, in press-b). This study found that children in collaborative conditions produced longer and more advanced stories than individual children. However, more studies are needed to consolidate this finding and generalize the conclusion.

The present study replicates Nicolopoulou and Richner’s research and compares group- and single-authored stories that were obtained in a different classroom at a different time. This way, we can tell whether peer collaboration has consistent effects across time and place on children’s narrative development. Several measurements on narrative competence were adopted to examine whether peer collaboration promotes children’s narratives better than working alone.

**Adult-child narrative interaction**

Narrative development is an important component of children’s growth in language. It is also a predictor of children’s academic achievement (Heath, 1982; Nicolopoulou & Richner, in press-a). Research on children’s narrative development has mainly focused on adult-child (usually caregiver-child) interactions (Eisenberg, 1985; Fivush & Fromhoff, 1988; Haden, Haine, & Fivush, 1997; McCabe & Peterson, 1991; Magee & Sutton-Smith, 1983; Miller & Sperry, 1988). Serving as more skillful partners,
adults provide children with more advanced knowledge and give guidance and directions whenever help is needed. Such help takes place in adult-child interactions from very early on. Adults construct these interactions as opportunities for children to explore and learn narrative competencies.

Eisenberg (1985) provided the first systematic study on the role that adults play in promoting children’s narrative development. She examined the developmental changes in the content and structure of children’s personal narratives, in a one-year longitudinal study on two Spanish-speaking girls, who were 21 and 24 months at the beginning and 32 and 38 months at the end of the study. The girls were audiotaped when having conversations with adults in their households such as their parents, neighbors about past experiences, relatives, and older siblings. These observations took place every three weeks for a whole year. They were children’s first spontaneous attempt to talk about past experiences with the elicitation and maintenance of adults.

In analyzing these conversations, Eisenberg observed three stages of development in children’s narrations of their past events. In phase one, the majority of narrative topics were provided by adults. And children’s involvement was motivated by adults’ questions. Children rarely introduced the topic of narratives and only responded with short, infrequent utterances. In phase two, children became more independent from adults’ questions and elicitations. Children were more likely to give information about the event spontaneously and needed no prompt from adults. The majority of the elements that children talked about was scripts, which are sequences of behaviors they were familiar with. Adults responded to children’s descriptions of these elements, even the imaginary ones, with a receptive attitude. In phase three, few descriptions of past events were
elicited by adults, as children recalled and talked about the past independently. Through these three phases, Eisenberg pointed out that the children became more autonomous narrators and developed the structure of their narratives over time. Children’s utterances grew longer, and included more new information about the events; they incorporated more past tense verbs; their description of events’ unique components increased; children’s dependence on adults’ elicitation to talk about the past was lessened and they started to initiate topics spontaneously. The findings suggested that adults led children’s narrative development: they created opportunities for children to talk, helped to choose topics familiar to children, and provided structures for children to learn the lexical items associated with these topics. This way, children gradually internalized the linguistic forms of past events so that they would be able to report these events without the support of adults.

While holding a similar belief that children’s narrative skills are promoted by more skilled adult partners, Haden, Haine, and Fivush (1997) argued that adult-child narrative interactions for preschoolers followed a collaborative “spiral” instead of a “scaffolding” pattern as Eisenberg suggested. In this longitudinal study, 15 white middle-class families participated in two rounds of family interviews. The first interview took place when the children were 40 months (3;4 years) and the second when they were 70 months (5;10 years) old. In each interview, the mother’s, father’s, and experimenter’s talk with the child about the past events was recorded. In the parent-child session, each parent was asked to discuss with their child about three shared memory events in a natural and spontaneous way. In the experimenter-child session, the experimenter asked the child to tell about another past event. Only general open-ended questions were asked (e.g. “Your
mom tells me you went to the aquarium. Can you tell me about that?" "What else happened?"), and the experimenter did not provide leading prompts during the child’s talking. The children’s talk in the three memory events with their parents was coded for the following components: (1) referential actions which requested or provided actions that occurred in the event; (2) referential descriptions which requested or provided objective details; (3) orientations which commented on the context of the event; and (4) evaluations which were affective or evaluative commentary of the event. The obtained results did not support a scaffolding model, which would predict that parents provided less narrative structures as children provided more. Instead, parents’ sophisticated narrative devices increased while children became more competent in telling personal stories as they grew older. The authors suggested that a “spiral” rather than a “scaffolding” model was operating here.

This “spiral” parental provision of narrative structures directly related to children’s developing abilities to incorporate these structures in their personal narratives. It was found that among all four types of narrative structures, i.e. referential actions, referential descriptions, orientations, and evaluations, mothers who emphasized the use of evaluative narrative structure had children who used more evaluations in their narratives later on. This is an indication that adults influence children’s acquisition of narrative structures in adult-child co-narration.

Another study that provides more information about how adults promoted children’s narrative competence was done by Magee and Sutton-Smith (1983). They observed the acquisition of storytelling skills of one girl named Jenny, between 23 and 33 months of age. In Jenny’s participation in adult-led literacy activities such as reading and
telling stories, the adults were found to support the child’s talk by asking questions, providing feedback, showing interest in listening to the child’s talk, and changing their own behaviors based on the child’s reactions.

All three studies reviewed above suggest that adults play a critical role in facilitating children’s narrative development and that they use various strategies in this process. Some researchers then became interested in finding out whether different adults would use these strategies in different ways. For example, the divergence of parental styles may lead to various levels of adult support in children’s narrative development. Some studies have focused on which parental style might best benefit children in their narrative development (Fivush & Fromhoff, 1988; McCabe & Peterson, 1991). Fivush and Fromhoff (1988) identified two distinctive styles for mothers in co-narrations with their children, and compared the two groups in terms of their promotion of children’s narrative development. In this study, ten mothers were asked to talk about shared past events with their 2 1/2 year-old children. Mothers were then divided into two groups (high-information group and low-information group) based on the mean length of their conversations and mean amount of information that they provided per event in the talk with their children. These two groups of mothers showed different maternal styles in their conversations with their children about the past: high information mothers talked more, asked more memory questions, were more elaborative, were more likely to continue questioning the child when the child showed willingness to maintain the conversations, and provided more information about the event. This group was referred to as elaborative mothers. Compared to low information mothers, who were called repetitive mothers, elaborative mothers provided not only more information but also different types of
information to their children. More descriptive information was offered by elaborative mothers to distinguish one specific event from other similar ones and to inform children which aspects of events were worth talking about. Accordingly, children of elaborative mothers recalled more information than children of repetitive mothers. The information, the questions, and the interest that elaborative mothers offered in co-narration with their children helped maintain the conversations, which created opportunities for children to talk about the past and to think how to talk about it. Fivush and Fromhoff suggested that this process leads to children's better performance when they narrate independently.

