

Teachers' Commands and Their Role in Preschool Classrooms

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Abstract

Introduction. Many aspects of teacher competency have been previously examined, particularly a teacher's ability to give commands effectively. Teachers' instructions to students within the classroom, aid in the acquisition of both the students' academic and nonacademic skills. Teachers' commands promote verbal and social skills, and facilitate appropriate classroom behavior. In this respect, compliance to teacher commands is an integral aspect of classroom behavior management.

Method. Naturally occurring levels of teacher commands were studied across three ages of preschool classrooms; toddlers, 3-4 year olds, and 4-6 year olds. Commands were identified through a review of the literature in coordination with preschool classroom observation and observation protocol development. Levels of fifteen different identifiable types of commands were measured across six different types of preschool activities.

Results. Results showed that there is a clear difference in the rates of commands across age levels and activities, and that specific types of commands occur at significantly higher percentages in differing age level preschool classrooms.

Discussion and Conclusion: Types of commands elicited by teachers and the rate of command elicitation are seen as having implications for classroom compliance levels.

Keywords: command, preschool, teacher, instruction

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Resumen

Introducción. Muchos aspectos en relación con las competencias docentes han sido previamente estudiados, especialmente la habilidad de los docentes para dar órdenes de forma efectiva. Las instrucciones de los profesores a los estudiantes en clase favorecen la adquisición tanto de habilidades académicas como no académicas. Tales órdenes promueven las habilidades verbales y sociales, y promueven un comportamiento adecuado en clase. En este sentido, la obediencia de las órdenes dadas por los docentes es un aspecto central en gestión del comportamiento del alumnado.

Método. Las órdenes dadas por los docentes fueron estudiadas en tres cursos de Educación Preescolar con niños de 3-4 años y de 4-6 años. Las órdenes fueron identificadas mediante una revisión bibliográfica junto con la observación en el aula y la observación mediante un protocolo de registro. Se identificaron 15 tipos de órdenes que fueron evaluados a través de 6 tipos de actividades.

Resultados. Los resultados muestran una diferencia clara en los porcentajes de órdenes en función de la edad y las actividades, y que determinadas órdenes específicas ocurren con mayor frecuencia en función de la edad.

Discusión o Conclusión. Los tipos de órdenes dadas por los docentes y el índice de elicitación de las mismas tienen implicaciones en relación con el acatamiento por parte de los alumnos.

Palabras Clave: Órdenes, Educación Preescolar, Docentes, Instrucción.

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Introduction

Many aspects of teacher competency have been previously examined (Lavelle, 2006; McAllister & Irvine, 2000). Amongst the most important is a teacher's ability to give commands effectively. Teachers' instructions to students within the classroom, aid in the acquisition of both the students' academic and nonacademic skills. Teachers' commands promote verbal and social skills, and facilitate appropriate classroom behavior (Atwater & Morris, 1988; Ford, Olmi, Edwards & Tingstrom, 2001; Matheson & Shriver, 2005; Noell, VanDerHeyden, Gatti & Whitmarsh, 2001). In this respect, compliance to teacher commands is an integral aspect of classroom behavior management.

Forehand and McMahon (1981) identify command form, or type of command, as an important component in improving compliance to commands. As noted by Houlihan, Sloane, Jones, and Patten (1992), a relatively large body of research exists looking at childhood compliance to commands. Various types of commands have been studied throughout the compliance literature. These commands include the following: direct commands, indirect commands, suggestions, reasoning commands, let's imperatives, questions, interrogations, if. . . then statements, threats, choice commands, positive commands, negative commands or verbal prohibitions including don't commands, stop commands, reprimands, and chained commands. Although some researchers have categorized commands by form (Atwater & Morris, 1988; Chapman & Zahn-Waxler, 1982; Forehand, Cheney, & Yoder, 1974; Forehand & King, 1977; Kuczynski & Kochanska, 1990a, 1990b; Reid, 1978), others have identified commands based on the command's specificity or feasibility (Forehand, Gardner & Roberts, 1978; Forehand & McMahon, 1981; Forehand, Wells, & Sturgis, 1978; Peed, Roberts, & Forehand, 1977; Williams & Forehand, 1984). Overall, throughout the vast array of command/compliance literature, only a few studies have studied commands in naturalistic classroom settings (Atwater & Morris, 1988; Matheson & Shriver, 2005; Nodoro, Hanley, Tiger, & Heal, 2006; Noell et al., 2001; Strain, Lambert, Kerr, Stagg, & Lenkner, 1983). Researchers have generally studied one command type at a time leading to the overlap in identification and description of commands and to some confusion regarding the role that command form, specificity, and rate play in a child's compliance to commands (Houlihan et al., 1992; Houlihan, Vincent, Ellison, & Jones, 1994).

A Brief History of Commands

In the years following the earliest command/compliance studies (Weiss, 1934), commands have generally been categorized either by form (i.e., question, suggestion, interrogation etc.), or by specificity and feasibility (i.e., alpha or beta type). Although numerous researchers have hinted at commands falling into both categories of form and specificity (Elrod, 1987; Glass, 1988; Houlihan & Jones, 1990; Houlihan et al., 1994; Kuczynski & Kochanska, 1990b), Forehand and McMahon (1981) were the only researchers to formally identify commands by both their form and specificity/feasibility.

Direct and Indirect Commands. Reid (1978) and Patterson (1982) defined a command as a direct, reasonable, and clearly stated command in which the behavior expected to be performed is specifically stated. Throughout the literature, commands of this form have been referred to as "direct" commands (Elrod 1987; Forehand & McMahon, 1981; Houlihan et al., 1994; Kuczynski & Kochanska, 1990b; Kuczynski, Radke-Yarrow, & Kochanska, 1985), "do" commands (Houlihan & Jones, 1990; Kuczynski & Kochanska, 1990a; Neef, Shafer, Egel, Cataldo, & Parrish, 1983), "positive" commands (Glass, 1988), and "declaratives" (Atwater & Morris, 1988). These commands might include commands such as "clean up your toys" and "you need to go wash your hands."

Another well-utilized command category within the command/compliance literature is that of "indirect" commands. As opposed to "direct" commands, "indirect" commands are suggestions to respond motorically or verbally which are not in question form (Forehand & McMahon, 1981). The following example might be categorized as an "indirect" command: "Those cookies are for our guests." These commands have also been referred to as "reasoning" (Chapman & Zahn-Waxler, 1982; Lytton & Zwirner, 1975), and "let's imperatives" (Atwater & Morris, 1988). Although most researchers have generally included general statements of reasoning and suggestion within the "indirect" command category (Elrod, 1987), Kuczynski and Kochanska, (1990b) also included commands in the form of questions which required a motor response, such as, "could you bring me a book?" within this category of commands.

