

The Impact of Teacher-Directed and Child-Directed Pretend Play on Cognitive Competence in Kindergarten Children

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The goal of our research was to study different forms of organization of pretend play on children's cognitive performance in a mixed-age environment. We studied two forms of management of the playing process: (a) teacher-directed play with simultaneous involvement of all children in the classroom, where the teacher plays the dominant role in the education process directing children's activity, and (b) child-directed play in various small groups. Twenty-six observations were performed on 51 children in two mixed-age classrooms. The mean age of the children was 4.6 years, with age span from 3 to 6 years. Data were collected regarding children's affective and cognitive behavior according to generally accepted taxonomies: Bloom for the cognitive domain, and Krathwohl for affective domain. We found a significant increase in cognitive manifestations during direction of the playing process in groups compared with frontal management of the lesson (113.1 ± 12.1 vs. 45.7 ± 10.3 , mean \pm SEM, $p < 0.0001$), which is related with better employment of the powerful education engine of the free-play children.

KEY WORDS: play; mixed-age groups; preschool child; affective domain.

INTRODUCTION

The Slovak Republic has become increasingly concerned about the effectiveness of its primary educational system. Preschool education is a part of the institutional framework of the educational system. Kindergartens are provided not merely to be of assistance for women entering the work force but as preschool educational institutions that provide a comprehensive education for children from 3 to 6 years (Guziová, 1999). One year of compulsory kindergarten for 5-year-olds prior to entering elementary school currently is in the legislative process in the Slovak Republic.

Play has been a well-established curriculum component in the nation's early childhood education (Podhájecká,

1992). There is a growing body of evidence supporting the many connections between cognitive competence in children and high-quality play, especially pretend play. Pretend play requires the ability to transform objects and actions symbolically. It is furthered by interactive social dialogue and negotiation and involves role taking, script knowledge, and improvisation. Many cognitive strategies are exhibited during pretense, such as joint planning, negotiation, problem solving, and goal seeking. Play is a part of language and cognition; all are parts of an integrated, reciprocally developing system (Bergen, 1998; Isenberg & Quisenberry, 2002). Recently a "cognitive theory of pretense" has been proposed (Nichols & Stich, 2000), which suggests that there is a "separate mental workspace" within the human brain that can explain the phenomenon of pretense. It is more likely that pretend play engages many areas of the brain because it involves emotion, cognition, language, and sensorimotor actions, and thus it may promote the development of dense synaptic connections (Bergen & Coscia, 2001).

Findings suggested a significant positive effect of mixed-age grouping on children's prosocial behavior and cognition. In mixed-age groups, children of at least

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a 2-year age span and diverse ability levels are grouped in a single classroom and are encouraged to share experiences involving intellectual, academic, and social skills (Goodlad & Anderson, 1987; Katz, Evangelou, & Hartman, 1990). Consistency over time in relationships among teachers, children, and parents is viewed as one of the most significant strengths of the mixed-age approach because it encourages greater depth in children's social, academic, and intellectual development. Recent empirical findings demonstrate academic gains for students participating in mixed-age classrooms (Nye, Cain, Zaharias, Tollett, & Fulton, 1995). This research supports the supposition that children's opportunities to interact with more advanced and less advanced peers strengthen their cognitive skills, including, it is likely, social cognition. Additional support for the benefits of the mixed-age classroom is generated by research demonstrating that behaviors elicited in younger children when relating to children older than themselves include more mature and cognitively complex play (Goldman, 1981; McClellan & Kinsey, 2002).

The goal of our research was to study different forms of organization of pretend play on children's cognitive and affective performance in mixed-age environment.

METHODS

Subjects

Our research was performed from March 26 until June 12, 2001, in kindergarten Zemplinska 2 in Presov, Slovak Republic. Twenty-six observations (lessons) were presented to 51 children in two mixed-age classrooms with 8 boys and 18 girls in the first, and 15 boys and 10 girls in the second classroom. The mean age of the children was 4.6 years, with an age span from 3 to 6 years. Children were from the same geographic area and were similar in ethnic and socioeconomic composition. The observations were performed in time interval from 8:30 to 10:30 of local time, 4 days a week. The observations were carried out by two teachers with the same educational level in their own classrooms in an environment familiar to children. The play themes were the same for both classrooms and were selected from the P. Claycomb play collection: *The Busy Classroom* (play on wizard—aimed to distinguish animals; play on autobus—distinguish rolling stock; play with a tactile box—distinguish the quality of things by haptic form; play on cooking of kindergarten soup—distinguish the quality of things by all senses, for example, the teacher asks children to bring something round, red, soft and whistling—red

rubber ball that whistles when pressed; Claycomb, 1992).