Similar to the categorizations of mother's conversational styles into elaborative and repetitive, McCabe and Peterson (1991) grouped mothers into topic-extending and topic-switching. They suggested that children's acquisition of narrative skills relate to parental strategies in eliciting narratives. Ten middle-class white Canadian children and their parents participated in the study. Parents were asked to record occasions at home when their children liked to tell them stories about past events. Those conversations were collected once when the children were 27 months old and again when they were 31 months old. When the children were 42 months, they were asked to tell personal narratives to an experimenter who provided only general information and questions without scaffolding children's storytelling. Two different parental styles in eliciting children's narratives were found: topic-extending and topic-switching. Topic-extending parents enriched the conversations by providing statements that extended a topic and by asking relevant questions with rich information. On the other hand, topic-switching mothers shifted topics from one to another too quickly for children to further explore one topic. It was found that topic-extending mothers had children who told longer narratives
when narrating with the experimenter later on. In addition, these narratives were more complex, in terms of having more propositions per narrative (proposition was defined as any verb in an independent clause). Instead, mothers who switched topics too soon did not seem to benefit their children’s narrative development.

The parental styles of topic-extending and topic-switching labeled by McCabe and Peterson (1991) are quite similar to elaborative and repetitive style identified by Fivush and Fromhoff (1988). Adults who are topic-extending or elaborative are more likely to engage children in talking about one event at a time. They also tend to maintain such talk by providing constructive information and questions. Adults who are topic-switching or repetitive, instead, have shorter conversations with their children. The information and questions that they use to facilitate the talk are usually restrictive and repetitive (Haden, Haine, & Fivush, 1997).

In short, these studies suggest that in adult-child narrative interactions, adults provide the linguistic structures to promote children’s narrative competencies. How effective such facilitation is depends on the parental styles. Compared to repetitive or topic-switching mothers, elaborative or topic-extending mothers tend to talk more and provide more constructive information and feedback for their children’s narratives. They thus contribute more to create and maintain co-narrations with their children. The stories produced by children of elaborative mothers are longer and more structurally complex. They also include more descriptive information (Fivush & Fromhoff, 1988; McCabe and Peterson, 1991). Through narrative interactions with adults, children start to take more initiatives in talking and become more autonomous in controlling the conversations (Eisenberg, 1985). They also gradually acquire the linguistic forms and narrative
structures to speak coherently (Eisenberg, 1985; Fivush & Fromhoff, 1988; Haden, Haine, & Fivush, 1997).

**Peer influence in narrative interaction**

Adult-child interaction in promoting children's narrative development is well supported by sufficient evidence as the studies show above. Being the more skilled partners, adults take the leading role not only in eliciting and maintaining the conversations, but also in providing models for children to learn from. In comparison to this asymmetrical and supportive environment that adults provide, peer interaction is characterized by partners with more equal-status and less developed skills. Whether and how peer interactions can facilitate children's narrative competence thus becomes the question that some researchers are interested in.

Umiker-Sebeok (1979) did the earliest study by examining the development of young children's spontaneous narratives in peer interactions. Three classrooms participated in the study, with 15 three-year-olds in the first classroom, 18 four-year-olds in the second, and 29 five-year-olds in the third. The spontaneous conversations between children as well as between children and their teachers were observed. Umiker-Sebeok divided the types of children's narratives into: events about inside or outside the classroom context, and events that were recent or remote from the time of storytelling. She found that the percentage of outside and remote events increased with age. In analyzing the internal structure of the narratives, Umiker-Sebeok adopted the six narrative elements used by Kernan (1974, cited in Umiker-Sebeok, 1979), which were based on the high-point analysis by Labov and Waletsky (1966, cited in Umiker-Sebeok.
1979). The six elements were: introductions, abstracts, orientations, complications, evaluations, and results (resolutions). She found that children’s narrative frequency and complexity increased with age: in comparison to 3-year-olds, 4- and 5-year-olds told narratives more frequently; the length of narratives increased over time; and older children were able to use more types of narrative elements in their stories. It was also found that children’s participation in shaping each other’s narratives increased with age: the number of conversational turns per narrative of 4- and 5-year-olds was bigger than that of 3-year-olds; and older children’s narrations received more responses such as acknowledgement and comments from the peer audience. These results suggest that in group activities children’s narrative competencies develop from age three to five in terms of the quantity and quality of their narrations. Their motivation in maintaining and shaping the conversation is also growing with age.

Similar to Umiker-Sebeok, Kuntay and Senay (2003) also examined preschoolers’ spontaneous co-narrations in the classroom settings with the involvement of teachers. They focused on whether and how prior stories from one child may provide contexts for other children’s upcoming narrations on related themes. Forty-six 3- to 6-year-old Turkish preschoolers participated in the study. The children’s extended discourse with teachers and peers in organized and free-time settings were videotaped two to three days a week for two and half months. Organized settings were formal classroom settings, in which teachers elicited and directed children’s talk. Free-time settings were those in which children sat around and had activities with loose structures. A total of 60 hours of videotapes were transcribed. The emphasis for the analysis was on the rounds of stories which preceded or succeeded narratives from other participants.
Kuntay and Senay found that children’s personal narratives most frequently occurred in the presence of teachers and rarely in talk among peers. In addition, the content of the previous stories was frequently replicated in succeeding narratives. The thematic relations between these narratives were analyzed. Children used two strategies to establish thematic relatedness with preceding narratives by other children: thematic emulation and thematic elaboration. In thematic emulation, the succeeding story was almost the exact repetition of the prior story. Thematic elaboration, on the other hand, added some variation and elaborations to the succeeding stories with the shared theme. Children used these two techniques to seize the conversational floor and outperformed the previous teller in front of the teacher. Kuntay and Senay argued that these were important ways for children to establish their power in the class, rather than for them to assist in developing each other’s narratives. And the role of adults in this case was to manage the group interaction and direct the topic development.

Preece (1992) suggested that children would be motivated and could benefit enough from talking to each other without adult interference. She tape-recorded conversations naturally produced by three 5-year-old children while she drove them to school. The three children (two were girls and one was a boy) were unacquainted with each other before this carpool started. Despite the author’s presence as the driver, she did not make any effort eliciting children’s narratives because she did not focus on narratives until after the data were collected. A total of over 90 hours of these children’s naturally occurring verbal interactions were obtained during an 18-month period from their kindergarten year to the first half of Grade 1. Among these verbal interactions, 599 narratives were identified. The narratives included children’s descriptions of past events,
their retelling of stories, their original creations, and any examples that they themselves labeled as stories. In these narratives, 72% were anecdotes and 12% were co-narrations. The definition of these two types of narratives was absent in the article, but it seems that there was no actual difference between the two. And as we can see in the next paragraph, children worked actively on each other’s stories and collaborated even in anecdotes.

In analyzing children’s reactions to narratives produced by peers, Preece suggested that children tend to use two types of responses. On the one hand, children serve as correctors and critics for their peer’s narrative productions. They pointed out mistakes and omissions when listening to other children’s stories. They also sought clarifications when they got confused. These corrections and inquiries helped the narrator’s polishing of the story, which led to a better acknowledgement of the story by their peers. As a result, the narrator would attempt to add missing information while narrating and be more aware of the accuracy of the information. On the other hand, children were also facilitators and collaborators when responding to each other’s narratives. The audience supported the narrator’s stories by “contributing solicited information”, “elaborating and corroborating the information reported, assisting with sequencing, confirming opinions expressed…” (p. 285).