Question Commands. Forehand and McMahon (1981) defined "question" commands as questions to which a motoric and verbal response are available and that directs the child's behavior. For example, "would you please sit down?" would be considered a "question" command by this definition. Although the appropriate child response is for the child to be

seated, the command is stated in a way that also would allow the inappropriate response of the child saying 'yes' or 'no' without responding motorically (see Table 1).

Table 1. Command types.

Command Type	Definition
<i>Interrogations</i>	Statement in question form to which the only appropriate child response is verbal. e.g., "How old are you?"
<i>Question Commands</i>	A statement in question form to which a motoric response is expected however a verbal response is available but inappropriate. e.g., "Would you close the door?"
<i>Regular Commands</i>	Orders that are stated directly. e.g., "Come here."
<i>Indirect Commands</i>	Suggestions (give the child an option not to respond) to respond motorically or verbally that are not in question form. e.g., "Those cookies are for later."
<i>Stop Commands</i>	Instruction to terminate an ongoing behavior, generally preceded by the word "stop." e.g., "Stop yelling."
<i>Don't Commands</i>	Instruction to terminate an ongoing behavior or a future behavior, generally preceded with the word "don't." e.g., "Don't run."
<i>Negative Commands</i>	Command consisting of instructions to terminate an ongoing behavior, which does not begin with the words "stop" or "don't". e.g., "Quit yelling."
<i>Other Commands</i>	Any command that cannot fit in one of the above categories or a command that may fit in two or more of the categories at the same time. e.g., "Why don't you just stop it."
Command Specificity	Definition
<i>Alpha</i>	An order, rule, suggestion, or question to which a motoric, verbal, or motor and verbal response is appropriate and feasible. e.g., "Stop kicking."
<i>Beta</i>	Command to which the child has no opportunity to demonstrate compliance due to vagueness, interruption, teacher completion, or restricted mobility. e.g., "Stop."

Interrogations. Another type of command which takes the form of a question is that of the "interrogation." Unlike "question" commands, in which the most appropriate response is motoric, "interrogations" are commands to which the only appropriate response is verbal (Peed et al., 1977). For example, "How old are you?" would be considered an "interrogation."

Interrogations have been referred to as "questions" throughout the literature (Forehand et al., 1974; Forehand, Gardner, & Roberts, 1978; Forehand & King, 1977), and therefore may be confused with the "question" commands previously discussed. Therefore, "interrogations" will be referred to as "interrogations" throughout this paper so as to distinguish them from the previous and distinctly different command category, "question" commands.

Negative Commands. Generally, "negative" commands refer to those commands which require an ongoing behavior to cease (Atwater & Morris, 1988; Glass, 1988), and may include commands containing "stop," "don't," "quit," etc. Researchers who have focused on specific types of "negative" commands have identified "don't" commands (Houlihan & Jones, 1990; Kuczynski & Kochanska, 1990a), "stop" commands, "rule statements" (Albin, O'Brien, & Horner, 1995), and "aversives or threats" (Forehand & McMahon, 1981; Glass, 1988; Patterson, 1982; Peed et al., 1977). Overall, the "negative" commands have been the most consistently identified and defined commands throughout the literature.

Alpha & Beta Commands. In addition to categorizing commands based on form, some investigators have also categorized commands based upon the feasibility and/or specificity of the command. These commands have been referred to as either "alpha" or "beta" (Peed et al., 1977). Peed et al. identified "alpha" commands as any command in which a motoric response is appropriate and feasible. In addition, they defined "beta" commands as those commands which the child has no opportunity to demonstrate compliance either due to vagueness, interruption, or the command being carried out by the parent before the child is able to respond. In their 1978 study, Forehand et al. supported the importance of the alpha/beta category by indicating that mothers interrupt children's compliance 35% of the time.

Compliance to Alpha/Beta Commands. Peed et al. (1977) noted that a high rate of "beta" commands may result in escalating and cycling behavior. When "beta" commands are elicited and children fail to comply, they are likely to be followed by more "beta" commands and thus what looks like more noncompliance. Thus, along with accurate reinforcement, a child's compliance to commands is dependent on effective use of commands including low levels of "beta" commands. Forehand et al. (1979) found that of all the commands that children in their study complied to, 78% of the time these commands were "alpha" commands. In addition, they noted that by decreasing only the level of "beta" commands elicited by parents, they were able to increase levels of compliance. Lastly, through natural observation of parents and their children, Williams and Forehand (1984) found that "alpha" commands were the best

maternal predictor of compliance whereas "beta" commands were predictors of noncompliance. Overall, the data overwhelmingly supports Peed et al. (1977) proposal, and suggests that for children ages two through eight, compliance is in direct correlation with the ratio of "alpha/beta" commands elicited.

Compliance to Direct and Indirect Commands. Research suggests that by using specific forms of commands, one is able to increase young children's compliance (Ford et al., 2001; Houlihan et al., 1994; Roberts & Powers, 1988). There is a significant amount of research to suggest that some command forms may be more effective at specific age levels (Elrod, 1987; Roberts & Powers, 1988). Elrod found that three-year-old children had higher rates of understanding when a "direct command" was given as opposed to an "indirect" command. However, five year olds were able to understand both. Additionally, Kuczynski and Kochanska (1990a) observed 70 mother/child pairs at ages 1 through 3.5 and then again at 5 years of age. Overall, these results recommend the frequent use of "direct" commands during toddlerhood. However, Kuczynski and Kochanska (1990b) also found that those mothers who frequently used "reprimands" and "indirect" commands when their children were toddlers were more likely to have compliant children at age five. Although these results seem somewhat contradictory, it is possible that in order for five year olds to be able to understand "indirect" commands they must have a history with similar commands. Therefore, these results would suggest the use of "direct" and simple "indirect" commands with toddler age children.

Compliance to Do and Don't Commands. Neef et al. (1983) indicated that the use of "do" and "don't" commands, although functionally distinct, is a significant contributor to compliance. Houlihan and Jones (1990) noted that while reinforcement of compliance with "don't" commands increases compliance to "don't" commands, it also increases inappropriate behavior. Therefore the use of "do" commands is suggested. Kuczynski, et al. (1985) support this suggestion by indicating that mothers who used "don't" commands with their five year olds had more behavior problems than those who used "do" commands.