Organization Forms of the Playing Process

We studied two forms of management of the playing process: (a) teacher-directed pretend play with simultaneous involvement of all children in the classroom and (b) child-directed pretend play in various small groups.

Teacher-directed play means joint activity of the teacher and children with the teacher organizing and continuously monitoring the process, elaborating situations that require simultaneous cooperation, and encouraging interaction of all children in the classroom. We refer to this as frontal play because it resembles traditional education in elementary school, where the teacher stands in the front of the room and plays the dominant role in the education process directing children's activity. Children listen and respond, obeying the teacher's instructions.

Child-directed play refers to free play in groups. Children spontaneously create groups and play different games according to their own interests, without external interventions. In our modification of pretend play in groups, the teacher actively participated in the playing process, beginning with a lesson presented to all children in the classroom concurrently. After awakening interest in the specified theme of the play, the teacher motivated children to create play groups. A variety of small, flexible playing groups of mixed ages and gender were formed and spontaneously modified during the lesson. The teachers, according to the actual situation, gently facilitated playing groups, activated passive children, and allowed a free-flow in the playing process. The classroom environments were an important part of organization of the lesson and they were carefully prepared, orderly and pleasing, as well as rich in materials, possibilities, and provocations that invited the children to participate in proposed play. Under the child-directed condition, children were free to undertake extended exploration and problem solving, often in small groups, where cooperation and disputation mingled pleasurably. The children progressed at their own pace and rhythm, according to their individual capabilities, under the unobtrusive directorship of the teacher in line with the established goals of the lesson.

The duration of the playing process depended on children's interest in each play theme. The average number of children participating in teacher-directed and child-directed play was 15.8 ± 3.0 (mean \pm SEM) and 14.9 ± 3.07 respectively.

Procedures

Data Collection

Data were collected regarding children’s affective and cognitive manifestations using a typing list developed in our kindergarten according to generally accepted taxonomies from Bloom for the cognitive domain (Bloom, 1956) and Krathwohl for affective domain (Krathwohl, Bloom, & Masia, 1964).

The incidence of each particular type of children manifestation was encoded, regardless of its intensity, by a number 1 and summarized at the end of the lesson (Table I). Similarly, teacher’s educational performance was measured by a sum of stimuli used to direct the playing process. For further analysis, children and teacher activity was registering on videotape.

Analysis of the Effect of the Organization of the Playing Process on Children’s Behavior

To compare the impact of different forms of direction of the playing process on children’s affective or cognitive behaviors and on teacher’s behavior stimuli, a

t test for unpaired data (or Mann-Whitney rank sum test) was used. In addition, owing to differential number of children and the duration of the lesson during the teacher-directed and child-directed play, children’s behavioral ratings were normalized as follows:

$$\frac{\text{The sum of observed affective or cognitive behaviors during the lesson}}{\text{Number of children participating in the playing process} \times \text{Duration of the lesson in minutes}}$$

A two-way ANOVA was used to test the relationship between affective and cognitive manifestations in relation to frontal or group organization of the playing process. As the first factor, the organization form of the children’s play was selected with levels (a) teacher-directed or (b) child-directed. As the second factor, the category of children’s behavior was coded as either (a) affective or (b) cognitive.

A similar process was used with teacher behavior:

Table I. Children’s Behavior and Teacher Stimulus During Different Forms of Organization of the Playing Process

Children’s Behavior											
AFFECTIVE DOMAIN				COGNITIVE DOMAIN				Teacher Stimulus			
Group	n	Frontal	n	Group	n	Frontal	n	Group	n	Frontal	n
Manipulate with toy	643	Listen	2487	Answer to the question	478	Answer to the question	539	Ask a question	303	Compliment	487
Enjoying	462	Imitate	2487	Term activity or thing	401	Ask	192	Compliment	261	Ask a question	447
Laugh	423	Enjoying	2487	Ask	379			Uphold	176	Answer to the question	306
Agree	371	Agreed	2487	Term feature	280			Direct the play	173	Explain	272
Watch	348	Direct the play	65	Justify	233			Explain	148	Uphold	213
Imitate	190			Find a solution	214			Show	122	Show	185
Direct the play	111			State	203			Encourage	115	Advise, help in choice	164
Do not agree	95			Suggest a solution	187			Answer to the question	98	Suggest a model situation	124
Recruit a playing partner	95							Is a playmate	42	Is a playmate	116
Change activity	84							Observe the play	15	Encourage	104
Reject	63										
Demand help	60										
Solve a conflict	50										
Sum	2995		10013	Sum	2375		731	Sum	2438		1453