Preece pointed out that the collaboratively produced narratives usually started with a short description of the relevant events by one child, and then other children would repeat or elaborate the information. This sort of pooling knowledge together enabled children to relate events easier and to produce narratives more effectively. She found that the collaborations occurred most frequently in make-believe stories. In addition, these co-narrations produced “the lengthiest and most structurally complex of the original
fantasies” (p. 290). Preece thus suggested that in comparison to adult-child interactions, peer interactions regard every partner as equal. This equal status allows children to assist and challenge each other freely. Because of this low-risk situation, children spontaneously pool their resources together. The knowledge shared by children and the peer feedback help them understand and improve their narrative skills. And the peer support is not the same type of assistance that children get from adult-directed interactions.

Agreeing that peer group activity is a special occasion for children to make progress in their narratives, Aviezer (in press) examined the joint constructions of naptime narratives among kibbutz children in a small group. These children were intimately familiar peers and had spent a lot of time together since infancy. There were three groups with three children in each bedroom, and their ages ranged between 32 to 42 months. A voice-initiated tape-recorder was placed in each bedroom to observe the conversations among children that occurred naturally during naptime. This procedure was repeated on successive days until each group had one hour of recorded conversation.

The result showed that joint constructions of narratives were of four types: personal anecdotes, which were stories of personal experiences; facts and behavioral scripts, which were “descriptive statements about events and people”; symbolic activity, which was “enacted in the world of make-believe stories and role-play”; and personal perspectives, which reflected speaker’s viewpoints and evaluations toward things (p. 22). Aviezer found that various types of narratives had different functions in children’s group life. For example, joint constructions of personal anecdotes were used to tell unusual experiences, whereas facts and scripts provided children with opportunities to share
conventional experiences and connect related events. In symbolic activity, children needed to share the imaginative background as well as the interest to keep this activity going. At the same time, they were required to negotiate with each other about their roles and contributions to the activity. When children included personal perspective in their narratives, they had opportunities to state their own perspectives and listen to others’ opinions. Aviezer suggested that these types of narratives enable children to share with each other about their past experiences as well as their thoughts of the real and imaginative world. They used each other as a resource to explore the human and physical world. Children’s familiarity with each other and their shared knowledge could compensate for their undeveloped linguistic and cognitive skills, and helped them succeed eventually in their joint construction of narratives.

Aviezer’s study shows us that young children’s spontaneous co-narrations happen very frequently when they are left alone without an adult presence. The elements relevant to maintain the co-narrations are children’s shared knowledge and interest. Verba (1993) suggested that these components are reflected best through pretend play, in which children are required to share meanings and desires as well as to negotiate with one another. Some researchers started to integrate narratives with play in research, and to investigate the role of peer group activities in children’s narrative development.

Nicolopoulou (1996) studied the influence of one type of peer collaborative activity—storytelling and story-acting—on children’s narrative development. A class of 28 four-year-olds (14 boys and 14 girls) from middle- to upper-middle class families participated in the study. These children voluntarily came to tell stories to the teacher, and the teacher wrote down the stories everyday. At the end of each day, the teacher read
these stories to the whole class, and the author of the story chose children from the class to act out the story. In this process, the role of the teacher was to create an environment for children to tell and act out stories, rather than to guide children directly in how to tell a better story.

Nicolopoulou coded structural complexity for all the 582 stories that she obtained through one academic year by adopting Hudson and Shapiro’s (1991) criteria: (1) setting statement; (2) using a fictional character; (3) explicit temporal sequencing; (4) problem or surprise action; (5) a resolution of or reaction to a problem or surprise action; and (6) an ending marker. Different from Hudson and Shapiro’s findings that only a small proportion of 4-year-olds’ stories included these elements, Nicolopoulou found that all 28 children used all of the elements, and the percentage of stories with these elements was quite high. In addition, boys’ stories were more likely to have problem/surprise and resolutions than girls’ stories.

To explain these children’s advanced level of story complexity and gender differences in incorporating various elements in stories, Nicolopoulou suggested that children’s narrative production is greatly influenced by their group life. In children’s storytelling and story-acting practice, they produced and elaborated their narratives for their own purposes. During the practice of telling stories and picking their peers to act out the stories, children used this process as a tool to build friendships with others, to seek group affiliation, and to establish their prestige among peers. They were enthusiastic in telling stories with increasing “variety, complexity, ambition, and sophistication” in order to produce better stories for acting out (pp. 387). Therefore, this socially structured
practice of storytelling and story-acting promoted children’s narrative development, by arousing their inner motivation that directs this development.

To examine the role of this storytelling and story-acting practice more carefully and search for better measurements of children’s narrative growth over time, Nicolopoulou and Richner conducted another study by comparing a classroom that received this practice to another classroom that did not (Nicolopoulou, 2002; Nicolopoulou & Richner, in press-a). Two preschool classes (one target class and one control class) in the Head Start program participated in the study through the whole academic year. The two classes were similar in terms of the curriculum as well as the quality of teachers and students, except that the target class received the practice of storytelling and story-acting whereas the control class did not. There were 11 children in the target class (5 girls and 6 boys) and 15 in the control class (7 girls and 8 boys). One hundred and eighteen stories by the target class were obtained through the whole academic year.

Children’s narrative skills in both the target and control class were tested twice on a Figurine-Based Narrative Task, with the first at the beginning of observations and the second at the end. In this task, two stories were elicited from each child using two themes illustrated through figurines (family theme and animal theme). Nicolopoulou & Richner found that in comparison to the control class, the scores of children in the target class improved more from Fall to Spring.

Furthermore, the narratives produced by children from the target class in the practice of storytelling and story-acting showed significant growth over time. In terms of linguistic complexity and sophistication, children’s narratives developed in the following
dimensions: (1) the number of clauses per story per child increased during the year, (2) children’s narrative clauses grew from Fall to Spring, which was an indication for better temporal sequence in describing an event, (3) children started to use the past tense instead of the present tense as their predominant tense in narratives, and (4) children tended to use higher level of connectors such as “because” to connect their clauses rather than simply use “and”. Children’s narratives also showed development through the representation of characters: from Fall to Spring, children started to include characters more purposefully rather than producing many characters while letting them do nothing in the story; the characters were more likely to have a goal-directed action; and there were more interactions among characters.

These growths of narrative competence showed the effects of the practice of storytelling and story-acting as a peer collaborative group activity. Nicolopoulou and Richner suggested that this activity creates a public arena that is “peer-oriented and peer-evaluated” (pp. 43). In this public setting, children from different backgrounds work together and pool their various knowledge and perspectives. This provides resources for children to produce better stories. In addition, children show spontaneity in telling better stories because this is a tool for them to pursue their own goals (e.g. friendship and affiliation) in the group life, and this process follows their own pace.