Compliance and the Rate of Commands. Not only have command form and specificity been found to be predictors of compliance, the rate with which commands are elicited has also been found to be an important variable in compliance (Plummer, Baer, & LeBlanc, 1977; Shoen, 1986). Atwater and Morris (1988) indicated that when rate of teacher instruction averaged between 1 and 2 commands per minute compliance stayed above 70 percent. However,

when the teacher's rate of instruction dropped below .75 commands per minute compliance dropped below 70 percent. These results suggest that when parents and teachers fail to maintain discriminative control with their commands, either due to too many commands or too few, noncompliance is likely to occur.

Activity Type and Compliance to Commands

Another variable closely associated with a child's rate of compliance to commands is the activity with which the child is engaging when the command is elicited. Atwater and Morris (1988) studied the natural rate of commands and compliance during different activities within the preschool setting. Additionally, they noted that although the number of children present was not a significant variable associated with commands elicited or with compliance to commands, they did note that the teacher's rate of instruction and approval varied significantly across differing preschool activities. Instructions occurred most frequently when children were expected to perform actions simultaneously as a group (e.g., music and games) and when expected to demonstrate mastery of academic concepts (e.g., preacademics). Instructions were least frequent during unstructured art or construction activities and during dramatic play, where children's actions are not specifically required. Lastly, they found that higher compliance scores tended to be associated with activities in which teachers provided more instructions and approvals (i.e., music and games, preacademics, discussion and sharing) whereas less compliance was associated with less teacher involvement (unstructured art, dramatic play). Some researchers have speculated that reinforcement gained in certain activities determines the response cost associated with the command that interrupts them (Houlihan & Brandon, 1996). This possible relationship has not been widely studied.

Naturalistic Observation in Classroom Settings

Although a large body of research exists looking at childhood compliance to commands, only a few studies have examined the types and rates of commands delivered naturally in classroom settings (Atwater & Morris, 1988; Ngoro et al., 2006; Strain et al., 1983). Strain et al. observed kindergarten through third grade teachers and the natural rate with which they provided instructions to students. Overall, they noted that the average rate of commands per

minute ranged from .2 to 2.5 for all teachers. However, they only scored commands in a general command category not breaking them down by type or specificity.

Atwater and Morris (1988) naturally observed teacher behavior and child compliance in preschool and elementary classrooms. The children in their study ranged in age from 45 months to 78 months. Overall, they identified four types of teacher commands to record: direct imperatives, let's imperatives, questions, and declaratives. Additionally, they identified each command as to whether it was positive or negative. Their results indicated that the teachers' commands varied significantly across activity but not across grade level and command type. However, they noted that grade level effects might have been confounded due to a smaller range of classroom activities available to observe within elementary school settings as opposed to preschool settings.

Summary

Atwater and Morris (1988) noted that if there are significant differences in instructional environments across grades this "could interfere with successful transitions for some children, particularly those who display high rates of inappropriate and noncompliant behavior" (p. 166). In this respect, teachers' type and rate of instruction is an important aspect in relation to children's classroom behavior.

Despite the warnings and efforts of some researchers (e.g., Roberts & Powers, 1988), many are still inconsistently identifying and naming commands throughout the literature. This is in part due to the relatively large number of studies which have focused on individual types of commands purposefully interspersed in controlled settings and the relatively few studies that have looked at the natural occurrence of commands within school settings. There is a need to study the natural occurrence of commands in specific environments (e.g., schools) if psychologists are to more completely understand the development of compliant or noncompliant behaviors in children. Therefore, this study will merge the command/compliance literature by identifying commands through natural observation in the preschool settings, clarify command definitions and nomenclature, and identifying developmental trends associated with command use in preschool settings.

The purpose of this study is to review the existing command/compliance literature to clarify the current role commands play in compliance. This review will focus on identifying

developmental trends in compliance to commands of differing form and specificity. In addition, other variables which may have a role in compliance to commands will be reviewed and identified. Secondly, this research will focus on clarifying the identification and description of commands by observing teachers' naturally elicited commands. Throughout these observations the researchers will identify whether teachers elicit naturally in the classroom the types of commands current research has identified as probable. Lastly, this study will provide a descriptive developmental assessment of the general differences in teacher instruction across three age groups of preschool children.

Method

Participants

The study sample consisted of lead and assistant teachers of a preschool located at a university in a medium-sized mid-western city. Children at the preschool were placed in one of three classrooms based on age and developmental level. Room one primarily contained toddlers through two years of age. Room two had children ranging in age from 3 years to 4 years, while room three had children ranging from 4 years through 6 years of age.

Consent was obtained from the director of the program to request the participation of teachers within the school. Upon consent of the agency, the lead and assistant teachers of the three age group classrooms were contacted and provided informed consent forms which described the study. Teachers were told that the researchers would be observing the interactions the teachers made with the students, however were not informed of the specific nature of the study in order to minimize reactivity.

Seventeen teachers received consent forms, sixteen of these teachers signed the consent form, and one teacher declined. Overall, thirteen teachers took part in the research study. The remaining teachers were unavailable for observation after giving consent.

Instruments and Procedure

Observation & Recording System for Teacher Commands

Observation focused on obtaining descriptive data of the different types of commands that teachers provided within 30 minute observation periods. Commands were scored as falling within one of eight different command categories. Those categories are as follows: regular command, indirect command, question command, interrogation, don't command, stop command, negative command, and other command. In addition, each command was also to be scored for if it was an alpha or beta command.

The recording form utilized in the study was predominantly a "check-mark form" which contained space for recording the occurrence of the different types of commands. Observation and recording occurred on a 15 seconds on, 15 seconds off interval system with event recording over the 30 minute session for a total of 60 intervals per session.

The on/off system for beginning and ending of intervals was available through the use of a Sony Walkman Cassette Player WM-AF23 with a dual adaptor for two sets of mini-headphones. In addition, an audio tape with 15 second intervals was utilized in the cassette player. The audio tape indicated the on and off (observation and recording) time for observers with a series of beeps and interval numbers. In addition, times indicating recording were filled with classical music so observers were able to more easily distinguished observation times, which were silent, from recording times.

Observers were seated to the side of the room in a nondisruptive manner and location. Because the study took place at an on-campus preschool, student observers were frequently present within the preschool classrooms, therefore, it is unlikely that the teachers would have responded reactively to observers associated with this study. All observations took place during regularly scheduled indoor activities. Observation did not occur on days when special activities such as field trips or class parties were scheduled.