Note: Sum, the sum of all children behavior in affective or cognitive domain or teacher stimulus during teacher-directed frontal or children-directed playing process in groups; n, number of each particular type of children behavior.

$$\frac{\text{The sum of teachers' behaviors observed during the lesson}}{\text{Number of children participating in the playing process} \times \text{Duration of the lesson in minutes}}$$

To assess the qualitative shift between affective and cognitive domain, we calculated the relative variation (RV) of children's affective and cognitive behaviors

$$\left(\frac{\text{Affective-Cognitive}}{\text{Affective}} \right) \times 100$$

during different forms of the organization of the playing process (teacher-directed or play in groups) and then compared each to the other using *t* test for unpaired data.

A linear regression analysis was used to study the association of teacher stimuli with children's affective or cognitive behaviors.

RESULTS

We measured 16,144, children behaviors during 26 lessons; of that total number, 10,744 behaviors were observed during the teacher-directed lesson and 5,370 during teacher-facilitation of play in groups.

During child-directed play in groups (GR) compared with teacher-directed frontal (FR) management of the lesson, we found a significant increase in cognitive (COG) behaviors ($113.1 \pm 12.1, n = 21$ vs. $45.7 \pm 10.3, n = 16$; mean \pm SEM, COG-GR vs. COG-FR, $p < 0.0001$; Mann-Whitney Rank Sum Test) and the decrease of affective (AFF) behaviors ($142.6 \pm 12.1, n = 21$ vs. $625.8 \pm 110.5, n = 16$; AFF-GR vs. AFF-FR, $p < 0.0001$; Fig. 1). The number of teacher's stimuli in group or frontal cluster did not differ significantly ($116.1 \pm 12.4, n = 21$ vs. $90.8 \pm 13.1, n = 16$; GR vs. FR, $p = 0.13$; Mann-Whitney Rank Sum Test).

When the interactions were analyzed by two-way ANOVA with normalized data, a statistically significant difference was found in children's behavior (a) during different kinds of the organization of the playing process (frontal vs. group, $p < 0.0001$), (b) between affective and cognitive manifestations ($p < 0.0001$) and (c) a statistically significant interaction was found between frontal or group direction of the playing process and corresponding affective or cognitive manifestations ($p < 0.0001$). Affective manifestations significantly prevailed on cognitive during frontal direction of the play, opposed to management of the playing process in groups where we

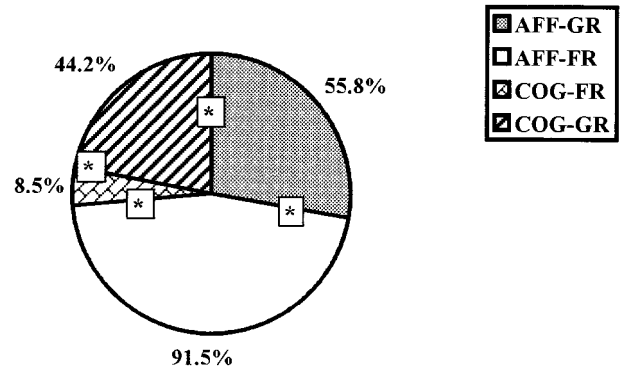


Fig. 1. Percentage distribution of affective and cognitive behavior during teacher-directed frontal (FR) or children-directed playing process in groups (GR).

Note: AFF, affective domain; COG, cognitive domain. * $p < 0.05$.

found an increase in cognitive domain (Fig. 1 and Fig. 2). We did not find significant difference in teacher's behavior between frontal and group management of the children's play.

The comparison of the relative variation (RV) of affective and cognitive manifestations indicated a highly significant shift to cognitive domain during play in groups compared with frontal management of the lesson (Fig. 3).

