DOCUMENT RESUME

ED 476 288 CS 511 983

AUTHOR	de Dios, M. J.; Montero, I.
TITLE	The Motivational Function of Private Speech: An Experimental Approach.
PUB DATE	2003-04-00
NOTE	18p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (Tampa, FL, April 24-27, 2003). See ED 433 137 for the earlier study.
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Cognitive Processes; Early Childhood Education; Elementary Education; *Inner Speech (Subvocal); *Student Motivation
IDENTIFIERS	*Private Speech

ABSTRACT

Recently, some works have been published exploring the role of private speech as a tool for motivation, reaching beyond the classical research on its regulatory function for cognitive processes such as attention or executive function. In fact, the authors' own previous research has shown that a moderate account of spontaneous private speech of children aged between 4 and 8 has motivational content. To obtain more conclusive data on a hypothetical motivational function of this kind of utterances, a study used a factorial design, with private speech and task difficulty manipulated as independent factors, and task performance and persistence observed as dependent variables. Subjects were 83 preschool, second-grade, or fourth-grade children from a school in Madrid, Spain. The results show that the participants persist more in the free private speech condition. In addition, the number of utterances is greater in this condition. It can be also observed that the increase in persistence is related to the relative frequency of private speech with motivational content. Finally, implications of these results for the development of a socio-historical approach to motivation are discussed. The codification system is presented in an appendix. (Contains 17 references and 4 figures.) (Author/RS)

The Motivational Function of Private Speech: An Experimental Approach

M. J. de Dios & I. Montero.

Universidad Autónoma de Madrid

Spain

Author's note

Second author's address: Ignacio Montero. Dpto. Psicología Social y Metodología. Universidad Autónoma de Madrid. Cantoblanco, 28049, Madrid. SPAIN.

E-mail: nacho.montero@uam.es

Abstract

Recently, some works have been published exploring the role of private speech as a tool for motivation, reaching beyond the classical research on its regulatory function for cognitive processes such as attention or executive function. In fact, our own previous research has shown that a moderate account of spontaneous private speech of children aged between 4 and 8 has motivational content. To obtain more conclusive data on a hypothetical motivational function of this kind of utterances, we propose the use of an experimental approach. This work presents the results of a study carried out with a factorial design, with private speech and task difficulty manipulated as independent factors, and task performance and persistence observed as dependent variables. The results show that the participants persist more in the free private speech condition. In addition, the number of utterances is greater in this condition. It can be also observed that the increase in persistence is related to the relative frequency of private speech with motivational content. Finally, we discuss the implications of these results for the development of a socio-historical approach to motivation.

The Motivational Function of Private Speech: An Experimental Approach.

Since the English translation of Thought and Language (Vygotsky, 1934/1962) many works have attempted to test his hypothesis about the self-regulatory function of what was called egocentric speech by Piaget (1923). The works of Zivin (1979) and Díaz & Berk (1992) collect the results of various decades of not always successful efforts intended to demonstrate the role of private speech in the self-regulation of motor activity, attention or executive function, as well as the developmental process following the appearance, consolidation and internalization of private speech in the final pre-school years (see also, Winsler, 1998; Winsler, Díaz y Montero, 1997). More recently, however, certain authors have begun to consider the possibility that this self-directed speech would play also a role in self-regulatory functions of other psychological processes. This is the case with emotional (Broderick, 2001) and motivational regulation (Montero & Huertas, 1999, Chiu & Alexander, 2000).

Parallel to this, since the nineteen-eighties works have been published attempting a socio-cultural approach with Vygotskian roots of the study of the motivational processes participating in education (Sivan, 1986, Rueda & Dembo, 1995). These works emphasize the importance of social interaction processes in the construction of motivational orientations in the educational context, but do not analyze the Vygotskian concept of the role of private speech in the transformation of social discourse into a self-regulatory tool. Only the aforementioned work by Montero & Huertas (1999) provides an approximation integrating the two Vygotskian ideas: the social origin of motivational processes and the role of language in their self-regulation.

