Re-conceptualizing “Directiveness” in Educational Dialogues:
A Contrastive Study of Interactions in Preschool and Special Education

Liv Inger Engevik, Silje Hølland, Bente E. Hagtvat

University of Oslo

Authors’ Note

Liv Inger Engevik, Department of Special Needs Education, University of Oslo; Silje Hølland, Department of Special Needs Education, University of Oslo; Bente E. Hagtvat, Department of Special Needs Education, University of Oslo.

Liv Inger Engevik is now at The Educational and Psychological Counselling Service (PPT), Røros, Norway. Silje Hølland is now at Department of Complex Learning Difficulties, Statped SE, Norway.

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Correspondence concerning this article should be addressed to Liv Inger Engevik, The Educational and Psychological Counselling Service (PPT), Røros, Norway. E-mail: l.i.engevik@isp.uio.no

Abstract

This study investigated the role of teacher directiveness in educational dialogues as it relates to several types of dyads and child engagement. The effect of directive teacher behavior, such as the use of instructions and commands, on children’s engagement and learning is a controversial matter in the field of educational research. Two types of dyads were examined: typically developing children and their preschool teachers (PreschDyads) and children with Down syndrome and their special education teachers (SpecEdDyads). Fourteen Norwegian dyads participated in the study and were videotaped while solving a construction task. The results indicated higher levels of teacher directiveness in the SpecEdDyads. Children with Down syndrome showed lower levels of engagement with the task than the typically developing children did. However, closer examination of the results of the SpecEdDyads with the highest scores in teacher directiveness revealed that these children scored above their group average on engagement. The pattern differed in the PreschDyads, in which the least directive teachers interacted with the most engaged children. A qualitative analysis of dialogue excerpts suggested that in educational contexts in which a child struggles with goal-oriented engagement, emotionally supportive teacher directives may generate joint problem solving, thereby enabling children to successfully complete cognitively demanding tasks that they may not be able to complete independently. In the PreschDyads, the children appeared to be more self-motivated and less dependent on directive support. These findings extend our knowledge of the qualities and functions of teacher directiveness in educational dialogues by illuminating how the individually adapted use of directives may enhance child engagement and learning.

Keywords: teacher directiveness, child engagement, Down syndrome, educational dialogues

Re-conceptualizing “Directiveness” in Educational Dialogues: A Contrastive Study of Interactions in Preschool and Special Education

In the current study, we examine directiveness in teacher-child dialogues that were designed to encourage joint problem solving. “Directiveness” refers to adults’ use of commands or questions that direct behavior or elicit a response from a child (Girolametto, Weitzman, Lieshout, & Duff, 2000). Adults’ use of directives has been a matter of controversy in the learning sciences. The concept has often been linked to adult control and intrusiveness, resulting in less-engaged children (Jones, 1980; Mahoney & Wheeden, 1999). To a lesser extent, the constructive role of directiveness in demanding learning tasks has also been emphasized (Girolametto et al., 2000; Kim & Hupp, 2005). Little research, however, has aimed to specify the features of teacher directives that may facilitate or hamper child engagement and learning in different educational contexts. Increased knowledge about these factors is particularly important in learning situations involving children with learning difficulties and who depend on teacher support to be engaged and learn.

We have investigated the qualities and functions of directives by contrasting a series of dialogues within two types of adult-child dyads in Norwegian educational contexts: special education teachers interacting with elementary school children with Down syndrome (SpecEdDyads) and preschool teachers interacting with typically developing preschool children (PreschDyads). These groups are interesting for comparison purposes. First, directives may serve different roles in interactions and learning situations in which intersubjectivity, or the process of achieving a shared view of the situation, such as a common goal of an activity (Berk & Winsler, 1995), is strongly challenged – as is often the case in SpecEdDyads. Second, special education and preschool teachers adhere to different pedagogical “credos.” Special education teachers

emphasize an obligation to continuously optimize the developmental process of children who struggle with learning. In contrast, inspired by Fröbel’s kindergarten philosophy (Fröbel & Hailmann, 2005), preschool teachers tend to highlight children’s self-activity and spontaneous growth (Ministry of Education and Research, 2012; Moyer, 2001). Therefore, special education teachers are sometimes described as assuming an instructional and authoritarian role (Fink, 1972; Goodman & Coles, 1992; Rimm-Kaufman, Voorhees, Snell, & La Paro, 2003), whereas preschool teachers are sometimes viewed as excessively child-oriented, valuing socialization and informal teaching (Alvestad, 2004). These differences in “credos” may be perceived in most Western countries but are perhaps particularly evident in Nordic preschools given the social pedagogical and play-oriented frameworks of these preschools (Organisation for Economic Co-operation and Development, 2006) and the goal-directed teaching of special education that is often organized into one-to-one instruction (Engevik, Næss, & Berntsen, 2014). In teacher-child interactions, a challenge to both groups is to balance the use of directives in ways that both ensure a satisfactory progression of learning *and* support children’s engagement and autonomy. The aim of the current study is to investigate the role of teacher directiveness in educational dialogues as it relates to child engagement in PreschDyads and SpecEdDyads.