Teacher Commands

Observers recorded the occurrence of a single teacher's commands in a 15 seconds on, 15 seconds off fashion throughout a session. A command was defined as a verbal statement

in which a teacher or caregiver requests a motor response, verbal response, or motor and verbal response from a child or group of children. Observers classified each command as one of the following: interrogation, question command, regular command, indirect command, stop command, don't command, negative command, or other command. Informal observations and literature review prior to the study indicated that commands could be distinguished by these eight categories. Overall, command categories and definitions were developed so as to reduce overlap and confusion between command definitions, and to separate commands into easily distinguishable categories for observation and recording. Eight general command types were defined (see Table 1). In addition to categorizing commands based on form, this study's investigators have also categorized commands based upon the feasibility and/or specificity of the command, defined as "alpha" or "beta" commands (see Table 1).

Activity Categories

In addition to observing and recording the occurrence of teacher elicited commands, observers also recorded the activity taking place during the observation interval. Activities were classified by the behavior required of children, and were modified from Atwater and Morris' (1988) breakdown of preschool activities. Activity categories were as follows: food activity, free play, music and games, preacademics, structured art, and transition between activities. Brief operational definitions for these commands are in Table 2.

Observer Training

Observers were trained in command recording and observation utilizing a number of different stimuli. All observers were provided an extensive Recording and Observation Manual which contained the purpose of the study, the procedure, and operational definitions for variables to be measured. In addition, the observers were provided with a schedule outlining the steps of observer training. The following activities made up the bulk of the observer training: observation and recording of video taped vignettes of command use, command flash cards, observation and recording of video-taped sitcoms, and naturalistic observation of preschool teachers.

Table 2. Definitions of activity categories scored in naturalistic observation

Activity	Definition
<i>Dramatic Play</i>	Engaging in fantasy or imaginative play.
<i>Food Activity</i>	Eating or drinking food items.
<i>Free Play</i>	Children manipulate a specific set of items chosen by the student. Not to include activities that have specific rules.
<i>Music & Games</i>	Performing the same actions as others or participating in the same game with specific rules.
<i>Pre-academics</i>	Performing work that involves supplying correct answers or demonstrating mastery of academic concepts.
<i>Structured Art</i>	Working with construction materials that require a correct product.
<i>Transition</i>	One or more students moving from one activity to another. Transition begins for all activities, except meals, when the teacher permits one or more students to disengage from the group. Transition begins from meals when a dirty plates tray is brought to the table. Transition ends for all activities when the teacher in charge begins to instruct a new activity.

Vignettes. During the first step of training, observers were introduced to the command types by reviewing their definitions and providing examples of the commands to the observers. In addition, observers viewed 15 short (30 - 60 second) video taped vignettes of the commands being used. The vignettes were made-up of graduate students portraying pre-schoolers in a classroom while a teacher was instructing the students with various commands. The second step to training included the observers verbally categorizing the commands elicited in the vignettes as the vignettes were reviewed.

Flash Cards. Observers were provided with a set of 90 command flash cards to become fluent at categorizing commands. Each of the 90 index cards contained a different command on one side and its corresponding command category on the other. Observers utilized the cards throughout the study. In addition, the cards were utilized as a review prior to naturalistic observations, and to identify problem commands. When a problem command was identified it would be written on a card and once categorized would be added to the stack.

Sitcom Videos. To become more efficient at observing and recording people's command use, observers were shown three 30-minute video-taped sitcoms depicting parent actors eliciting commands. First all observers were required to observe and identify commands ver-

bally. When commands were incorrectly omitted the tape was replayed until all members were consistent on identifying commands. Watching the same video, observers were then required, as a group, to verbally indicate the type of commands that were elicited. Last, independent observers were required to score commands from the video as they occurred in real time.

Naturalistic Observation. To allow the observers to become comfortable with the recording form and the preschool classroom, observers spent an average of six 30-minute sessions observing and recording commands elicited by a teacher within the classroom, prior to initial data collection. Obtaining pre-observation levels of reliability of 80% would have been preferable, however, pre data collection observations were kept to a minimum so as not to be intrusive in the classrooms.

Interobserver Agreement

Interobserver agreement data was obtained for 30% of all data collected. Due to classroom constraints, including the ability of both observers to see and audibly hear the teacher targeted for observation, observers were positioned close to each other. Even though observers were positioned close to each other, observer awareness of each other's recordings were minimized due to the following reasons: The position of the observers body in the selected chairs (preschool size) required a natural hiding of recording material which was placed on the observers lap, observers were instructed to refrain from talking to one another, and during recording intervals in which no commands occurred the observers were required to mark at least three spaces anywhere on the form with a predetermined "no command occurred" code.

Interobserver agreement data was carried out on the following variables: preschool activity, command occurrence, command type, and alpha/beta coding of command types. Throughout data collection, instances occurred when one or both observers could not record data due to extraneous variables such as, the teacher leaving the room, the observer/s not being able to hear the teacher, or the observer/s being verbally or physically interrupted by an individual within the room. Throughout data collection, all intervals scored as such by one or more observers were omitted in data analysis and interobserver agreement assessments.

Activity Type Agreement. Interobserver agreement for activity type, was obtained using interval agreement. Observers' data sheets were compared interval by interval and

agreement was calculated by dividing total agreement on intervals by total agreement plus total disagreement. Mean agreement on activity type was 92.47%, and ranged from 72% to 100%. See Table 3 for a breakdown of agreement scores by age level room.

Command Occurrence Agreement. Agreement of command occurrence was obtained using an interval by interval assessment. First, agreement was calculated for all intervals, including intervals in which both observers found that no commands occurred. This calculation is titled Interval by Interval (I-I) in Table 3. Agreement was then calculated omitting intervals in which both observers found no commands to have occurred. This calculation is titled Scored Interval in Table 3 and was assessed due to the fact that a high number of intervals in which no commands occurred were believed to positively skew the first type of reliability analysis. Overall, Interval by Interval occurrence agreement was 86.27% while Scored Interval (S-I) occurrence agreement was 75.87%. See Table 3 for a breakdown of agreement scores by age level room.

Table 3. Interobserver agreement percentages across rooms and overall mean levels.