These authors observed the presence of a significant percentage (20% on the average) of private speech with motivational content emitted in different natural and structured observational situations by preschoolers and children in the first few years of

primary school. Likewise, as in the later work by Chiu & Alexander (2000), a significant correlation was demonstrated between these utterances and motivational indicators such as performance and persistence in the task.

However, as pointed out by Díaz (1992), correlational analyses do not allow establishing definitive conclusions on the role of private speech. This author also warns of the possible error in attributing functions to speech based solely on its content. A third concern relates to the difficulty level of the task as a confounded variable. According to the above, it would be necessary to design more conclusive studies to show the relation of utterances with motivational content with classical measures of motivation (performance and persistence), while considering the role of task difficulty. In addition, those studies should include an ontogenetic perspective to test the internalization process postulated by Vygotsky for the pre-school ages.

Following the methodology used by Montero & de Dios (2001), we propose a study with two independent variables experimentally manipulated (private speech utterances and level of task difficulty), a grouped variable (age) and two dependent measures (task performance and persistence). The level of linguistic development is included as covariable in order to control individual differences.

Method

Participants

Eighty-three children from a school in Madrid (Spain) in three different school years: 26 were preschoolers (average age 5 years, 10 months), 29 were second graders (7 years, 7 months) and 28 were fourth graders (9 years, 8 months). Of these, 34 were boys (40.96%) and 49 were girls (59.04%).

Materials

The experimental task involved solving Tangram puzzles. Tangram puzzles consist of seven parts with different geometrical shapes and sizes. With them the participants must form figures following models shown to them. The figures were ordered according to 7 difficulty levels.

Additionally, all subjects were administered the Peabody Picture Vocabulary Test Revised (PPVT-R) to evaluate their linguistic development level. The purpose was to obtain a measure of their verbal aptitude and thereby control individual differences in their level of linguistic development. This test has been used extensively in research on private speech because it correlates highly with other intelligence measures (Berk, 1992).

Private speech was analyzed with the code shown in Appendix 1, based on that used by Berk (1986) and developed by Montero & Huertas (1999).

Procedure

The study followed a 3x3x2 factorial design, with two inter subjects independent variables: educational level, with three levels –5-year-old preschoolers, 2nd and 4th grade primary school – and task difficulty, with three levels –low, medium and high -, and one intra subject independent variable, manipulation of the private speech production, with two levels –free and obstructed. The typical punctuation in the PPVT-R test was considered as a covariable.

Each subject was individually observed in three sessions. All of them took place in presence of the experimenter. In the first session the Peabody test was administered and an individual calibration of the task difficulty was performed. This calibration involved each subject solving a Tangram puzzle of each difficulty level, starting with the easiest until reaching the level in which the puzzle could only be partially solved

without help; this level was considered the medium difficulty level for the individual child, as it was in the zone of proximal development. The levels immediately below and above were considered her or his low and high difficulty levels respectively.

With these data, each child was randomly assigned to a difficulty level –low, medium or high- at which to form the figures, according to his or her individual calibration.

In the following two sessions each subject was individually asked to create as many figures as desired within the assigned level of difficulty. In one session speech utterances were obstructed by making the child listen to music with headphones – modernizing an old Vygotsky's idea - while in the other session no impediments were placed to private speech utterances. The order of presentation of these two experimental conditions was counterbalanced. These two sessions were video-taped for the subsequent analysis of private speech utterances, performance in the task and persistence.

Results and Discussion

The ANCOVA performed with the aforementioned independent variables and covariable, and the number of private speech utterances as a dependent variable showed an interaction between the conditions of private speech manipulation and task difficulty ($F(2, 46)=8.365$, $p<.01$). Figure 1 shows the number of private speech utterances in each experimental situation, according to the task difficulty level.

Figure 1

Obstructing private speech clearly diminishes the number of utterances in the three levels of difficulty. This fall is particularly noticeable for the medium and high

levels. In addition, free utterance of private speech adopts an inverted U distribution, with more utterances when the task has medium difficulty. However, in the situation where private speech is obstructed the utterances are few for all difficulty levels.