Educational Dialogues, Dyadic Asymmetry, and Child Engagement

The theoretical and methodological foundation of this study is dialogical and strongly influenced by an interactionist paradigm in which learning is seen to be socially and culturally mediated by more competent dialogue partners (John-Steiner, Panofsky, & Smith, 1994; Vygotsky, 1978). Within this context, “educational dialogues,” or joint problem solving whereby a learner is guided by an adult (or more competent child), are perceived as natural and useful

contexts in which to investigate the gradual transition from “intermental” (social) functioning to “intramental” (individual) functioning (Rojas-Drummond & Mercer, 2003; Wertsch, 1979).

By definition, educational dialogues are asymmetric in the sense that a teacher leads an interaction and holds the more dominant role. The degree of asymmetry may nonetheless vary considerably between dyads and contexts. Few studies have investigated dyadic asymmetry in teacher-child interactions. In dyadic language lessons, Gustavsson (1988) documented high levels of asymmetry. Moderate-to-high levels were observed in shared book readings involving typically developing children and their preschool teachers (Hølland, Engevik, & Hagtvét, 2014). In parent-child interactions involving children with and without developmental delays, the former interactions were driven more by the adult (Lieberman, Paden-Belkin, & Harel, 1995). It is unclear whether this tendency originated in mothers’ attempts to stimulate children who lag behind or in the propensity of children with disabilities to take fewer initiatives (cf. Fidler, Philofsky, Hepburn, & Rogers, 2005; Spiker, Boyce, & Boyce, 2002; Wishart, 1991).

Bruner and collaborators labeled the guiding of problem solving in educational dialogues with the term “scaffolding” (Wood, Bruner, & Ross, 1976). This concept refers to the contributions that an adult (or another child) can make by providing direction, demonstrations, or task simplifications to help a child solve a problem that would be beyond his unassisted effort. It has been argued that the metaphor of scaffolding is misleading because it evokes an image of a passive child whose knowledge is shaped by adults (Butler, 1998). However, in line with the interactionist paradigm, we consider a child’s learning to be a collaborative effort and the child to be an active co-constructor of knowledge, even when scaffolding is intensive (cf. Bruner & Watson, 1983; Linell, 2009; Rojas-Drummond & Mercer, 2003; Stone, 1998).

Educational dialogues are argued to hold significant potential for learning (Alexander, 2008; Kumpulainen & Wray, 2002; Littleton & Howe, 2010; Mercer & Howe, 2012), particularly when they involve child engagement and active collaboration (Rommetveit, 1992). A crucial issue is the extent to which a teacher actively creates opportunities for child engagement, perceived as “sustained behavioral involvement in learning activities accompanied by a positive emotional tone” (Skinner & Belmont, 1993, p. 572). “Child engagement” is frequently used as a barometer of the quality of educational settings (Kim & Hupp, 2005; Mahoney & Wheeden, 1999; McWilliam, Scarborough, & Kim, 2003; Maher Ridley, McWilliam, & Oates, 2000). Although educational dialogues are asymmetric by definition, the level of dyadic asymmetry may be reduced when a child is highly engaged (Rommetveit, 1992). Creating opportunities for child engagement when learning is demanding constitutes a crucial challenge in all teaching; in special education, this is often a core challenge.

In interactional studies of the learning of students with Down syndrome, low-level child engagement has been observed in addition to a tendency to “switch out” of tasks even when they are within the child’s capabilities and to avoid tasks that are above the child’s present ability level (Fidler et al., 2005; Wishart, 1993). Difficulties in initiating, regulating, and maintaining joint attention during social interactions are also associated with Down syndrome (Cebula & Wishart, 2008; Green, Dennis, & Bennets, 1989). With scaffolding being a dynamic intervention finely tuned to the child’s ongoing learning progress, these difficulties presumably affect the support given by the teacher during learning activities. In this context, we shall argue that the view of directives as solely a teacher-initiated instructional approach that overrides the child’s contributions (cf. Nelson, 1973) ignores the fact that directives may arise as a response to the child’s signals. The impact of child behavior on teacher-child interactions has received little

attention in the literature despite the prominence of bidirectional models of adult-child interactions, as noted by Spiker and collaborators (2002).

Adult Directiveness and Responsiveness

Adult directiveness is often viewed in contrast to adult responsiveness, which has emerged as a type of interaction style that is purported to promote an optimal environment for all children. Adult responsiveness is characterized by sensitivity to the child’s interests and current focus of attention (Flynn & Masur, 2007; Rimm-Kaufman et al., 2003). Responsive interactional strategies include following the child’s lead, waiting for the child to initiate an interaction, encouraging conversational turn-taking, and expanding the child’s expressions. In the field of language development, responsive interchanges that are tuned into actions or objects on which the child focuses are considered to provide essential input for early language learning (Girolametto, Weitzman, & Greenberg, 2006). Responsive adult behaviors are also found to support children’s independent problem-solving skills (Landry, Smith, & Swank, 2006).

‘Adult directiveness’, in contrast, is a controversial and often negatively loaded construct (Kim & Hupp, 2005; Marfo, 1990). It commonly refers to adults’ imposition of their own agendas on children by issuing demands, resulting in highly adult-led interactions (Nelson, 1973). As previously mentioned, directiveness has mainly been scientifically addressed in the context of early parent-child interactions. It has been associated with maternal control and insensitivity and viewed as causally related to poor developmental outcomes for children with disabilities (Marfo, 1990). Mothers of children with cognitive disabilities have been portrayed as more directive, controlling, and dominant and less responsive than mothers of typically developing children (Jones, 1980; Lieberman et al., 1995; Mahoney, Fors, & Wood, 1990). Rimm-Kaufman and collaborators argue that this portrayal applies equally to special education

teachers due to a strong focus on instructional strategies that enhance skill teaching and a lack of priority to the “value of emotionally supportive teacher-child relationships” (Rimm-Kaufman et al., 2003, p. 153).