Preschool Room	Preschool Activity	Occurrence I-I	Occurrence S-I	Command Type	Alpha/Beta
<i>Toddler</i>	86.05	87.39	77.25	81.33	82.33
<i>3-4 yr. old</i>	96.01	85.43	74.31	84.16	81.3
<i>4-6 yr. old</i>	95.35	86	76.06	80.02	75.43
<i>Overall</i>	92.47	86.27	75.87	81.84	79.95

Note: Occurrence I-I = Interval by Interval; all intervals were utilized in calculating interobserver agreement. S-I = Scored Interval; intervals in which both observers scored as no commands occurring were not utilized in calculating interobserver agreement.

Command Type Agreement. The interobserver agreement of command type and alpha/beta type was also calculated in an interval by interval fashion. In addition, the agreement of command type and alpha/beta type was dependent on prior agreements that commands had occurred. Therefore, interobserver agreement for command type for each interval was calculated as the number of agreements of command type within the interval divided by the number of commands recorded by both observers within the interval. The agreements were then summed and divided by the total number of intervals scored for command type. Overall, interobserver agreement for command type was 81.84% (see Table 3).

Alpha/Beta Agreement. Interobserver agreement for alpha/beta type occurred in a similar manner as that of command type, except it was dependent on prior agreements that the command type had been scored. Overall, alpha/beta interobserver agreement was 79.95% (see Table 3).

Results

Observation Summary Statistics

Classroom Observation Time. Teachers in each of the three age level classrooms were observed via a 15 seconds on, 15 seconds off observational method. It is significant to note that each classroom was observed for equal amounts of time; however, when summarizing data, actual observation time for each classroom was slightly different due to intervals which were dropped due to factors such as the teacher leaving the room, and observers' inability to audibly understand the teachers' commands. Therefore, the number of actual minutes of data collection in each of the classrooms are as follows: toddler room (T room) had 237 minutes, 3-4 year-old-room (3-4 room) had 278 minutes, and 4-6 year-old-room (4-6 room) had 257 minutes.

Individual Teacher Command Rates. Overall, thirteen teachers were observed across the three age level classrooms. Due to differences in each teacher's overall work schedule, some teachers were available for observation more frequently than other teachers. In order to note if any differences between age levels was due to unequal observation of teachers and skewing of the data, each teacher's overall number of minutes and mean rate of commands elicited per minute were calculated and are presented in Table 4. These results indicate that while individual teachers were at times observed a significantly larger amount of time than other teachers, the mean rates of commands elicited by individual teachers appear to be similar across age level classrooms.

Activity Observation. Each observation interval was coded for one of six different activities that occurred within the classrooms. Each activity occurred across the three age level classrooms except "structured art" which did not occur in the toddler room. Additionally, the activity category "dramatic play" was dropped from analysis because it did not occur during observations. The number of minutes that each activity was observed and the number of commands that occurred under each activity are noted in Table 5.

Table 4. Summary and analysis of variance of overall rate of teacher's commands across three classrooms.

Preschool Room/ Teacher	Minutes Observed	Total Number of Commands	Mean Rate of Com- mands per minute
Toddler room			
<i>Teacher 1</i>	32.5	103	3.53
<i>Teacher 2</i>	169.5	495	3.36
<i>Teacher 3</i>	35	113	3.52
<i>Total</i>	237	726	3.41
3-4 room			
<i>Teacher mixed</i>	46.5	182	3.97
<i>Teacher 4</i>	84.5	256	2.99
<i>Teacher 5</i>	121.5	421	3.33
<i>Teacher 6</i>	25.75	57	3.11
<i>Total</i>	278.25	924	3.26
4-6 room			
<i>Teacher mixed</i>	15	34	2.79
<i>Teacher 7</i>	108.75	539	5.23
<i>Teacher 8</i>	21.25	74	5.07
<i>Teacher 9</i>	28	154	5.42
<i>Teacher 10</i>	38	123	3.35
<i>Teacher 11</i>	13.25	50	3.78
<i>Teacher 12</i>	18.25	93	4.98
<i>Teacher 13</i>	14.25	27	1.89
<i>Total</i>	256.75	1095	4.62* Room 4-6 > T,3-4

Table 5. Summary and mean rate of teacher's commands across preschool activities

Preschool Activity	Minutes Observed	Total Number of Com- mands	Rate of Mean Commands per minute
<i>Food Activity</i>	167.5	511	3.13 [^]
<i>Free Play</i>	192.75	605	3.15 [^]
<i>Music & Games</i>	56.25	152	2.57 [^]
<i>Pre-academics</i>	179.5	691	3.74
<i>Structured Art</i>	41.5	220	4.41
<i>Transition</i>	134.5	566	4.59* Transition
<i>Combined Total</i>	772	2745	

Note. ANOVA indicating that commands occurring during Transition Activities occur at a significantly higher rate than commands during Food Activities, Free Play and Music and Games. * $p \leq .01$.

Analysis of Command Rates

Command Rate & Age. A series of repeated-measure ANOVAs were utilized to evaluate statistical differences in the rate of commands elicited by teachers of the three age level classrooms. In the first set of ANOVAs, observation data obtained from each teacher was summed for each age level classroom. Then the mean rate of commands for each age level classroom was obtained. The overall mean rate of commands was then compared across age level classrooms. Results indicate that teachers in the T room and 3-4 room elicited on average approximately 3 commands per minute to students, while teachers in the 4-6 room elicited approximately 4.5 commands per minute on average, a statistically significant difference (see Table 4).

Command Rate & Activity. In the second ANOVA analysis, observation data obtained from all teachers was summed for each of the six activity categories. The overall mean rate of commands was then compared across activity types. Results indicate that a significantly higher rate of commands occurred during transition activities as compared to food activities, free play, and music and games. Commands occurred during transition activities at approximately 4.5 commands per minute whereas around 3 commands per minute occurred during food activities, free play, and music and games (see Table 5).

Command Rate & Age & Activity. Observation data obtained from teachers in each age level classroom was summed for each of the six activity categories. The overall mean rate of commands for each classroom age level was then compared across activity types. Results indicate that there was not a significant interaction for overall command rate and activity type when age level was taken into consideration. These results indicate that when analyzing each activity separately, teachers from all three age level classrooms elicited commands at a similar rate.

Analysis of Command Type Rates

Command Type Rates & Age. A series of repeated-measure ANOVAs were utilized to evaluate statistical differences in the rate of the different command types elicited by teachers. In the first set of ANOVAs, observation data obtained from each teacher was summed for each age level classroom. The overall mean rate of each of the different types of commands was then compared across age level classrooms. Statistically significant differences in com-

mand rates between age level classrooms were found for the following commands: don't alpha, don't beta, interrogation alpha, interrogation beta, negative alpha, negative beta, interrogation alpha, and interrogation beta commands (see Table 6).