Two conclusions may be inferred from these results. Firstly, the method used to manipulate private speech was effective; obstructing private speech was successful in reducing it to a minimum. Secondly, when there are no obstacles the amount of private speech depends on the task difficulty level, as held by Vygotsky.

To study the effect of private speech manipulation on performance, an ANCOVA was performed of repeated measurements with private speech manipulation, grade and task difficulty level as factors, PPVT-R as covariable, and performance as a dependent variable. The results showed that speech manipulation produces a significant drop in performance, which varies with the task difficulty ($F(2, 46)=3.914$, $p<.05$). Figure 2 shows the average performance calculated as the percentage of success (parts placed correctly) in the group of puzzles attempted in the second and third session, as a function of the condition of manipulation of private speech and the task difficulty level.

Figure 2

Performance falls as the task difficulty level increases. In addition, when tasks have a medium or high difficulty speech obstruction causes a drop in performance. In the case of medium difficulty tasks, performance drops more clearly, falling by 16% approximately (61.17% in the free private speech condition vs. 45.82% for obstructed private speech). For high difficulty tasks there is also a drop in performance, albeit lower, approximately 10% (35.56% in the free private speech condition vs. 25.95% in the obstructed private speech condition).

This result shows the relation between emission of private speech and performance. When free emission of private speech is allowed performance is significantly higher, particularly for medium difficulty tasks, as postulated in Vygotskian theory. Private speech acts as a behavior regulator, favoring performance when the task has a medium or high difficulty level.

This effect of private speech manipulation on performance agrees with the results found in the study by Montero & de Dios (2001), although in the present study the differences of performance in the two experimental situations, medium and high difficulty level, are less marked. This may be because the measure of performance in said study was obtained using a single puzzle, while in our case it was more common for the participants to wish to perform several puzzles in each session.

Another objective of the study was analyzing the effect of private speech emission on persistence in the task, a classical indicator of motivation. For this purpose, an ANCOVA was conducted using the same variables as in previous analyses, but with persistence in the task (calculated in minutes) as a dependent variable. The results showed that there is a similar fall in persistence in all difficulty levels when private speech is obstructed ($F(1,46)= 5.086$, $p<.05$). Figure 3 shows the persistence time in the two experimental conditions, considering the task difficulty level.

Figure 3

It seems that allowing the subjects to emit private speech allows them to persist more in the task. Furthermore, although with a marginal probability, there is an effect of task difficulty ($F(2.46)=2.998$, $p<.060$). According to this, whether or not private speech is obstructed the time of persistence varies with the task difficulty level.

Specifically, persistence is significantly lower for low difficulty tasks than for medium difficulty tasks. The execution time in medium and high difficulty tasks was not significantly different, although there is a tendency for it to drop in the latter case. This supports a finding contrasted long ago (Atkinson & Litwin, 1960): tasks involving a moderate challenge (medium difficulty level) favor a higher persistence. What is added here is the mediating role of private speech utterances.

However, the final objective of this work intends to reach somewhat further. We do not only wish to show that persistence depends on the free emission of private speech, but also that it is related to the emission of private speech with motivational content. Figure 4 shows superimposed the persistence in the free speech condition and the utterances with cognitive and motivational content as a function of task difficulty level. Note that in the case of low and high levels, the ratio between the two types of utterances is three to one. However, in the case of medium difficulty level the ratio is two to one. This is, not only is there a greater persistence when there is more speech but there is also a greater persistence when the proportion of speech with motivational content is higher.

Figure 4

Conclusions

This work presents an experimental approach that allows studying the motivational function of private speech going beyond the analysis of its content. By an experimental manipulation of the amount of private speech emitted and a joint study of the influence of task difficulty, estimated individually for each participant, we have shown that both performance and persistence depend significantly and relevantly on the

possibility of free speech. Furthermore, a higher persistence is associated to a higher proportion of private speech with motivational content.