Directive and responsive interaction styles have typically been viewed as opposite ends of a continuum as if they were incompatible stable adult styles (McWilliam et al., 2003). However, this dichotomy has also been contested, and we will argue that directiveness and responsiveness may represent two orthogonal dimensions. Several studies reveal that mothers can be directive *and* responsive or directive *and* intrusive depending on the context (Cielinski, Vaughn, Seifer, & Contreras, 1995; Crawley & Spiker, 1983; Marfo, Dedrick, & Barbour, 1998). Recently, a more nuanced understanding of “directiveness” has emerged, suggesting that certain directives may have particularly useful functions in some contexts, such as literacy instruction (Flynn & Masur, 2007; Justice, Mashburn, Hamre, & Pianta, 2008). Flynn and Masur (2007) attempted to re-conceptualize “directiveness” and argued in favor of a distinction between *supportive behavioral directives*, which direct the child in the course of an ongoing activity in which he or she is engaged, and *intrusive behavioral directives*, which are used to constrain or redirect activity, such as shifting the child’s focus of attention. Such attention directives are argued to be intrinsically more intrusive (Flynn & Masur, 2007; Pine, 1992). This claim likely stems from research on early language development, particularly the work of Tomasello and Farrar (1986). They concluded that children learn new words better when adults refer to objects on which the child is already focused as opposed to attempting to redirect the child’s focus to objects on which they are not currently focused. Similar results are found in studies of mothers interacting with their children with Down syndrome (Harris, Kasari, & Sigman, 1996). However, these findings are based on research involving young children (between 13 and 41 months) in play situations

with their mothers. It is likely that attention directives serve a different function in learning contexts in which older children and their teachers work on tasks with a defined goal and a broader aim than vocabulary gains, such as problem-solving skills. In sum, previous research on the qualities and functions of directives in educational dialogues largely appears to be based on studies of language development in rather young children, with a limited focus on the child’s contribution and its impact on the adult’s scaffolding strategy.

It appears that the phenomenon of “directiveness” may require yet another reconceptualization that more fully captures its richness and nuances. In such an attempt, the distinction between supportive and intrusive teacher directives should include emotional qualities, such as the emotional tone in which teacher directives are given. Emotional support is particularly important for child engagement and academic performance when teaching students who are at risk of school failure (Hamre & Pianta, 2005). Thus, the distinction between teachers who act in a “directive and insensitive” manner versus a “directive but warm” manner is relevant and relates to the fundamental components of teacher-child relationships (Hamre & Pianta, 2001; Owen & Ware, 1996; Stern, 1977). Whether directives are given in a forceful way that interrupts the child and negates his/her individuality or in an acknowledging negotiation with the child is vital to the quality and outcome of teacher-child interactions (The NICHD Early Child Care Research Network, 2005). Emotional aspects of both teacher directiveness and child engagement are included in the current study as important analytical tools.

Teacher Directiveness and Child Engagement

Child engagement is a crucial component of most research on the negative effects of adult directives on learning. The argument in favor of this inference is that directives typically lead to low engagement, which negatively affects learning (Marfo, 1990). In preschool interactions

involving typically developing children and their teachers, McWilliam and collaborators (2003) found that providing elaborations and information was more influential in child engagement than directives were. Thus, utterances that built upon and expanded the child’s observed behavior were interpreted as more valuable for preschool children than utterances characterized by an obligation for the child to perform (McWilliam et al., 2003). In preschool interactions involving children with disabilities, Mahoney and Wheeden (1999) found that a combination of highly responsive *and* moderately directive teacher interaction styles enhanced child engagement. Despite these complex and potentially positive interrelations between directiveness, responsiveness, and engagement, Mahoney and Wheeden (1999)—rather misleadingly—recommended low-directive approaches for teachers of children with disabilities because directives may reduce child initiation (Czaja, 1999).

Kim and Hupp (2005) conducted one of the few studies on teacher directiveness and the engagement of children with cognitive disabilities in a school context. Their main findings were that teacher directives facilitated frequent, although short-lived, engagement periods among elementary school students during language arts instruction by enabling student involvement (Kim & Hupp, 2005). These findings support our assumption that under certain conditions, teacher directives may play a constructive role within demanding learning contexts involving school-aged children who experience a prolonged need for comprehensive scaffolding due to factors such as cognitive disabilities. Taken together, the research of Mahoney and Wheeden and of Kim and Hupp suggests that the effects of teacher directives on child engagement should not be considered an either-or phenomenon with one-sided negative connotations assigned to directiveness. Rather, their studies suggest that the tendency to view teacher directiveness as a barrier to child engagement and as incompatible with responsiveness is an oversimplification that

ignores how its impact appears to vary with the child’s characteristics, the level of directiveness, and the demands of the learning tasks. In essence, their findings suggest the need for a reconceptualization of teacher directiveness and its impact.