The research reviewed above shows the types of co-narrations that peer interactions produce (Aviezer, in press; Kuntay & Senay, 2003; Preece, 1992; Umiker-Sebeok, 1979) and the process of peer co-narrations (Aviezer, in press; Kuntay & Senay, 2003; Preece, 1992). Peer interactions provide children with an equal-status environment where they share their knowledge with one another and practice what they have learned.
from the adult world. In this process, children can support and challenge each other at the relevant level to promote their development. They are exposed to perspectives from themselves as well as those from others and learn how to communicate and negotiate effectively with each other. In addition, peer narrative interactions such as the practice of storytelling and story enactment fully arouse children's inner motivation to tell more sophisticated narratives (Nicolopoulou, 1996; Nicolopoulou, 2002; Nicolopoulou & Richner, in press-a). Being able to tell more advanced narratives allows young children to gain the conversation floor as well as to establish their power in the peer group (Kuntay & Senay, 2003; Nicolopoulou, 1996). This way, children spontaneously pool their resources together to produce better stories.

However, when we are intrigued by the question of how the group work promotes young children's narrative development, we seem to forget to question the presumption: Does the peer collaboration truly facilitate children's narrative competence more favorably than working alone? None of the research that we reviewed above on children's co-narrations compared collaborative conditions to individual conditions. This comparison would provide answers to the question of whether peer collaboration is superior than individual working in promoting children's narrative growth. Nicolopoulou and Richner (in press-b) addressed this question. They analyzed group- and single-authored stories told by preschoolers through their practice of storytelling and story-acting. These children were nine 4-year-olds in a preschool classroom and they participated in the study over the course of the year. Nicolopoulou and Richner found that in comparison to single-authored stories, the group-authored stories were longer, with more dramatic problems, and had more complicated character representations. Gender
differences were also found in terms of the frequencies and the functions of group-authored stories.

Unfortunately, this study is the only one so far that compares stories produced by groups of children versus those by individual children. Preece’s study had both co-narrations and antidotes, but as being mentioned before she did not distinguish the two. Thus we need to be cautious to generalize the conclusion before we have more evidence to support the findings that peer collaboration works better than individual conditions in promoting children’s narrative competence.

To further examine this question and consolidate the findings by Nicolopoulou and Richner (in press-b), the present study aimed to replicate Nicolopoulou and Richner’s research by analyzing stories told by children through the practice of storytelling and story-acting in a different classroom.

The current study

This study used Nicolopoulou’s archival data collected from Fall 1993 to Spring 1994 in a preschool classroom. It compared the spontaneously produced stories told by groups of children versus those told by individual children. We used five indices to examine children’s narrative development: narrative length, narrative elaboration, connectivity level, number of characters, and character representation level. When children work together in telling a story, they not only have to obtain and keep the narrative floor, but also need to take others’ perspectives and negotiate on how to develop the story line. In addition, the collaborative environment allows children to pool
resources together and tell more complex stories. All these features of peer collaboration might lead to a more advanced story in group work settings than in individual settings.

Based on these theories, we have three ways to look at the data.

1. To compare the characteristics of group-authored stories with single-authored stories. It is hypothesized that in comparison to single-authored stories, group-authored stories were longer, had more elaborations, had higher levels of connectors, had more characters, and had higher level of character representations. In addition, such advantages of the group-authored stories should remain stable from the Fall to Spring.

2. To examine whether storytellers’ gender influenced their single- and group-authored stories over time.

3. To examine whether storytellers’ age influenced single- and group-authored stories over time.
Method

Participants

The participants were a class of 17 3- to 4-year olds, 10 girls and 7 boys, who attended a preschool in northeastern U.S. Among these children, 5 girls and 6 boys were 4-year-olds, and 5 girls and 1 boy were 3-year-olds. Boys’ ages ranged from 3;10 to 4;10 at the beginning of the year (mean \[M\] age=4;4), and girls’ ages ranged from 3;3 to 4;11 (mean \[M\] age=4;1). These children were mostly from middle- to upper-middle class families.

Procedures

The stories were collected through a storytelling and story-acting practice invented by Paley (1981, 1988). In our data collection, children in the classroom went to tell stories to the teacher whenever they wanted to almost everyday. Sometimes the stories were told by individual children and sometimes the stories were produced by groups of children. As each story was told, the teacher wrote it down without giving any comments or prompts. At the end of each day, the teacher read out aloud all the stories that she got during that day to the whole class. When each story was read, the author of the story chose other children from the classroom to act out the story with him/her.

The 17 children told 343 stories altogether, and 55 stories were left out for the following reasons. Some of the 55 stories were from the puppet shows which happened during holidays such as Halloween. What happened in these shows was that the children used puppets to put on a show in the classroom. Stories told by the children that were related to the puppet shows were excluded because the characters of these stories were
restricted by the show plot instead of spontaneously developed by the children. The rest of the 55 stories were left out because they were told by a girl whose native language is not English. After this step of data reduction, 288 stories were left.

Measures and coding
The stories were coded on the following five indices.

1. **Number of clauses** According to the definitions by Nicolopoulou & Richner (in press-a), a clause should contain a verb and express a single activity, event, or state. For example, “The dog and the cat danced” was counted as one clause. The number of clauses per story was counted for each story, as an index for the length of story.

2. **Number of elaborations** This measurement examined the amount of information that children used to make their stories more specific and to include more details, instead of just giving the stories a skeletal description. Several components were coded as elaborations: (1) Adjectives (e.g. “A princess lived in a yellow house.”) (2) Adverbs (e.g. “The dinosaur ate the wolf quickly.”) (3) Metaphorical terms (e.g. “The girl moved like a statue.”) (4) Descriptions that specify location, time, direction, the tools that were used, etc. to distinguish one event from another (e.g. “The princess went out into the wood.” “We had breakfast the next morning.” “The dinosaur hit the monster on the back.” “Robin killed them with fly swappers.”) Each story was given a number as the amount of elaborations based on the total number of adjectives, adverbs, metaphorical terms, and specifying phrases in the story.
3. **Connectivity.** This measurement examined how children use various connectors to build connections between clauses in their stories. Six levels of connectivity were adopted to tell children’s capabilities of using different connectors (Nicolopoulou & Richner, in press-a). From level 0 to level 6, these connectors reflected the development of children’s ability to tell stories in a logical manner. Each story was given a number as connectivity level from 0 to 6, depends on the highest level of connectors that the author used in the story. Each connectivity level is illustrated below.

- **Level 0:** no connectors

**Level 1-2:** Logical connectors

- **Level 1:** “and” only
- **Level 2:** “but”

**Level 3-4:** Temporal connectors

- **Level 3:** “then” or “and then”
- **Level 4:** “when” or “and when”

**Level 5-6:** Causal-temporal connectors

- **Level 5:** plus “because” or “so”
- **Level 6:** plus “because” and “so”

4. **Number of characters.** We counted animate characters, which were people or animals (Nicolopoulou & Richner, in press-a). Animate characters were those who were agents and who were able to take actions. Inanimate characters (objects that usually did not take actions or received actions, such as a house and a chair) were also counted, but only if the author made them animate characters by giving
them self-directing actions (e.g. "The hot dog walked into the house.") The total number of characters per story was counted for each story.