These data imply that it is possible to support more strongly the motivational function of private speech, providing data relevant to extending the self-regulatory function of speech beyond motor activity and certain cognitive abilities, without contradicting the Vygotskian theory on the mediated nature of higher psychological functions. In addition, this type of research opens a new path for exploring the development of goal-forming processes in the context of educational activities, as it allows accessing the dynamics that configure its various elements (see Pintrich & Schunk, 2001) by analyzing their appearance in the spontaneous private speech of children between the ages of five and ten.

References

Atkinson, J.W. & Litwin, G.H. (1960). Achievement motive and test anxiety conceived as motive to avoid failure. *Journal of Abnormal and Social Psychology, 60*, 52-63.

Berk, L.E. (1986). Relationship of Elementary School Children's Private Speech to Behavioral Accompaniment to Task, Attention, and Task Performance. *Developmental Psychology, 22*, 671-680.

Berk, L.E. (1992). Children's private speech: An overview of theory and status of research. In R.M. Díaz & L.E. Berk (Eds.), *Private Speech: From social interaction to self regulation* (pp. 17-53). Hillsdale, NJ: LEA.

Broderick, N.Y. (2001). An investigation to the relationship between private speech and emotiin regulation in preschool age children. Ann arbor, MI: UMI Dissertation Services.

Chiu, S. & Alexander, P.A. (2000). The motivational function of preschooler's private speech. *Discourse Processes, 30* (2), 133-152.

Díaz, R.M. (1992). Methodological Concerns in the Study of Private Speech. En R.M. Díaz y Berk, L.E. (Eds.), *Private Speech: From Social Interaction to Self-Regulation* (pp. 55-81). New York, N.Y.: LEA.

Díaz, R.M. & Berk, L.E. (Eds.) (1992). *Private Speech: From social interaction to self regulation*. Hillsdale, NJ.: LEA.

Montero, I. y Huertas, J.A. (1999, Abril). *The motivational function of private speech*. Poster presented at the Annual Meeting of the AERA. Monreal, Canada. ERIC document: PS027860.

Montero, I. & de Dios, M. J. (2001, April).. Poster presented at the Annual Meeting of the AERA. Seattle, WA.

Piaget, J. (1923). *Le langage et la pensée chez l'enfant* [Language and Thought of the child]. Neuchâtel, Switzerland : Delachaux et Niestlé.

Pintrich, P.R. & Schunk, D.H. (2001). *Motivation in education. Theory, research, and applications*, 2nd ed. Englewood Cliffs, NJ: Prentice Hall.

Rueda, R. & Dembo, M.H. (1995). Motivational processes in learning: A comparative analysis of cognitive and sociocultural frameworks. In M. L. Maehr & P.R. Pintrich (Eds), *Advances in Motivation and Achievement, vol 9, Culture Motivation and Achievement,* (pp. 255-289). London: JAI.

Sivan, E. (1986). Motivation in social constructivist theory. *Educational Psychologist, 21*, 209-233.

Vygotsky, L.S. (1962). *Thought and Language*. (E. Hanfmann, & G. Vakar, Eds. & Trans.). Cambridge, MA: MIT Press. (Original work published 1934).

Winsler, A. (1998). Parent-Child interaction and private speech in boys with ADHD. *Applied Developmental Science, 2*, 17-39.

Winsler, A., Díaz, R.M. & Montero, I. (1997). The role of private speech in the transitions from collaborative to independent task performance in young children. *Early Childhood Research Quarterly, 12*, 59-79.

Zivin, G. (Ed) (1979). The development of self-regulation through private speech. New York: Wiley.

Appendix 1

Private Speech Codification System (Montero & Huertas, 1999)

This private speech codification system presents two large categories:

A. Cognitive private speech, comprising the following subcategories:

- Task-irrelevant private speech: utterances referring to absent persons, songs and word repetitions not associated with the task.
- Task-relevant private speech: utterances describing the own activity, self-answered questions and comments guiding the activity, relevant to the task.
- Indications of inner speech: muttering, tongue movement and incomprehensible utterances, relevant to the task.