The Current Study

To date, no study has investigated the qualities and functions of teacher directiveness in joint problem solving involving children both with and without cognitive disabilities. By contrasting the two types of dyads and combining numerical measures with a qualitative approach, the current study aimed to highlight subtle interactional processes and distinctions. In addition to examining dyadic asymmetry within the groups, teacher directiveness and child engagement were investigated by two complementary methods to capture a) verbal and nonverbal actions that contributed to interactional progression and b) emotional expressions of directiveness and engagement. Finally, the bidirectional influences of adult and child behaviors were addressed. The research questions were as follows:

- 1) *How is teacher directiveness manifested in problem-solving interactions involving children with and without Down syndrome?*
- 2) *How is child engagement manifested in problem-solving interactions between teachers and children with and without Down syndrome?*
- 3) *How does teacher directiveness interrelate with child engagement in the two types of dyads?*

Method

Participants

A total of fourteen teacher-child dyads, seven SpecEdDyads and seven PreschDyads, participated in the study. The child participants in each sample were recruited from two large-

scale longitudinal studies of language development: the first sample from a cohort of children with Down syndrome (Næss, 2012) and the second from a cohort of typically developing children taking part in the Child, Language and Learning (CLL) study (Department of Special Needs Education, University of Oslo, 2013). All of the schools and preschools involved were located in densely populated areas of Norway in or near the capital.

Children with Down syndrome and their special education teachers. Five girls and two boys with Down syndrome (aged 8.00 – 8.09 years) participated. They were selected on the basis of their language skills to constitute a diverse subsample (in accordance with the broad variations in communication skills previously found in the population (cf. Kumin, 2008; Næss, 2012). Thus, some children in the current sample had limited expressive vocabularies and poor articulation and relied heavily on gestures and signs in addition to shorter verbal utterances, whereas others articulated sentences more clearly. The children represented a variety of levels of communicative functioning (upper, middle, and lower ranges) as assessed by clinical assessments and the results of a broad battery of language tests (Engevik, Næss, & Hagtvet, 2014). The measures of communicative functioning were more varied between the children than were the measures of cognition (Block Design: raw score mean = 19.6, $SD = 2.4$) (WPPSI-III; Wechsler, 2008). In relation to the Norwegian norms for the Wechsler scales, this result corresponds to an average cognitive level (scale score of 10) among children aged 3 years 9 months – 3 years 11 months. The schools of the recruited children indicated the name of each child’s main teacher. Seven of the eight invited teachers agreed to participate. One teacher declined; she was new to her job and did not know the target pupil well enough. The final sample consisted of six female teachers and one male teacher (age $M = 46$ years, range = 32 – 56). One teacher had been trained in general education, whereas the rest had between 1.5 and 4.5 years of

special needs training at the university level ($M = 2.5$ years) as a supplement to either preschool or general school teacher education. The teachers reported an average of 5 years in their current job position (range = 1 – 13) and 3 years of experience with the target pupil (range = 2 – 7).

Preschool children and their teachers. Teachers working in mainstream preschools enrolled in the CLL study were invited to participate in this sub-study. The criterion for selection was that the teacher had a preschool teachers’ diploma. The length of relevant work experience after graduation was reported, with an average of 9.5 years (range 3.5 – 17). After the preschool teachers (all females, age $M = 37$ years, range = 25 – 46) agreed to participate, the parents of the CLL children were contacted, and all accepted the invitation. The criteria for selection were that the children did not have any known learning difficulties, developmental delays, or other challenges. Four girls and three boys (aged 5.10 – 6.00 years) attending the last year of preschool constituted the child sample in the PreschDyads. Their cognitive level was within the upper normal range (Block Design: raw score mean = 27.1, $SD = 4.1$) (WPPSI-III; Wechsler, 2008). In relation to the Norwegian norms for the Wechsler scales, this result corresponds to an average cognitive level (scale score of 10) among children aged 6 years – 6 years 3 months.

To preserve anonymity, we will refer to all of the teachers and children as females in the presentation and discussion of findings.

Procedure

The activity setting. With the aim of precise descriptions and comparisons between groups, the observations of teacher-child interactions occurred in a pre-structured, play-oriented learning situation in which the teacher and the child were asked to jointly construct a Duplo house from a model provided by the researcher. The task was designed to be too difficult for these children to solve independently and was expected to encourage cooperation between the

teacher and the child. Problem solving (i.e., implementing strategies and evaluating results) is challenging for most preschool children and represents a particular area of difficulty for children with Down syndrome, also during school (Fidler et al., 2005). At the same time, difficult learning situations are prime opportunities for learning, and one-to-one problem-solving interactions may shed light on aspects of learning that are often hidden in ordinary classroom situations. However, the pilot test indicated that the task was more difficult for the SpecEdDyads, and the task was subsequently modified. To equalize the challenges, the SpecEdDyads were given a concrete model of a house to copy, whereas the PreschDyads were given a picture of a more complex house to copy (see Online Supplementary Material Figure 1). The adaptation of the task reflects the measured gap in cognitive levels between the groups of children.

Data material. The data consisted of 14 videotaped interactions that occurred at the children’s preschool or school. The researcher videotaped the sessions as unobtrusively as possible. The child and his/her teacher were seated at a table side by side. The average duration of the sessions was 9.5 minutes (range = 6 - 14.5 minutes) for the SpecEdDyads and 11 minutes (range = 5 - 15 minutes) for the PreschDyads. The dialogues were transcribed in accordance with an adapted version of the transcription conventions of conversation analysis (see Online Supplementary Material Table 1). Nonverbal communication, such as pointing, picking up and placing blocks, and nodding, was included in the transcripts on the grounds that it substantially contributed to the dialogues, particularly in the group of children with Down syndrome. These nonverbal acts were coded on the basis of their function in the ongoing interactions in the same way as verbal utterances.