5. **Character depth and complexity.** The measurement examined the development of children’s character representation. A simplified version of the coding scheme by Nicolopoulou & Richner (in press-a) was adopted for the present coding. Three levels of character complexity were used, as demonstrated below. From level 1 to level 3, characters start to have more interactions with other characters, as well as a higher level of psychological processes. Each story was given a number that ranged from 0 to 3 as an index of character depth, depending on the highest level of character complexity of the story. “1” stands for “Actors” with only external characteristics and actions. “2” stands for “Agents” with basic psychological capacities. “3” stands for “Persons” that have higher psychological processes that include beliefs, knowledge, dreams, desires, etc. Thus, the higher the character representation level is, the more advanced a character was depicted by children in terms of the character’s psychological processes.

- **Level 0.** No story: There was no character in the story.
- **Level 1.** Actors: Actors are represented simply by actions (e.g. “The bears bite the rabbit.”) or described by the external characteristics only. These external characteristics include physical traits (e.g. “Once there was a bear and then second came a big stumpy dinosaur.”), names or ages (e.g. “There was a princess named Sonia.”), possessions (e.g. “Once upon a time there was a cat and it had a hat.”), locations (e.g. “They lived in the castle.”), and evaluative descriptions (e.g. “The bear was nice.”).
• Level 2. Agents: Agents start to have basic psychological capacities, which are reflected through their intention-leading behaviors and their responses to other characters’ behaviors. A character can be coded as an agent if it has: (1) behaviors that are directed by its intentions (e.g. “He killed the bear and tried to skin it and make a fur coat out of it.”); (2) psychological capacities such as see, feel, communicate, or simple and undirected emotions (e.g. “They saw a rainbow above the house.” “He was hungry.” “Kyle said, ‘Hi, goo-goo, gah-gah.’” “Once upon a time there were some friends and they were happy.”); (3) physiological or emotional responses to itself or other characters (e.g. “He was thirsty so he drank water.” “The princess was scared by the monster.”)

• Level 3: Persons: Persons have higher psychological processes that include beliefs, knowledge, dreams, desires, etc. These mental states are cognitive and representational in nature. They reflect the content of the character’s thinking, which leads to the character’s behaviors. For example, “Piglet and the baby Heffalumps comes up on the tree and they were scared and they talked. Piglet said ‘I’m scared.’ The Heffalumps said ‘Do you think we could come down,’ the Piglet said ‘We will.’ They went in the tent to have a better fire.”
Results and discussion

Table 1 shows that throughout the whole academic year, there were approximately three times as many single-authored stories (212 stories) as group-authored stories (76 stories). In addition, the frequency of single-authored stories was stable from the Fall to Spring for boys and girls, except that 4-year-old boys told more stories in the Spring than in the Fall. The frequency of group-authored stories, however, had a different pattern. Specifically, boys told less group-authored stories in the Spring than in the Fall, but the opposite was found for girls. The mixed-gender group-authored stories also increased over time.

All these single- and group-authored stories were coded on the five indices, which were illustrated in the method section. Within each measure, three levels of analysis were conducted, which were directed by our three ways of looking at the data. The first level focused on the difference between single- and group-authored stories over time. The second level examined the role of gender in single- and group-authored stories from the Fall to Spring. The third level investigated the age effect on single- and group-authored stories over time. The results will be presented below on these three levels for each measure.

The single-authored stories include those told by 3-year-old boys, 4-year-old boys, 3-year-old girls, and 4-year-old girls individually. Group-authored stories included those by 4-year-old-boy groups, 3-year-old-girl groups, and 4-year-old-girl groups. Three-year-old-boy groups did not exist because only one 3-year-old boy participated in our study. Thus, any conclusion about age difference below came from girls only. In addition, each mixed-gender and mixed-age group (mixed age groups of 3- and 4-year-old boys, mixed
age groups of 3- and 4-year-old girls, and mixed gender groups of boys and girls) had only one story in either Fall or Spring (see Table 1). Therefore, we did not include these three participant groups in the discussion.

**Number of clauses**

Table 2 shows the mean number of clauses per story for single- and group-authored stories in the Fall and Spring. In both seasons, group-authored stories were longer than single-authored stories. However, the advantage of group-authored stories was stronger in the Spring than in the Fall. For example, group-authored stories were longer than single-authored stories by 2.81 clauses in the Fall, and by 4.05 clauses in the Spring.

When we added gender as a factor, a gender difference was found (see Table 3). Only group-authored stories by girls in the Spring were longer than their single-authored stories. For girls' stories in the Fall and boys' stories in both Fall and Spring, the length of their group-authored stories was about the same as that of their single-authored stories.

Furthermore, no age difference was found between the 3- and 4-year-old girls (see Table 3). Specifically, for both age groups in the Fall, their single-authored stories and group-authored stories had about the same length. Later on in the Spring, the advantage of group-authored stories started to occur and this was true for both 3- and 4-year-old girls. The group-authored stories were longer than single-authored stories by 6.00 and 6.17 clauses for 3-year-old girls and 4-year-old girls, respectively. Noteworthy is how the length for the 3-year-old girls’ group-authored stories was calculated based on the two stories in the Fall and the seven stories in the Spring (see Table 1 for the number of
stories produced by each participant group over time). The small number of these stories should make us more cautious to conclude that the 3-year-old girls’ group-authored stories had the same length as their single-authored stories in the Fall, and were longer than their single-authored stories in the Spring. At the same time, however, the larger sample of 4-year-old girls’ group-authored stories confirmed this trend.

Thus, we can conclude that group-authored stories were not always longer than single-authored stories. In fact, this did not become true until Spring, and only for girls. At the beginning of the academic year, girls’ group-authored stories had the same length as their single-authored stories. During the second half of the year, they started to tell longer stories in collaborative conditions. And this was true for both 3- and 4-year-old girls. In contrast, group-authored stories did not help boys to tell longer stories than single-authored stories in either Fall or Spring.

Number of elaborations

Table 2 shows the mean number of elaborations per story for single- and group-authored stories in the Fall and Spring. Similar to the length of stories, group-authored stories had more elaborations than single-authored stories, but to a different extent in different seasons. The group-authored stories in the Fall had 1.11 more elaborations than the single-authored stories, and this number was 2.65 in the Spring.

A gender difference was also found (see Table 4). Girls’ group-authored stories had the same amount of elaborations as their single-authored stories in the Fall, and started to have more elaborations than single-authored stories in the Spring. However, such advantage of group-authored stories was not found in boys. Boys’ group-authored
stories had about the same amount of elaborations as their single-authored stories in both the Fall and Spring.

In addition, there was no age difference between the 3- and 4-year-old girls (see Table 4). In the Fall for both age groups, their group-authored stories had about the same amount of elaborations as their single-authored stories. In the Spring, however, group-authored stories had more elaborations than single-authored stories; with an advantage of 4.44 and 3.93 elaborations for the 3- and 4-year-old girls, respectively.

Thus, we can conclude that group-authored stories did not always have more elaborations than single-authored stories. This only became true for girls in the Spring. During the first half of the year, both boys’ and girls’ group-authored stories had about the same amount of elaborations as their single-authored stories. In the Spring, boys kept the same trend, but girls produced more elaborations in their group-authored stories than in their single-authored stories. In addition, both 3- and 4-year-old girls conformed to this pattern.