Table 6. Analysis of mean rates of command types and age level classroom

Command Type	F-value	Test: LSD
<i>Regular Alpha</i>	16.98***	3-4 room > T room & 4-6 room
<i>Regular Beta</i>	10.27***	4-6 room > T room & 3-4 room
<i>Interrogation Alpha</i>	13.07***	T room & 4-6 room > 3-4 room
<i>Interrogation Beta</i>	4.41*	4-6 room > T room & 3-4 room
<i>Negative Beta</i>	3.71*	4-6 room > T room (did not occur)
<i>Don't Alpha</i>	3.97*	3-4 & 4-6 room > T room (did not occur)
<i>Don't Beta</i>	6.14**	4-6 room > 3-4 & T room (did not occur)

Note. *p < .05 **p < .01 ***p < .001

Overall, teachers in the 4-6 room had a consistently higher rate of command elicitation on five types of commands compared to those teachers in the T room. Along with the teachers from the 4-6 room, the 3-4 room teachers also had higher rates than T room teachers on negative beta and don't alpha commands. Lastly, the only type of command where T room teachers had significantly higher rates of elicitation was that of interrogation alpha commands. No significant interactions were found for the other remaining command types. Table 6 indicates results and significance levels from repeated measure ANOVAs for these analyses.

In addition to analyzing command type rates and age for significant differences, the rates were also graphed so as to view each command type in comparison to the other. Figure 1 shows rates for each command type across age levels. Overall, the data indicate that interrogations occurred at the highest rate in the T room and the 4-6 room, while regular alpha commands occurred at the highest rate in the 3-4 room. Additionally, the more aversive commands, such as negatives, don't commands, and stop commands, all occurred at lower rates in comparison to the other command types in all classrooms. Furthermore two types of the negative commands (negative beta and don't commands) did not occur at all within the T room while the 3-4 and 4-6 room had significantly higher rates of occurrence of these commands.

Command Type Rates & Activity. A series of repeated measure ANOVAs were utilized to analyze significant differences between rates of individual command types which occurred during different activities. Observation data obtained from all teachers was summed for each of the six activity categories and then for each of the different possible command types. The mean rate of each of the different commands was then compared across activity types. Results indicate that there was not a significant interaction for any of the individual command type rates and activity types. These results indicate that while transition activities had significantly higher rates of overall command occurrence than other activities, no specific type of command occurred at a higher rate during transitions as compared to other activities. Therefore, specific command rates stayed relatively constant across activities.

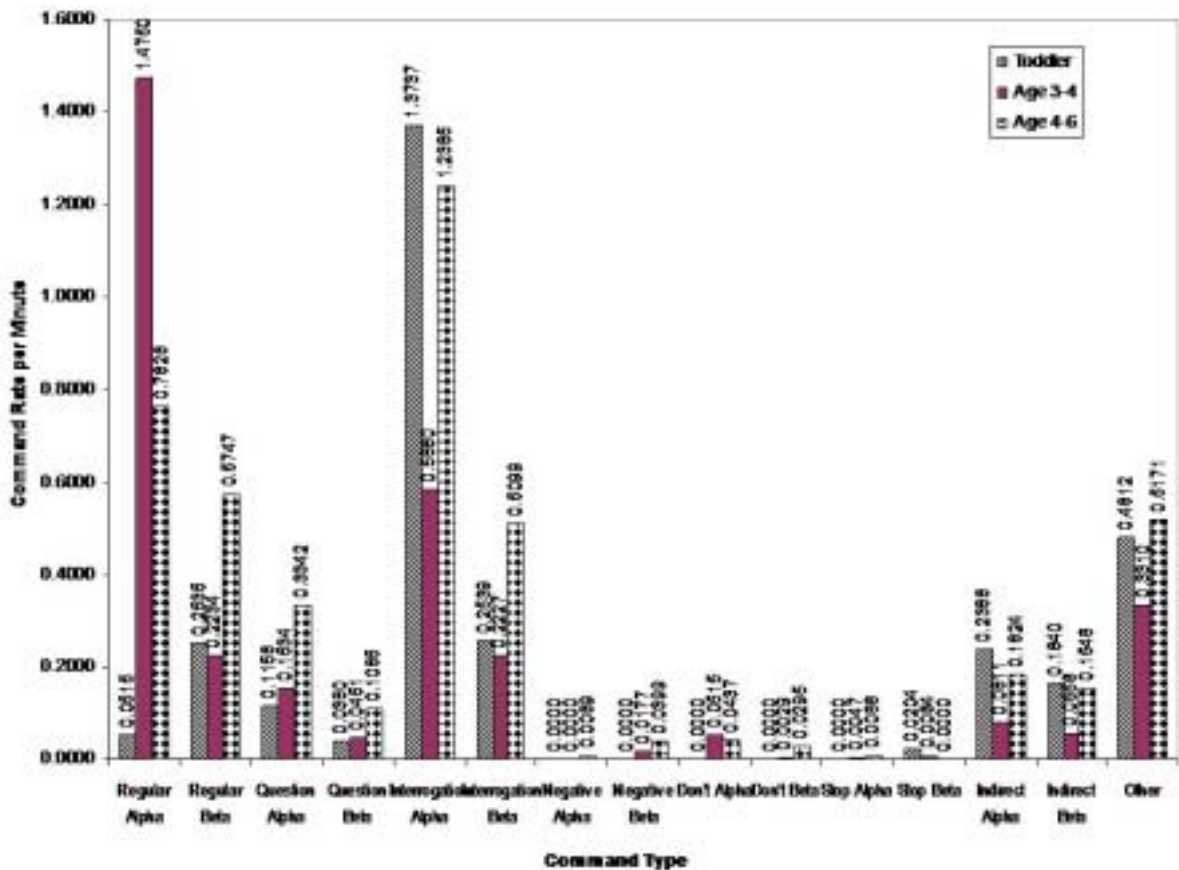


Figure 1. Mean rates of different commands across three age level classrooms.

Analysis of Command Percentages

Command Type Percentages and Age. A series of repeated-measure ANOVAs were utilized to evaluate statistical differences in the mean percentage of the different command types elicited by teachers. In this set of ANOVAs, observation data obtained from each

teacher was summed for each age level classroom. From this, the mean percentage of each of the different command types for each age level classroom was obtained. The overall mean percentage of each of the different command types was then compared across age level classrooms. Statistically significant differences in command percentages elicited by teachers between age level classrooms were found for several of the different command types. Table 7 indicates results and significance levels from repeated measure ANOVAs for these analyses.