Analytical approaches. The video recordings were analyzed by three complementary approaches, addressing a) the degrees of dyadic asymmetry, teacher directiveness, and child engagement, as assessed by the Initiative-Response (IR) analysis (Linell, Gustavsson, & Juvonen, 1988); b) the emotional qualities associated with directiveness and engagement, as assessed by the Qualitative Ratings Scale (Owen & Ware, 1996); and c) the interrelation between teacher directiveness and child engagement, as assessed by means of group comparisons and in-depth analyses of dialogue excerpts.

Measures

Asymmetry. Consistent with the IR analysis, each turn in the dialogues was analyzed in terms of its initiatory and/or responsive aspects based on a system of 18 codes, as defined in Table 1. Table 1 also illustrates the dialogical nature of the analysis through examples from the current dataset. The 18 codes are distributed on a six-point ordinal scale from the strongest initiative with no response properties (highest score) to the weakest response without any attempt to move the dialogue forward (lowest score). In human dialogues, most turns have both initiatory and responsive aspects and are coded as turns corresponding to medium scores. Based on the IR scores (from 1 to 6), the mean value of interactional strength or dominance for each participant can be calculated; this is referred to as the IR index. Dyadic asymmetry was measured by comparing the IR index of the teacher and that of child. In symmetric dialogues, such as informal conversations between friends, the difference between the IR indexes (IR difference) is close to 0, according to Linell et al. (1988). Differences of less than 0.5 are characterized as low levels of asymmetry or balanced conversations, whereas differences above 1.0 reflect high levels of asymmetry, typically found in interviews and interrogations. Moderate differences between 0.5 and 1.0 represent unbalanced conversations. Hølland et al. (2014) further divided these

categories into low-to-moderate (0.5 - 0.6), moderate (0.7 - 0.8), and moderate-to-high (0.9 -1.0) levels of asymmetry. In the current study, we apply this finely graded terminology.

Teacher directiveness. Teacher directiveness was first assessed by the Solicitation (S) coefficient from the IR analysis, which indicates how often a teacher’s turns were coded as containing a *strong initiative*. Table 1 displays the turn types included in the S-coefficient. Posing a strong initiative implies that the speaker explicitly solicits the other person to express a certain type of response (e.g., requests, commands and questions). The amount of strong initiatives posed by the teacher thus reflects the extent to which he/she seeks to control the direction and content of the interaction. The measure is expressed as a percentage of each teacher’s total number of turns (Linell et al., 1988).

Second, teacher directiveness was assessed in terms of the emotional qualities of each interaction by using the seven-point “Respect for Child’s Autonomy” scale extracted from the Qualitative Rating Scale by Owen and Ware (1996). This global rating system was originally developed to examine the relationship between early child care and children’s development (the NICHD Early Child Care Research Network, 2005). Various aspects of the emotional climate of adult-child interactions, including Respect for Child’s Autonomy, are assessed by an overall observation. A global score of each subscale is given on the basis of the emotional dimension, as described in the scale manual. The Respect for Child’s Autonomy subscale from the first-grade manual covers emotional dimensions associated with adult directiveness. Low scores on the scale reflect strongly directive behaviors in which the teacher displays limited acknowledgement of the child’s intentions and contributions. Such interactions are largely dominated and controlled by the adult, who intrudes in a forceful way. High-scoring teachers, in contrast, interact with the child in a way that acknowledges the child’s perspective, encourages the child

to acknowledge the teacher’s intentions, and negotiates the course of interactions in the session. These teachers may insist on the importance of following instructions, but they do so while simultaneously acknowledging the child’s differing perspective in an unobtrusive manner (Owen & Ware, 1996).

Child engagement. To investigate child engagement as previously defined (see page 6), two approaches were utilized. The first measure used to assess child engagement was the Initiative (I) coefficient developed from the IR analysis. This coefficient was designed for the current study to reflect how often a child’s turns were coded as containing *strong* and *weak initiatives* (see Table 1). Whereas strong initiatives demand a response from the conversation partner, weak initiatives invite interaction by means of suggestions or assertions (Linell et al., 1988). Given that teachers generally hold the dominant role during educational dialogues, weaker efforts by the child to influence the interaction should be included as signs of engagement. In addition, the given construction task encouraged non-verbal participation by the children, and any self-initiated building attempts were interpreted as suggestions and contributions to solving the problem and were coded as weak initiatives. Similar to all the coefficients from the IR analysis, the I-coefficient is expressed as a percentage of the child’s total number of turns.

Second, child engagement was assessed by the seven-point Child Agency and Child Persistence scales extracted from the Qualitative Rating Scale by Owen and Ware (1996). A child who scores low on the Agency scale displays limited involvement and seems hesitant to engage in the task, and the child’s behavior is characterized by a lack of confidence and interest in the activity. Children who score high on this scale act with vigor, confidence, and eagerness to perform the task. They demonstrate agency and engagement throughout the session without

showing fear of failure. The Persistence scale measures involvement with the provided material. Persistence does not necessarily include enthusiasm, but it includes motivation and engagement in the activity over time. Low scores indicate little involvement or engagement with minimal effort or concentration. At the high end of the scale, the child is persistently focused on the task throughout the session (Owen & Ware, 1996). The combined average of the scores on the Agency and Persistence scales constitutes the emotional component of child engagement in the current study.