During organization of the playing process in groups we found a highly significant positive correlation between teacher stimulus and children behavior in cognitive domain ($R = 0.805, p < 0.0001, n = 21$) and any

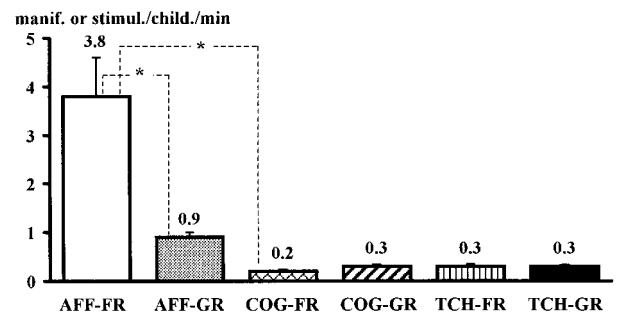


Fig. 2. The comparison of children's behavior (manif.) and teacher stimuli (stimul.) during teacher-directed frontal (FR) or children-directed playing process in groups (GR).

Note: Affective manifestations significantly prevailed during frontal direction of the playing process as opposed to play in groups where the difference was not so distinct.

AFF, affective domain; COG, cognitive domain; TCH, teachers stimuli.

* $p < 0.05$.

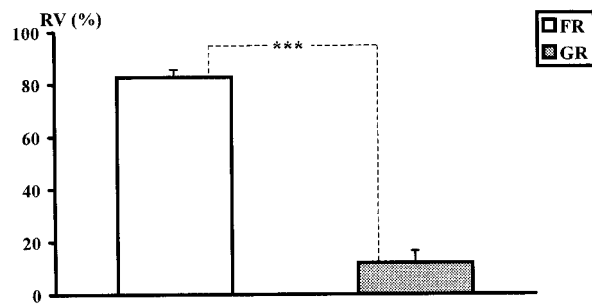


Fig. 3. The comparison of the relative variations of affective and cognitive behavior during teacher-directed frontal (FR) or children-directed playing process in groups (GR).

Note: Play in groups evoked a balanced relationship between cognitive and affective domain compared with frontal management of the lesson where relative variation remained high.

RV, relative variation of children affective and cognitive behavior.

*** $p < 0.0001$.

associations with affective sphere ($R = 0.33$, $p = 0.134$, $n = 21$); and the opposite pattern during frontal organization of the playing process, when the teacher stimulus was significantly effective in affective ($R = 0.905$, $p < 0.0001$, $n = 16$) opposed to cognitive domain ($R = 0.26$, $p < 0.326$, $n = 16$).

The duration of the lesson had a tendency to be shorter during frontal management of the playing process— 19.8 ± 2.57 min (mean \pm SEM)—compared with play in groups when it lasted 25.1 ± 2.04 min.

DISCUSSION

The press for academic readiness through concentrated and direct teaching of alphabet, number, color, and other skills is now affecting the amount of time allocated for play in preschools. This trend has had a negative effect on social pretend play, which requires extended uninterrupted time periods to develop complexity. Thus, one major challenge for proponents of such play is to be able to articulate to policymakers how children's development of the types of cognitive skills that are demonstrated in pretense is as important (or even more important) for academic readiness and later school success than memorizing the standard set of information officially targeted as early childhood competencies (Bergen, 1998).

Our results are in accordance with earlier research on play/cognitive development relationships supporting play-based curricula in programs for children under age 6 in preschool. We found an increase in cognitive manifestations during organization of the children play in groups, compared with the teacher-directed frontal play.

The composition of the children's behavior during play in groups was enriched as evidenced by the higher levels attained in both affective and cognitive domain taxonomies (Table I). Additionally, children-directed play in groups evoked a balanced relationship between the cognitive and affective sphere, shifting the proportion of children's behaviors toward the cognitive domain (Fig. 3).

Our modification of the play in groups facilitate the advantages of mixed-aged grouping classroom practices by creating an environment (with the teacher's assistance) that increased opportunities for children to interact with more advanced and less advanced peers, and strengthened their cognitive skills in keeping with their individual rate of knowledge and skill acquisition.

A highly significant positive correlation between teacher's behavior and children's behavior in the cognitive domain and its absence in the affective domain, emphasizes the significance of the organization of the playing process in groups on cognitive competence. The opposite pattern was found in teacher-directed lessons, where the frontal play favored emotional development. Both organization forms should be combined; however, for balanced children's emotional and cognitive development, the modification of the play in groups presented here (e.g., teacher-presented lesson followed by free play) shows promise. Emotions and cognition cannot be separated (Caine & Caine, 1994).