B. Private speech with motivational content. Comprising the following subcategories:

- Causal attribution for success and failure: Utterances attributing a cause to the result obtained in the task.
- Expectancies for success and failure: self-directed comments before beginning the task, anticipating its outcome.
- Positive and negative evaluations with emotional load: Evaluations of own work accompanied by emotional expression.
- Positive and negative evaluations without emotional load: Evaluations of own work without clear emotional expression.
- Positive and negative emotions: Expression of positive or negative feelings.
- Other achievement motivation utterances: comments with motivational content that cannot be classified in any of the above categories.

Figure 1: Averaged number of utterances as a product of the interaction between task difficulty and manipulation of private speech

	Level of Difficulty		
	Low difficulty	Medium difficulty	High difficulty
Free PS	35.32	98.82	60.04
Obstructed PS	24.43	33.54	31.89

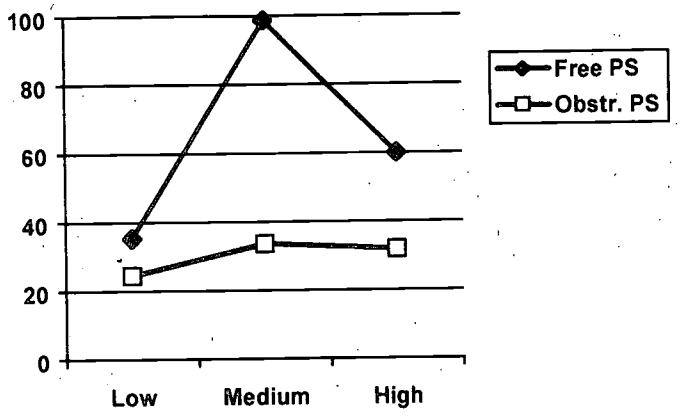


Figure 2: Percentage of successful Task Performance

	Level of Difficulty		
	Low difficulty	Medium difficulty	High difficulty
Free PS	94.69	61.17	35.56
Obstructed PS	92.02	45.82	25.95

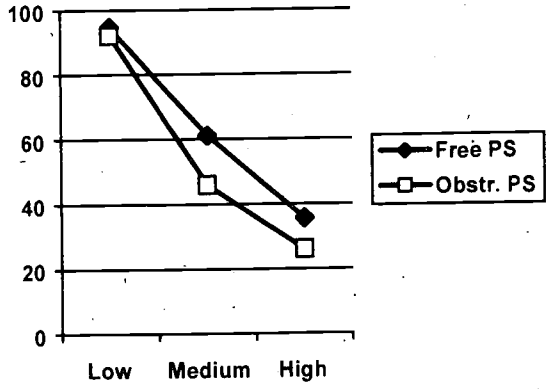


Figure 3: Persistence

	Level of Difficulty		
	Low difficulty	Medium difficulty	High difficulty
Free PS	12 min. 27 sec.	15 min. 24 sec.	13 min. 44 sec.
Obstructed PS	10 min.48 sec.	14 min. 1 sec.	12 min. 9 sec.