Interrelation between directiveness and engagement. The final analytical approach was designed to investigate the interrelation between adult and child behavior in the two groups and whether high levels of teacher directiveness were related to reduced child engagement, as previously suggested (cf. Mahoney & Wheeden, 1999; McWilliam et al., 2003). Interactions in each group that contained extreme levels of teacher directiveness (both the highest and the lowest S-coefficients) were examined and compared. The examination revealed distinct group patterns concerning the interrelation between teacher directiveness and child engagement, as described below. Interactions characterized by these distinct group patterns were further analyzed qualitatively. Illustrative extracts from the dialogues are presented below. These “telling cases” (cf. Mitchell, 1984) allowed us to consider how the phenomena of teacher directiveness and child engagement were interrelated and influenced by the context. These cases also provided opportunities to generate explanations for the observed group patterns.

Inter-Rater Reliability

The first and second authors were trained in both IR analysis and the Qualitative Rating Scale. The inter-rater agreement between the authors was 89%. The material, consisting of 14 video recordings (with a total of 2,677 turns), was divided between the two authors and coded

according to the criteria. The evaluations of inter-rater reliability were conducted with a trained research assistant that independently IR-coded a total of 795 randomly selected turns (four videotapes), yielding a Cohen’s kappa coefficient of 0.83 (Cohen, 1960) (exact agreement with another coder = 84%). For the Qualitative Rating Scale, Pearson correlations were calculated to account for the distance between scores when disagreement occurred. Half of the material (seven videotapes, also randomly selected) was coded for inter-rater reliability, and the subscale of Respect for Child’s Autonomy yielded a correlation coefficient of 0.81, while the combined subscales of Agency and Persistence yielded a correlation coefficient of 0.94.

Results

We first report the degrees of asymmetry within the dialogues. Then, we present the results from the measures of teacher directiveness and child engagement as well as the interrelation between these phenomena, as illustrated in excerpts from the dialogues.

Dyadic Asymmetry

In the PreschDyads, teachers obtained a mean IR index of 3.41, and the children’s IR index mean was 2.91, revealing an IR difference of 0.50. This IR difference reflects a low-to-moderate level of dyadic asymmetry (see the Methods section). The teachers in the SpecEdDyads obtained a mean IR index of 3.35, and the children’s value was 2.65, resulting in a moderate IR difference of 0.70. The difference in IR differences between the two groups (= 0.23) did not reach statistical significance, but it was in the expected direction, with a slightly higher level of asymmetry in the SpecEdDyads. In both groups, the levels of asymmetry were lower than in comparable studies of dyadic asymmetry in language and literacy activities (Gustavsson, 1988; Hølland et al., 2014; Marková, 1991). This finding might be explained by the informal, play-oriented context of Duplo building. Additionally, the teachers’ turns were most frequently

coded as medium on the interactional strength scale, meaning that their utterances were largely linked to the child’s previous contribution (see Table 1), which reflects a conversational approach.

Teacher Directiveness

Table 2 presents the levels of teacher directiveness. The S-coefficient from the IR analysis of the preschool teachers shows that on average, 37.3% of their turns contained a directive (total number of turns for the seven preschool teachers = 639, $M = 91$, range = 43 - 125). Among the special education teachers, the average was 46.8% (total number of turns for the seven special education teachers = 709, $M = 101$, range = 50 - 135). This result indicates that roughly half of the special education teachers’ utterances compelled an explicit response from the child. The difference between the two groups is significant (t -value = 0.040), with a large effect size of 1.2.

Table 2 further presents the results from the Qualitative Rating Scale. The average scores on the seven-point Respect for Child’s Autonomy subscale were moderately high and similar in the two groups, with a small effect size of 0.2. This scale reflects the extent to which the teacher recognizes and respects the child’s perspectives and individuality. These findings (5.1 for the preschool teachers and 5.3 for the special education teachers) therefore indicate that although the special education teachers used more directives than the preschool teachers, they did not appear to do so in an intrusive manner that suppressed the child’s individuality. Rather, the emotional tone was characterized by trust and an acknowledgement of the child’s contributions.

Child Engagement

One crucial issue in learning is children’s engagement in educational dialogues, and Table 3 presents the levels of such engagement. The I-coefficient from the IR analysis shows that

on average, 56.3% of the turns of the preschoolers contained some form of initiative (total number of turns for the seven preschool children = 630, $M = 90$, range = 41 - 120), compared to 40% for the children with Down syndrome (total number of turns for the seven children with Down syndrome = 699, $M = 100$, range = 50 - 131). Despite large intra-group variations, the difference between the two groups is significant (t -value = 0.023), with a large effect size of 1.4, suggesting that the typically developing children contributed more substantially to joint problem solving than did the children with Down syndrome.