Table 7 results indicate that similar to the rate data, the more aversive commands, including the negatives, don't, and stop commands, all occurred at the lowest percentages in comparison to the other commands. Additionally, older classrooms had significantly higher percentages of these commands. Although this data visually correlates quite well with the rate data, it fails to correlate on one variable. This data indicates that indirect commands occurred in the T room at a significantly higher percentage than in the 3-4 & 4-6 rooms. These results are inconsistent with the rate data which indicated no significant differences between classrooms for indirect commands.

Table 7. Analysis of mean percentages of command types and age level classroom

Command Type	Percent T room	Percent 3-4 room	Percent 4-6 room	Total	F-value	Test: LSD
<i>Regular Alpha</i>	15.21	43.50	15.49	24.42	35.20***	3-4 >T & 4-6
<i>Regular Beta</i>	7.69	6.51	11.85	8.52	4.11*	4-6 >T & 3-4
<i>Question Alpha</i>	4.41	5.26	7.78	5.66	.6750	n.s.
<i>Question Beta</i>	1.15	1.12	2.97	1.67	2.02	n.s.
<i>Interrogation Alpha</i>	43.78	17.16	27.70	30.52	22.23***	T > 3-4 & 4-6 4-6 > 3-4
<i>Interrogation Beta</i>	7.12	7.23	11.40	8.40	1.81	n.s.
<i>Negative Alpha</i>	.0000	.0000	.2260	.0656	2.38	n.s.
<i>Negative Beta</i>	.0000	.4219	.8146	.3726	3.96*	4-6 > T room
<i>Don't Alpha</i>	.0000	1.34	1.27	.8004	3.69*	3-4 & 4-6 > T
<i>Don't Beta</i>	.0000	.0635	.6155	.1992	4.20*	3-4 & 4-6 > T
<i>Indirect Alpha</i>	6.32	2.49	2.72	4.04	3.67*	T > 3-4 & 4-6
<i>Indirect Beta</i>	4.64	1.18	3.22	3.11	3.44*	T room > 3-4
<i>Other</i>	12.60	13.14	13.60	12.96	.0797	n.s.

Note. *p < .05 **p < .01 ***p < .001 n.s. (not significant)

In addition to analyzing command type percentages and age for significant differences, the percentages were also graphed so as to view each command type in comparison to the other. Overall, the data indicate that interrogation alpha commands occur at the highest per-

centage in both the T room and the 4-6 room while regular alpha commands are highest in the 3-4 room. Figure 2 shows percentages for each command type across age levels.

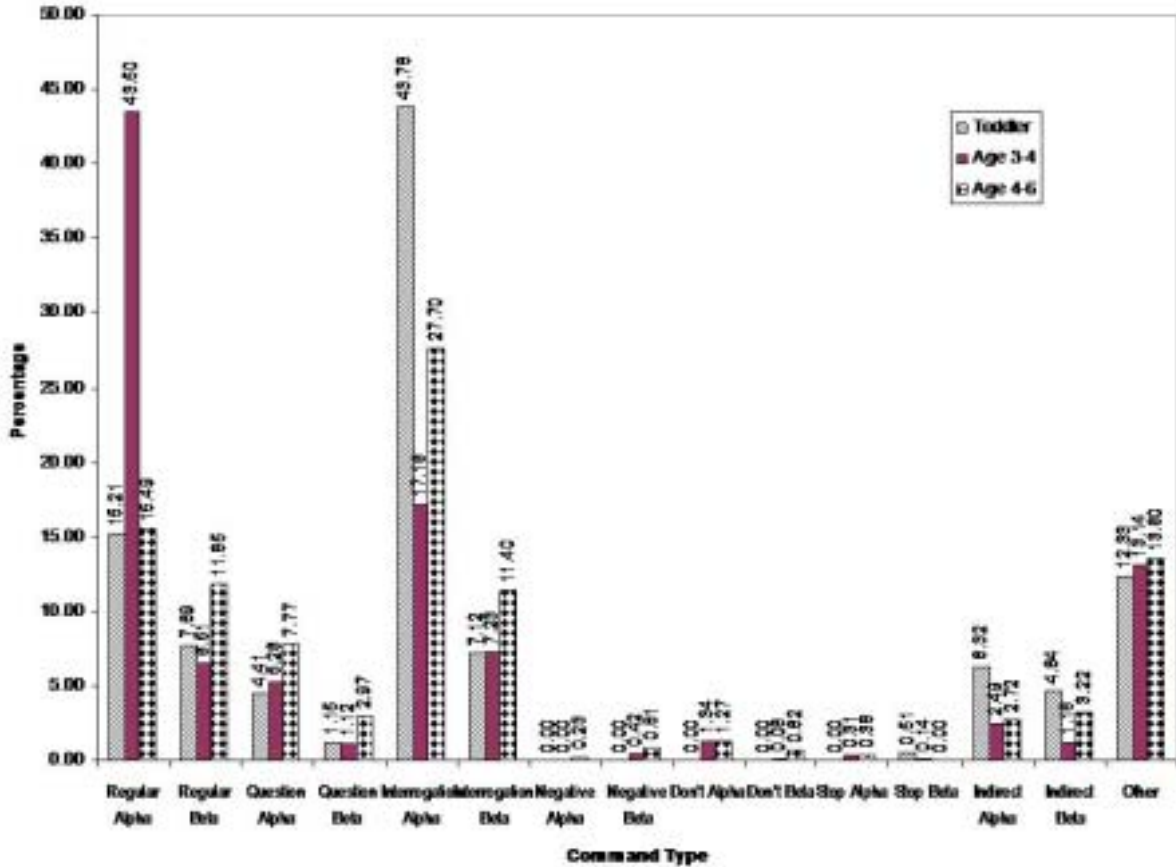


Figure 2. Mean percentages of different commands across three age level classrooms.

Discussion and Conclusions

Studies throughout the compliance literature have used unique sets of commands. While some studies look at commands as one category (Strain et al., 1983), others break commands into only those of alpha and beta type (Williams & Forehand, 1984; Forehand et al., 1979; Peed et al., 1977), while other studies have indicated that a more specific command type may effect compliance (Kuczynski & Kochanska, 1990b). Very few studies have combined command form (direct, indirect, question etc.) with the more specific categories of alpha and beta (Forehand & McMahon, 1981). The present study utilized the command type with alpha/beta identifiers, and identified the uniqueness of each of these commands by determining the rate and percentage with which these commands occur within preschool class-

rooms. In addition, the study also identified developmental trends in rates and percentages of different command types used within preschool classrooms.