In spite of the more demanding nature of simultaneous management of various playing groups, this form of direction of the playing process leads to expansion of the roles of nurturing and commitment on the part of both children and teacher. By gently entering the playing process, skillful teachers may be able to shift children's cognitive and emotional development to a higher level using the powerful natural engine of the free play. Our results are in accordance with Vygotsky's theory of the zone of proximal development. Cole, John-Steiner, Scriber, Souberman and Vygotsky (1978) offer reasons for teachers to intervene in the playing process, leading to provide a kind of strategic assistance to children in learning new tasks and to extend the "zone of proximal development." Similar favorable effects of the play intervention methods were found in children with disabilities. Special educators often use play intervention methods, such as script rehearsal, to promote young children's pretend play abilities because of the hypothesized relationships between enhanced play skills and enhanced cognitive, social, and language development (Neeley, Neeley, Justen & Tipton-Sumner, 2001).

We would argue that the lowered rate and level of cognitive domain behaviors from children during the

teacher's direction of play is related to the poorer use of natural drive of the pretend play in the education process. During frontal management condition, children's persistence gradually decreased, thereby shortening the duration of the lesson compared with the free play condition, when children take greater pleasure in play and learning.

In sum, there is a growing body of evidence supporting the many connections between cognitive competence and high-quality pretend play. If children lack opportunities to experience such play, their long-term capacities related to metacognition, problem solving, and social cognition—as well as to academic areas such as literacy, mathematics, and science—may be diminished. These complex and multidimensional skills involving many areas of the brain are most likely to thrive in an atmosphere rich in high-quality pretend play (Bergen & Coscia, 2001). It appears that our play intervention method in various small mixed-age groups may be an important factor that enhances the development of social and cognitive abilities. Children think more, learn more, remember more, spend more time on task, and are more productive in well-implemented cooperative groups rather than directive, competitive structures of the frontal organization of the playing process. These younger children also exhibit less reliance on the teacher and on their peers for help in caretaking and problem-solving situations.

Further research is needed to develop optimal methods of organization of the playing process to enhance enormous natural educational potential of the free pretend play in mixed-age groups and in different contexts and cultures.

REFERENCES

- Bergen, D. (1998). Stages of play development. In Doris Bergen (Ed.), *Readings from . . . Play as a medium for learning and development* (pp. 71–93). Olney, MD: Association for Childhood Education International.
- Bergen, D., & Coscia, J. (2001). *Brain research and childhood education: Implications for educators*. Olney, MD: Association for Childhood Education International.
- Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain*. New York: Longmans, Green.
- Caine, G., & Caine, R. N. (1994). *Making connections. Teaching and the human brain*. Menlo Park, CA: Addison-Wesley.
- Claycomb, P. (1992). *The busy classroom*. Mt. Rainier, MD: Gryphon House.
- Cole, M., John-Steiner, V., Scriber, S., Souberman, E., & Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Goldman, J. A. (1981). Social participation of preschool children in same- versus mixed-age groups. *Child Development*, 52, 644–650.
- Goodlad, J. I., & Anderson, R. H. (1987). *The nongraded elementary school*. New York: Teachers College Press.
- Guziová, K. (1999). The program v children education in kindergartens. Approved by Ministry of Education of Slovak Republic, Resolution Number 197/99-41 from May 28, 1999. L'udoprint, Trenčín. (In Slovak)
- Isenberg J. P., & Quisenberry N. (2002). Play: Essential for all children. *Childhood Education, Fall*, 33–39.
- Katz L. G., Evangelou D., & Hartman J. A. (1990). *The case for mixed-age grouping in early childhood education programs*. Washington, DC: National Association for the Education of Young Children.
- Krathwohl, D. R., Bloom, B. S. & Masia, B. B. (1964). *Taxonomy of educational objectives: Handbook II: Affective domain*. New York: David McKay Co.
- McClellan, D. E., & Kinsey, S. J. (2002). Children's social behavior in relation to participation in mixed-age or same-age classrooms. *Early Childhood Research and Practice*, 1(1).
- Neeley, P. M., Neeley, R. A., Justen, J. E., III, & Tipton-Sumner, C. (2001). Scripted play as a language intervention strategy for preschoolers with developmental disabilities. *Early Childhood Education Journal*, 28(4), 243–246.
- Nichols, S., & Stich, S. (2000). A cognitive theory of pretense. *Cognition*, 74, 115–147.
- Nye, B. A., Cain, V. A., Zaharias, J. B., Tollett, D. A., & Fulton, B. D. (1995). Are multiage/nongraded programs providing school students with a quality education? Some answers from the school success study. Paper presented at the annual conference on Creating Quality Schools, Oklahoma City, OK.
- Podhájecká, M. (1992). Hrovo-učebné činnosti v materskej škole (Play-educational activity in kindergarten, in Slovak). *Predškolská Výchova (Pre-school Education)*, 47(2), 2.