The results from the Qualitative Rating Scale measuring child engagement (Agency and Persistence) offer some support for the above-mentioned finding in terms of a moderate effect size, which suggests that the engagement level among the preschool children is marginally higher than that in the Down syndrome group (see Table 3). However, the difference is not significant, and the average scores (6.3 for the typically developing children and 5.9 for the children with Down syndrome) reveal a relatively high degree of engagement for both groups on the Agency and Persistence seven-point scales. The reported finding that 40% of the utterances of children with Down syndrome included an initiative also suggests a relatively high engagement level, although lower than that of the typically developing children. For the typically developing children, the high average number of initiatives that were posed together with the high ratings on Agency and Persistence suggest that these children participated eagerly in the problem-solving interactions.

Interrelation Between Teacher Directiveness and Child Engagement

One aim of the study was to investigate the extent to which high levels of teacher directiveness are associated with low child engagement. We examined interactions that contained extreme levels of teacher directiveness (high or low) as assessed by the IR analysis, and

contrasting patterns were revealed. The three special education teachers who used the *most* directives (with S-coefficients equal to 57.8%, 52.6%, and 52.3%, all above the group mean of 46.8%) interacted with highly engaged children with Down syndrome relative to the group (with I-coefficients equal to 45.0%, 42.0%, and 45.5%, all above the group mean of 40.0%). In contrast, the three *least* directive preschool teachers (with S-coefficients equal to 25.6%, 34.4%, and 35.8%, all below the group mean of 37.3%) interacted with the most engaged children among the preschool children (with I-coefficients equal to 70.2%, 70.7%, and 57.0%, all above the group mean of 56.3%). To further pursue these distinctive group patterns, we conducted in-depth analyses of the PreschDyads that were characterized by low levels of teacher directiveness and high levels of child engagement (IR analysis) and the SpecEdDyads that were characterized by high levels of both teacher directiveness and child engagement (IR analysis). Below, three telling cases (one from the PreschDyads and two from the SpecEdDyads) are presented to illustrate possible explanations for the different group patterns.

PreschDyad A. This interaction is characterized by low levels of teacher directiveness, as illustrated by the inclusion of strong initiatives in 35.8% of the teacher’s turns (S-coefficient equivalent to SD -0.22) and a high score of 6 on the Respect for Child’s Autonomy scale. The child was highly engaged, with 57.0% of her turns containing an initiative (I-coefficient equivalent to SD +0.06) and a score of 6.5 on the Agency and Persistence scale. The excerpt is obtained from the opening sequence of the interaction.

1	Teacher:	What should we start with? ((looks at the child))
2	Child:	Perhaps down there ((points at the picture)), and then we build up and up
3	Teacher:	Yes. Then, we have to find (these three); then, ((points where the girl pointed))
4	Child:	Three blue ones [how are they connec
5	Teacher:	[Mm* ((starts to sort out blue blocks from the pile))
6	Child:	((Gathers the sorted blocks in front of her)) (I’ll keep them here)
7	Teacher:	Mm* And then? ((points at the picture))
8	Child:	Two dark green ones
9	Teacher:	Mm*

- 10 Child: ((Picks up two blocks)) Two dark green ones
 11 Teacher: Yes (.)
 12 Child: How should they be placed?
 13 Teacher: I think they are placed next to each other like that, you see? ((points at the picture))

* Affirmative expression.

The teacher begins with a directive that invites the child to suggest where to begin (turn 1), and the child assumes an active role from the beginning (turn 2). Throughout the session, the few questions posed by the teacher are open-ended “what” and “how” questions, and she often leaves room for the child to initiate by providing responses with no initiating properties (e.g., turn 11). This low-directive interaction style appears to work well for this child because she is persistently engaged in the task and requests help when she needs it (e.g., turn 12). When answering the child’s questions, the teacher primarily refers to the picture and provides an explanation without picking up or placing the blocks for the child (e.g., turn 13). The general impression is that the teacher and the child took their time to jointly explore how to resolve the task and alternated between who would suggest the next step toward the solution.

SpecEdDyad B and SpecEdDyad C. In comparison, the SpecEdDyads generally exhibited higher levels of teacher directiveness and lower levels of child engagement, as reflected by the IR analysis. Moreover, the interactional pattern was characterized by the coexistence of frequent teacher directives and frequent child initiation relative to the group mean. The following two excerpts illustrate this pattern in different ways. The first, SpecEdDyad B, involves a special education teacher who scores highly on directiveness, with 52.3% of her turns containing a strong initiative (S-coefficient equivalent to SD +0.65). The teacher also obtains the maximum score of 7 on the Respect for Child’s Autonomy scale. Taken together, this finding indicates a directive approach with a very positive emotional tone. The interacting child is highly engaged, with initiations or suggestions in 45.5% of her turns (I-coefficient equivalent to SD +0.44), and obtains a score of 6.5 on the Agency and Persistence scale. Her communicative

functioning is assessed to be in the upper range relative to the current sample (see the method section, page 12). This excerpt is obtained from the end of the session, in which one side of the red roof was the only part missing on the house that they were building.