**Number of characters**

Table 2 shows the mean number of characters for single- and group-authored stories in the Fall and Spring. Inconsistent with our hypothesis, group-authored stories did not have more characters than single-authored stories. This was the case for both Fall and Spring.

In addition, no gender and age difference was found (see Table 5). For both boys and girls, and for both 3- and 4-year-old girls, their group-authored stories had about the same amount of characters as their single-authored stories throughout the academic year.
Connectivity

Table 2 shows that the connectivity level of group-authored stories did not differ much from that of single-authored stories. This was the case for both Fall and Spring. However, we need to be cautious about this conclusion because comparing the mean connectivity level actually overlooks a lot more information. In a more refined analysis, we counted the proportions of stories that fell into each of the three general connectivity levels (logical connectors, temporal connectors, and causal-temporal connectors) for each participant group. The comparison between single- and group-authored stories for different genders is shown in Figure 1, and the comparison for different ages is shown in Figure 2.

No gender difference was found. As we can see from Figure 1, for both boys and girls, group-authored stories had a higher percentage that fell into the higher connectivity level (Causal-Temporal) and had a lower percentage that fell into the lower connectivity level (Logical) than single-authored stories. However, such difference was more significant in the Spring than in the Fall. For example, in the Fall, 5% of boys’ single-authored stories had the causal-temporal connectors, in contrast to only 13% of their group-authored stories. In the Spring, 11% of their single-authored stories had the causal-temporal connectors, but this percentage blew up to 33% for their group-authored stories. Similar results were found for girls.

In addition, no age difference was found between 3- and 4-year-old girls (see Figure 2). In the Fall for both 3- and 4-year-old girls, group-authored stories and single-authored stories had about the same proportions in the use of higher level connectors. In the Spring, however, both 3- and 4-year-olds’ group-authored stories had a
higher proportion than their single-authored stories that used causal-temporal connectors, with 29% vs. 10% for the 3-year-olds and 33% vs. 11% for the 4-year-olds.

Thus, we can conclude that children were more likely to use higher level connectors in group-authored stories than in single-authored stories. However, this did not become significant until the second half of the year. This was true for both boys and girls, as well as for both 3- and 4-year-old girls.

Character representation

From Table 2, the character representation level of group-authored stories was about the same as that of single-authored stories, and this was the case for both the Fall and Spring. Similar to the connectivity level, this way of looking at the data actually left out a lot of information. In a more refined analysis, we counted the proportions of stories that fell into each of the three character representation levels (Actors, Agents, and Persons) for each participant group. The comparison between single- and group-authored stories for different genders is shown in Figure 3, and the comparison for different ages is shown in Figure 4.

A gender difference was found (see Figure 3). Specifically, only girls’ group-authored stories were superior to their single-authored stories, and it seems that such advantage occurred only in the Spring but not in the Fall. For example, in the Fall, girls’ stories that represented “Persons” was 17% in their single-authored stories and 15% in their group-authored stories. In the Spring, this percentage was 12% for their single-authored stories and 26% for their group-authored stories. In contrast, boys’ group-authored stories did not show such advantage in either Fall or Spring. In fact, opposite
trend was found for boys. Their single-authored stories had a higher proportion that focused on “Persons” than their group-authored stories, and this was consistent over time (see Figure 3). Meanwhile, although boys started off representing “Actors” less often in their group-authored stories (56%) than in their single-authored stories (67%), but this trend did not continue during the second half of the year. In the Spring, boys’ group-authored stories became more likely to represent “Actors” than their single-authored stories.

Furthermore, no age difference was found between the 3- and 4-year-old girls (see Figure 4). Specifically, for both age groups in the Fall, the proportion of their group-authored stories that focused on representing “Persons” was about the same as that of their single-authored stories. However, group-authored stories became more likely to represent “Persons” than single-authored stories in the Spring, for both 3- and 4-year-old girls.

Thus, we can conclude that group-authored stories were better than single-authored stories in character representations. However, there was gender difference. Only girls’ group-authored stories surpassed their single-authored stories in the use of higher level character representations. And this advantage did not occur until the second half of the academic year. In contrast, boys’ single-authored stories were superior to their group-authored stories in representing “Persons” in both Fall and Spring. Perhaps surprisingly, for the boys, the proportion of characters represented as “Actors” increased from the Fall to Spring. Additionally, there was no age difference between single- and group-authored stories over time. For both 3- and 4-year-old girls, group-authored stories did not surpass single-authored stories in representing “Persons” until the Spring.
Summary

Three analyses were used to examine single- and group-authored stories over time. The results showed that group-authored stories were not always superior to single-authored stories. Table 2 roughly presented the characteristics of single- and group-authored stories in the Fall and Spring. We can see that the advantage of group-authored stories depends on the measure and the season. Specifically, the length and the elaborations of group-authored stories surpassed those of single-authored stories in the Spring, but not in the Fall. On all the other measures, group-authored stories were about the same as single-authored stories in both the Fall and Spring.

However, for the above analysis, the stories were pooled across gender and age. Later, we took gender and age into consideration by conducting more refined analyses. Age difference did not emerge in the comparison between 3- and 4-year-old girls but gender difference was found in three indices. Specifically, in comparison to girls' single-authored stories, their group-authored stories were longer; had more elaborations; and represented higher level characters. This was particularly true for the second half of the academic year. However, a similar advantage for group-authored stories was not found in boys. Both boys' and girls' group-authored stories had more use of higher level connectors than their single-authored stories. Neither boys' nor girls' group-authored stories had more characters than their single-authored stories. This may indicate that the number of characters is not a very useful measure to tell the difference between group- and single-authored stories.
General discussion

The present study examined whether group-authored stories promoted children’s narrative development better than single-authored stories. Stories told through the preschoolers’ practice of story-telling and story-acting were analyzed using five measures: the length, the number of elaborations, the number of characters, the connectivity level, and the character representation level. The results suggest an advantage of group-authored stories was found in almost all the indices except for the number of characters. However, this superiority mostly occurred in girls’ but not in boys’ group-authored stories. In addition, girls’ group-authored stories did not become better than their single-authored stories until the second half of the year. Both 3- and 4-year-old girls followed this trend.

To provide an explanation for why group-authored stories promoted children’s narrative development in a gender-specific way, we will first talk about gender difference in peer collaboration in general.

Gender differences in peer collaboration

Previous research on gender difference in communication styles has shown that boys and girls have distinct interaction styles. Specifically, boys show masculine or “agentic” style. They tend to be assertive, status-oriented and focus on dominance when interacting with other boys. However, girls prefer to use feminine or “communal” social interaction style, which is collaborative and focuses on connections with one another (Hibband & Buhrmester, 1998).
Some research has provided evidence for this argument (Sachs, 1987; Maccoby, 1998; Nakamura, 2001). Specifically, girls request and give more explanations during conversations. In addition, girls take their partners’ reactions into consideration more often than boys when they give responses. On the contrary, boys use direct imperatives or prohibitions when they talk with one another. They reject others’ suggestions more often than girls. The two genders also have different strategies to express their requests. Girls are more likely to avoid direct conflict when they try to control the behaviors of the listeners in their same-sex play. They are more likely to use questions to express their needs and desires (Sachs, 1987; Nakamura, 2001). In contrast, boys are more assertive in expressing their needs. They usually issue commands and prohibitions directly to each other (Maccoby, 1998). In essence, girls tend to talk with one another in ways that keep the interaction going, whereas boys’ conversational styles are more likely to disrupt the interactions.