Overall, the research strongly suggests that the rate of instruction is an important factor in compliance. First, compliance is optimal when the rate of instruction is approximately one to two commands per minute (Forehand et al., 1974; Forehand & King, 1977). Additionally, when the rate of instruction is too low (approximately .75) compliance also drops (Atwater & Morris, 1988). Strain et al. (1983) observed the natural rate of instruction in kindergarten rooms and noted that all of the teachers they observed elicited commands averaging from .2 to 2.5 commands per minute. These results closely match the recommended instruction rates for optimal compliance; however, the current study identified somewhat different rates of instruction for average preschool age children. These results indicated that preschool teachers averaged between 3 to 4.5 commands per minute. It is possible that these differences in command rates have occurred due to differences in the definition and type of commands utilized and studied throughout the command compliance literature. It is therefore important for future researchers to consider all types of commands when studying command rate as a potential significant variable in the study of compliance.

The literature also suggests children's preschool activity to be a possible component in compliance. Atwater and Morris (1988) found that the teacher's rate of instruction and approval varied significantly across differing preschool activities. They found that higher compliance scores tended to be associated with activities in which teachers provided the most instruction and approval. These activities included, music and games, preacademics, and discussion and sharing. In addition, they found that less compliance was associated with activities with less teacher involvement, such as unstructured art. Ndoro et al. (2006) found similar results while examining the number of commands per activity in a preschool classroom. Outdoor and free choice activities had the lowest number of commands and the lowest compliance rate.

Although Atwater and Morris (1988) did not study teacher involvement and compliance during transition activities, the current study found that transition activities had a significantly higher rate of instruction compared to music and games, free play, and food activities (4.5 commands per minute compared to approximately 3 commands per minute). These results might suggest that transition activities with a high rate of teacher instruction have high rates of compliance; however, future research must study transition activities more closely.

First, a rate of instruction over two commands per minute may hinder compliance (Forehand et al., 1974; Forehand & King, 1977). However, it is likely that while compliance may vary as a function of rate of teacher instruction for most preschool activities, transition activities may not be affected in the same way. Although the current study did not assess compliance during transition activities, it is possible that high rates of commands during transition times may be a function of other setting variables that occur as part of transition activities within the classroom (i.e., poor transition cues which result in disorderly transition times which require a high rate of teacher interaction). Overall, it is important for future research to identify whether compliance during transitions directly varies as a function of rate of teacher instruction.

In addition to the rate of instruction and the activity with which children are engaged, it is important to note the developmental trends associated with command elicitation in preschool settings. Overall, the more aversive commands (stop, don't, and negative commands) all occurred at the lowest percentages in all classrooms. However, when these commands did occur, the 3-4 and 4-6 rooms had significantly higher percentages than the toddler room. Aversive commands are often associated with inappropriate behavior and requests for a student to cease an activity.

It is possible that aversive commands are elicited to older children because older children are perceived to be responsible for their own behavior and therefore able to comply appropriately with such requests. Alternatively, it is possible that older children engage in more inappropriate behavior which requires redirection via verbal request. Overall, it is likely that a combination of these two conclusions is responsible for the higher percentage of aversive commands elicited to 3-6 year-old children as compared to toddlers.

Finally, although the aversive type commands were elicited at a very low percentage in all classrooms, it is still important to remember that aversive commands direct a child as to what behavior to cease, however, do not indicate what alternative behavior the child should engage in. Therefore, any level of use of this command type should be considered closely as a potential factor in compliance/noncompliance to commands.

Overall, while results were highly correlated for the majority of the rate and percentage data, there was one discrepancy to this analysis. Although indirect commands occurred at similar rates across all preschool classrooms, they occurred at significantly higher percentages within the toddler room as compared to the other two classrooms. Because indirect commands have been associated with being difficult to understand, high percentages of such

commands in a toddler room may be considered counter indicative for compliance. However, Kuczynski and Kochanska (1990b) identified that the use of reprimands and indirect commands during toddler age was predictive of compliance at age five. Further longitudinal study of the use of indirect commands with toddlers is necessary to completely understand the role such commands may play in compliance.

In addition to indirect commands, teachers also elicited a significantly higher rate of interrogation alpha commands to toddlers as compared to children 3-4 years-of-age. Little research has been done studying the impact that interrogations have in the early development of language; however, it is likely that interrogations, taking the form of general conversation, are quite important during this developmental period. It is likely that they stimulate speech, language, and verbal behavior. In this respect, they are likely to be of importance during all preschool ages, including children ages 3-4 and 4-6 years-of-age. Researchers should consider studying potential differences in speech, language, and verbal ability as a function of rate of interrogation type commands elicited in preschool classrooms.

Overall, teachers in the toddler, 3-4, and 4-6 rooms demonstrated significant differences in the type of commands which they utilized. Overall, regular alpha commands occurred at the highest rates and percentages in the 3-4 room, whereas interrogation commands occurred at the highest rate and percentage in the toddler and 4-6 room. It is likely that the rate and percentage of regular commands is quite high in the 3-4 room because these children are transitioning from the unstructured classroom associated with the toddlers to the more highly school oriented and structured classroom of the 4-6 room. Observed differences between the toddler and the 3-4 room indicate that many new behaviors are required of the students entering the 3-4 room. It is likely that these children therefore may require a significant increase in regular command use by teachers in order to orient these children from a less structured environment toward a more structured preacademic setting.

It may be prudent in future research to examine differences that occur when working with children whom are classified as bilingual or as having English as their second language. Previous research has examined differences between bilingual students and non-bilingual students and found no significant differences between the groups (Martínez & Henao, 2006), use of commands and response to commands was not examined in this study. Given the rising number of students in the United States with English as a second language, this could be valuable research for the future of our schools.

Overall, this study clarified the identification, definition, and use of commands within preschool settings. These results showed that the rate, form, specificity and age with which commands are delivered are all important variables in compliance and child development. A most prominent limitation is the questionable generalizability of this data to other settings. However, the purpose of this research was to be able to reliably identify and define each of the commands for future reference and secondly to identify each command's unique contributions to the area of childrens' compliance with commands typically seen in preschool classrooms.

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