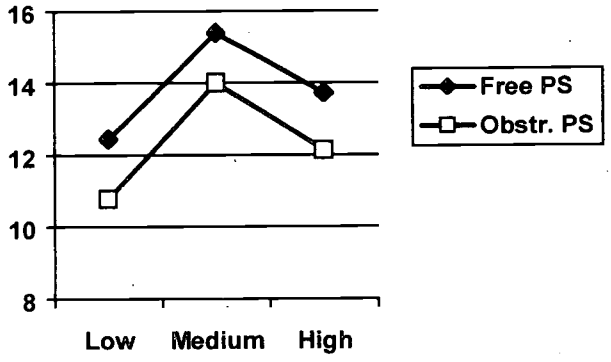
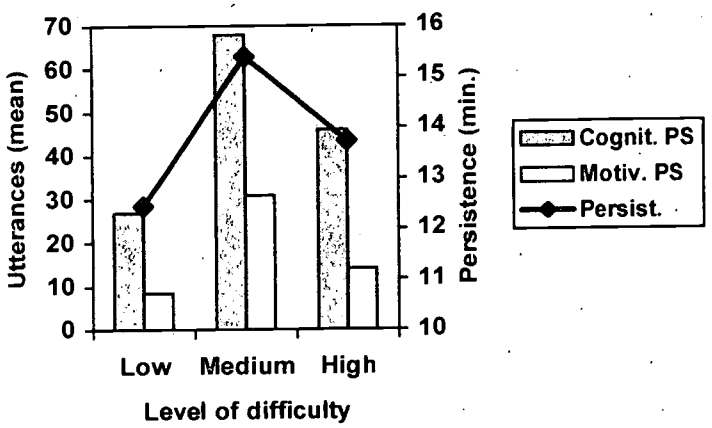


Figure 4: A visual representation of the relationship between proportion of PS with motivational content and persistence on task

	Level of Difficulty		
	Low difficulty	Medium difficulty	High difficulty
Persistence	12 min. 8 sec.	15 min. 2 sec.	13 min. 6 sec.
Motivational PS	19,32	27,08	19,11



U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

REPRODUCTION RELEASE

CS 511 983

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: THE MOTIVATIONAL FUNCTION OF PRIVATE SPEECH: AN EXPERIMENTAL APPROACH

Author(s): M.J. DEDIOS & I. MONTERO

Corporate Source: UNIVERSIDAD AUTÓNOMA DE MADRID

Publication Date: APRIL, 2003

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Level 1 ☒

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy.

The sample sticker shown below will be affixed to all Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Level 2A ☐

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 2B ☐

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, → please

Signature:	Printed Name/Position/Title: IGNACIO MONTERO, ASSOCIATE PROFESSOR
Organization/Address: SPAIN UNIVERSIDAD AUTONOMA, CANTOBLANCO 28049 MADRID	Telephone: +34 91 8590281 FAX: +34 91 3975215
	E-Mail Address: nacho.montero@uam.es Date: APRIL 30th 2003

ERIC/
EECE

Have your work included in the ERIC database...

Providing information since 1967 about the development, education, and care of children from birth through early adolescence

ERIC Clearinghouse on Elementary and Early Childhood Education (ERIC/EECE)

University of Illinois
Children's Research Center
51 Gerty Drive
Champaign, IL 61820-7469

ericeece@uiuc.edu (email)
http://ericeece.org (Web)

800-583-4135 (voice/tty)
217-333-1386 (voice)
217-333-3767 (fax)

April 21, 2003

Dear Colleague:

It has come to our attention that you will be giving a presentation at the ***2003 Biennial Meeting of the Society for Research in Child Development*** to be held in Tampa, Florida, on April 24-27, 2003. We would like you to consider sending us your presentation, or any other recently written education-related papers or reports, for possible inclusion in the **ERIC** database.

As you may know, **ERIC (the Educational Resources Information Center)** is a federally sponsored information system for the field of education. Its main product is the **ERIC** database, the world's largest source of education information. **The Clearinghouse on Elementary and Early Childhood Education** is one of 16 subject-specialized clearinghouses making up the **ERIC** system. We collect and disseminate information relating to all aspects of children's development, care, and education.

Your paper should be at least 8 pages long and not previously published. **Announcement in ERIC does not prevent you from publishing your paper elsewhere** because you still retain copyright. Your paper will be reviewed, and we will let you know within 6 weeks if it will be added to the ERIC database.

Please sign the *reproduction release* on the back of this letter and return it with an abstract and two copies of your presentation to **Booth #46** or to **ERIC/EECE** at the address in the letterhead. If you have any questions, please contact me by email at ksmith5@uiuc.edu or by phone at 800-583-4135. I look forward to receiving your paper.

Best wishes,

Karen E. Smith

Karen E. Smith
Assistant Director