These discrepancies in the two genders’ interaction styles explain why group-authored stories help girls better than they help boys to gain narrative length and elaborations. By taking partners’ opinions into consideration and commenting in a more mitigated way, girls provide each other with a supportive environment in the co-narration. This atmosphere allows different individuals to make contributions, and tell longer stories with more details. In contrast, this is not very likely to happen in boys’ group-authored stories, because boys reject others’ suggestions and interrupt each other more often. We can also see that boys seem to lose interest in telling stories with others over time, whereas girls do the opposite. Our data showed that boys told less group-authored stories
in the Spring than in the Fall, but girls increased the production of group-authored stories in the second half of the year.

Furthermore, some other studies on gender differences in children’s narratives found that children use stories to actively approach and reproduce gender roles (Nicolopoulou, 1997). While telling these stories, children are also involved in a process of constructing their gender identities. For example, the themes of boys’ and girls’ stories are different. Boys like to tell stories that are full of aggression and disorder, such as battles and fights. On the other hand, girls prefer stories that focus on home settings with less conflict, like a princess and prince getting married. In addition, the types of connections among characters are different in boys’ and girls’ stories. Girls organize their characters’ interactions around the stable social relations, but boys connect their characters through assigning them action roles in the conflicts.

This explains why girls are able to develop their character representation level better in group-authored stories, whereas boys are not. By working together, girls are more likely to have characters interact with each other along the line of social relations. This enables girls to develop characters on their psychological functions. Thus, the characters can be represented at a higher level in collaborative conditions than in individual conditions. However, this is not how it works for boys. Boys’ stories are constructed around aggression and conflicts. A group-work setting is more likely to arouse their expansion of the aggression, rather than having them focus on characters’ deeper interactions which are based on characters’ psychological process. As we can see from the data, boys’ character representation in their group-authored stories tends to stay at the “Actors” level and focus on characters’ actions.
The benefit of group-authored stories over time

The advantage of group-authored stories occurred almost exclusively in girls, another interesting finding is that this benefit did not occur until the second half of the academic year. This was true for story length, elaborations, and character representations. It seems to indicate that group-authored stories helped girls’ narrative development in a gradual way. The reason why this benefit did not show up until the Fall is probably because children need to take time to learn how to cooperate with each other. Only after they have been working collaboratively for a while, do 3- and 4-year-olds realize how to take another’s perspective and how to influence the group work in an appropriate way.

Future directions

This study successfully assessed preschoolers’ narrative development through peer collaboration. Future directions for this work include combining experimental design with observation in natural settings. The present study collected data in a natural setting. The stories were told by children voluntarily and were recorded by a teacher who worked in the classroom. The advantage of this methodology is that the data reflect what actually happens in the classroom daily. Any conclusion that we get based on these data can be generalized to real settings. However, this method does not allow us to have well controlled groups and an equal number of stories told by each group. For example, we had no group-authored stories by 3-year-old boys, and had only 2 group-authored stories by 3-year-old girls in the Fall. This placed some constraints on data analysis. In the future,
it might be possible to structure the participant groups and establish a minimum number of stories for each group.

Secondly, it would be helpful to include 5-year-olds in the study. In the current study, we did not find age differences in single- and group-authored stories over time. The reason might be 3- and 4-year-olds may not be that different from each other. Having a group of 5-year-old might help us better examine the role that age plays in single- and group-authored stories.

Thirdly, it might be useful to video tape the process of children’s group storytelling. This will give us a better sense of how the collaboration actually occurs in different participant groups. This may give us insight into why peer collaboration promotes narrative development in girls but not boys. The information from the videotaping will also give us a sense of how much each individual contributes to the group work. This way, we can tell whether the so called “collaboration” is really a group product, or is actually promoted by certain individuals.
References


Table 1

The frequencies of stories produced by 3- and 4-year-old boys and girls individually and collaboratively for the Fall and Spring

Single-authored stories (Total = 212)

<table>
<thead>
<tr>
<th>Participant group</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys 3-yr</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Boys 4-yr</td>
<td>34</td>
<td>50</td>
</tr>
<tr>
<td>Girls 3-yr</td>
<td>38</td>
<td>31</td>
</tr>
<tr>
<td>Girls 4-yr</td>
<td>22</td>
<td>28</td>
</tr>
</tbody>
</table>

Group-authored stories (Total = 76)

<table>
<thead>
<tr>
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<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys 4-yr</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Boys 3- &amp; 4-yr</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Girls 3-yr</td>
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<td>7</td>
</tr>
<tr>
<td>Girls 4-yr</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Girls 3- &amp; 4-yr</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Boys &amp; Girls</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

* There were no group-authored stories by 3-year-old boys, because only one 3-year-old boy participated in the study.
Table 2
Comparison between Single- vs. Group-authored stories across the five indices over time.

<table>
<thead>
<tr>
<th>Indices</th>
<th>Fall Single</th>
<th>Fall Group</th>
<th>Spring Single</th>
<th>Spring Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Range</td>
<td>Mean</td>
</tr>
<tr>
<td>No. of clauses</td>
<td>8.65</td>
<td>4.53</td>
<td>(1-27)</td>
<td>11.46</td>
</tr>
<tr>
<td>No. of elaborations</td>
<td>2.40</td>
<td>2.31</td>
<td>(0-10)</td>
<td>3.51</td>
</tr>
<tr>
<td>No. of characters</td>
<td>4.44</td>
<td>1.85</td>
<td>(1-11)</td>
<td>5.54</td>
</tr>
<tr>
<td>Connectivity level</td>
<td>2.45</td>
<td>1.17</td>
<td>(0-5)</td>
<td>3.11</td>
</tr>
<tr>
<td>Character representation</td>
<td>1.56</td>
<td>0.77</td>
<td>(1-3)</td>
<td>1.59</td>
</tr>
</tbody>
</table>
Table 3

**Mean number of clauses (Number of stories) for Fall and Spring by 3- and 4-year-old boys and girls individually and collaboratively**

<table>
<thead>
<tr>
<th>Participant group</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single</td>
<td>Group</td>
</tr>
<tr>
<td>(No. of children)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-yr (1)</td>
<td>6.00 (5)</td>
<td>NA*</td>
</tr>
<tr>
<td>4-yr (6)</td>
<td>9.85 (34)</td>
<td>11.13 (16)</td>
</tr>
<tr>
<td>3- &amp; 4-yr</td>
<td>NA*</td>
<td>14.40 (5)</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-yr (5)</td>
<td>7.24 (38)</td>
<td>5.50 (2)</td>
</tr>
<tr>
<td>4-yr (5)</td>
<td>9.82 (22)</td>
<td>10.18 (11)</td>
</tr>
<tr>
<td>3- &amp; 4-yr</td>
<td>NA*</td>
<td>18.50 (2)</td>
</tr>
</tbody>
</table>

* NA means that there were no stories produced by the children.
Table 4

*Mean number of elaborations (Number of stories) for Fall and Spring by 3- and 4-year-old boys and girls individually and collaboratively*

<table>
<thead>
<tr>
<th>Participant group</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single</td>
<td>Group</td>
</tr>
<tr>
<td></td>
<td>(No. of children)</td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-yr (1)</td>
<td>1.20 (5)</td>
<td>NA*</td>
</tr>
<tr>
<td>4-yr (6)</td>
<td>2.32 (34)</td>
<td>2.69 (16)</td>
</tr>
<tr>
<td>3- &amp; 4-yr</td>
<td>NA*</td>
<td>3.80 (5)</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-yr (5)</td>
<td>1.71 (38)</td>
<td>2.50 (2)</td>
</tr>
<tr>
<td>4-yr (5)</td>
<td>4.00 (22)</td>
<td>4.27 (11)</td>
</tr>
<tr>
<td>3- &amp; 4-yr</td>
<td>NA*</td>
<td>7.00 (2)</td>
</tr>
</tbody>
</table>

* NA means that there were no stories produced by the children.
Table 5

*Mean number of characters per story (No. of stories) by 3-year-old and 4-year-old boys and girls individually and collaboratively over time*

<table>
<thead>
<tr>
<th>Participant group</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single</td>
<td>Group</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-yr (1)</td>
<td>3.00 (5)</td>
<td>NA*</td>
</tr>
<tr>
<td>4-yr (6)</td>
<td>5.32 (34)</td>
<td>5.44 (16)</td>
</tr>
<tr>
<td>3- &amp; 4-yr</td>
<td>NA*</td>
<td>7.20 (5)</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-yr (5)</td>
<td>4.00 (38)</td>
<td>4.50 (2)</td>
</tr>
<tr>
<td>4-yr (5)</td>
<td>4.18 (22)</td>
<td>4.91 (11)</td>
</tr>
<tr>
<td>3- &amp; 4-yr</td>
<td>NA*</td>
<td>7.00 (2)</td>
</tr>
</tbody>
</table>

* NA means that there were no stories produced by the children.
Figure 1. Mean proportions (%) of three general connectivity levels by *boys and girls* individually and collaboratively in Fall and Spring.
**Figure 1.** Mean proportions (%) of three general connectivity levels by *boys and girls* individually and collaboratively in Fall and Spring.
Figure 2. Mean proportions (%) of the highest general connectivity levels by 3- and 4-year-old girls individually and collaboratively in Fall and Spring.
Figure 2. Mean proportions (%) of the highest general connectivity levels by 3- and 4-year-old girls individually and collaboratively in Fall and Spring.
Figure 3. Mean proportions (%) of the highest character representation level by boys and girls individually and collaboratively in Fall and Spring.
**Figure 3.** Mean proportions (%) of the highest character representation level by *boys* and *girls* individually and collaboratively in Fall and Spring.
Figure 4. Mean proportions (%) of three character representation levels by 3- and 4-year-old girls individually and collaboratively in Fall and Spring.
Figure 4. Mean proportions (%) of three character representation levels by 3- and 4-year-old girls individually and collaboratively in Fall and Spring.
Ruohong Wei  
Curriculum vitae

**Personal History**  
Date of birth: May 17, 1980  
Place of birth: Kashi, Xinjiang Province, China  
Parents: Kun Wei and Kaili Li

**Education**  
Lehigh University: M. S. Psychology, 05/2004  
Beijing Normal University (BNU, CHINA): B. A. Psychology, 06/2001

**Research Interest**  
My research concerns the role of storytelling in children’s cognitive development. Specifically, I am interested in how a child’s co-narration with other children serves as collaboration and promotes children’s cognitive and language development.

**Academic Experience**

- **Master’s Thesis**, Lehigh University, 09/2002—05/2004  
  • Comparing stories told by a group of children versus stories told by a single child  
  • Examining the role of peer collaboration among preschool children

- **Teaching Assistant** for Social Psychology, 01/2004—05/2004  
  • Helped students to answer their questions and review for their tests  
  • Managed tests and graded tests

- **Teaching Assistant** for Child Development, Lehigh University, 09/2003—12/2003  
  • Helped students to answer their questions and review for their tests  
  • Managed tests and graded tests

  • Conducted research on a cross-cultural project in comparing Chinese and American preschoolers’ cognitive, emotional, and social development  
  • Interviewed Chinese and American children in their native language  
  • Coded interview data for future analysis  
  • Adjusted coding schemes to make them suitable for preschool children

- **Research Assistant**, Psychology at Lehigh University, Bethlehem, PA, 09/2002—05/2003  
  • Updated and translated the webpage for data collection in several cross-linguistic studies on naming motion verbs and objects  
  • Enabled Chinese subjects to participate in these studies online  
  • Scheduled and conducted experiments, and coded the data

- Working with Prof. Padraig O'Seaghdha on my First Year Project on the role of syllables in Chinese word naming, 09/2001—09/2002  
  • Helped decide the four factors used in the experiment  
  • Left out the confounding factors such as the interference from the similarity of orthography, phonology, and semantic from the materials that was used in a previous study  
  • Presented Chinese characters in picture files as experimental stimuli  
  • Used E-Prime to run the experiment  
  • Ran the participants, collecting data, analyzing data by using EXCEL & SPSS, and writing the report
• Presented my First Year Project entitled “Early phonological activation in Chinese disyllable naming” in the department brown bag, 10/2002

• Presented my final paper for Social Cognitive Psychology entitled “Facial expressions identification in different cultural and social groups” in the Global Symposium at Lehigh University, 03/2002

**Publications**


**Leadership Experience**

• President of CSSA (Chinese Students and Scholar Association) in Lehigh University, 09/2002—09/2003
  □ Organized a donation for SARS, and got a total of $1247.00 from faculties, staff, and students at Lehigh, 05/2003
  □ Participated in the International Bazaar at Lehigh: organized a fashion show and presented Chinese food, 04/2002
  □ Organized a celebration for the Chinese New Year with attendance of more than 200 people from all kinds of cultural backgrounds, 01/2003
  □ Organized a B-B-Q for the Chinese Full Moon Festival, and attendance was more than 200, 10/2002
  □ Participated the International Week at Lehigh: presenting Chinese food and Chinese tea, and a presentation on Chinese culture was provided for people to learn more about China, 11/2002

• Treasurer of Chinese Students and Scholar Association in Lehigh University, 09/2001—09/2002
  □ Took care of the account of CSSA
  □ Provided President and other committee members with the economic situation of the club and new ideas about hosting events

**Related Courses**

<table>
<thead>
<tr>
<th>Social Cognition</th>
<th>Analysis and Design of Experiments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developmental Psychology</td>
<td>Psycholinguistic</td>
</tr>
<tr>
<td>Cognitive Psychology</td>
<td>Research Seminar</td>
</tr>
<tr>
<td>Children and Narratives</td>
<td>Professional seminar</td>
</tr>
<tr>
<td>Psychology of gender</td>
<td>Technical writing</td>
</tr>
<tr>
<td>Multicultural Perspectives</td>
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</tbody>
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