- 1 Teacher: Did we forget anything? (.) What if the rain is pouring down ((illustrates with her hands that raindrops are falling on all the different sides of the house that they are building. Places the two houses next to each other and waits))
- 2 Child: (.) You know what, it's not equal
- 3 Teacher: No, what can we do then to make them equal?
- (...)
- 4 Teacher: If you look at the sides of the house, if it rains now ((illustrates that the rain is falling on one side of the roof of the model)), then the roof is protecting the house ((Child: yes)) And then it starts to rain over here ((illustrates similarly on the house that they are building)); then the roof is protecting ((Child: yes)). And then the rain comes over here ((illustrates on the other side of the model)) What happens then? Does it rain into the house?
- 5 Child: No
- 6 Teacher: No. And then it rains here ((illustrates that the rain is pouring down on the side of their house where the roof is missing)). Is the rain coming into the house now?
- 7 Child: Yes
- 8 Teacher: Yes ((sits back in her chair))
- 9 Child: ((Picks up a red block)) There is only one left
- 10 Teacher: Let's see if you can find more
- 11 Child: There's another one ((picks up another red block)). One there ((attaches a red block on top of their house))
- (...)
- 12 Teacher: There you are. You see?
- 13 Child: And then this one ((picks up one more red block and attaches it to the house)) Now the rain can come (xxx) ((laughs))
- 14 Teacher: Now the rain can come as much as it likes ((smiles))
- 15 Child: YES
- 16 Teacher: What are you going to do next?

The excerpt illustrates how this teacher drives the interaction forward and encourages the child to think and act through such actions as providing clues and directives that link the roof to the rain (turns 1, 4, 6), which enables the child to identify the missing part. By occasionally asking open questions (e.g., turn 16), the teacher initiates co-construction rather than providing instruction. The frequent initiatives posed by this teacher direct the activity in which the child is already focused and engaged. In line with the pattern found in other SpecEdDyads, there is no evidence that the teacher's frequent use of directives compromises this child's involvement in

the task. On the contrary, this particular child’s high levels of agency, persistence, and initiation appear to be logically connected to the “opportunity space” facilitated by the teacher, who (similar to the teacher in PreschDyad A) takes a step back and allows the child time to think and react after providing sufficient guidance (e.g., turn 8). The child’s behavior is also affected by her level of development. She immediately understands the task, expresses complete sentences clearly, and maintains her focus of attention in long sequences.

The next excerpt, SpecEdDyad C, is from another dyad that exhibits a high level of teacher directiveness, with 57.8% of the teacher’s turns containing a soliciting initiative (S-coefficient equivalent to SD +1.29). A moderately high score of 5 is given on the Respect for Child’s Autonomy scale, indicating that the teacher supported the child’s perspective in the observed session, although not consistently. The girl’s communicative functioning is assessed to be in the lower range, reflecting considerable difficulties (see page 12). Although 45% of her turns include an initiative (I-coefficient equivalent to SD +0.40), they are not always linked to the ongoing activity, as shown by the low score of 3.5 on the Agency and Persistence scale. Thus, the combination of analytical approaches provides essential supplementary information about the recorded session. The excerpt also sheds light on the overall differences between the groups, with more teacher directives and less child engagement within the SpecEdDyads.

1	Teacher:	(...) What color is this? ((points at the model))
2	Child:	Blue
3	Teacher:	Blue, yes. Could you find two blue blocks?
4	Child:	No
5	Teacher:	No? If you find two blue blocks, then I’ll find two blue blocks (.). Then, we’ll take two each. Could we do that?
6	Child:	Yes
7	Teacher:	Yes. Then, I’ll take these two ((picks up two small blue blocks from the pile)). Which ones are you going to take?
8	Child:	Green
9	Teacher:	Are you going to get green ones? We were supposed to ((Child: picks up the block closest to her and looks at it, it is blue)). There you have ONE, could you [find one more
10	Child:	[(Picks up another small blue block))
11	Teacher:	There it is. Then, you can place yours there ((points)) and I’ll place mine

- here ((attaches her blocks))
- 12 Child: ((Attaches the blocks to the house))
- 13 Teacher: Good. Is it equal now? ((puts the two houses together))
- 14 Child: (.) Yes ((smiles and looks at the teacher))
- 15 Teacher: Yes, exactly the same. And then what is this? ((points at the next row on the model))
- (...)
- 16 Teacher: Yes. But, WHAT is it that we’re lacking now? ((points at the roof of the model))
- 17 Child: (Roof) ((knocks two blocks together at the table))
- 18 Teacher: The roof, yes, it’s missing ((puts her hand over the girl’s hands)). Then, we need... Which color do we need then? ((points at the roof of the model))
- 19 Child: (xxx) (Roman*) ((picks up a black block and plays/pretends that it is walking on the roof of the house))
- 20 Teacher: Yes, look, up like that, and down there ((illustrates how the girl can make the block walk down on the other side of the roof))
- 21 Child: (xxx) (Roman) ((tries to attach the black block on the top of the model))
- 22 Teacher: Huh? ((removes the black block)) Which color do we need now?
- 23 Child: (I am Roman) ((looks at the black block in her hand))
- 24 Teacher: Do you want to put a man** on the top of the house? That we can do in the end
- 25 Child: ((Picks up and attaches a white block on the roof of the model, not the house that they are building))
- 26 Teacher: But, now you are making it different ((removes the white block from the model)). Which color is supposed to be here? ((points at the house they are building))

* Roman is the name of this girl’s brother, but her articulation makes it difficult to understand. While interviewing the teacher, we learned that the girl frequently asks where her brother is and that, in cooperation with the girl’s parents, the teacher does not always respond to this “fixation” when working on school assignments.

** The teacher apparently misunderstands and thinks that the girl is talking about a man when she says Roman.

Overall, this teacher governs the interaction to a greater extent than the teachers in the previous dyads by posing closed questions that test knowledge (e.g., of colors) and “yes/no” questions that limit the child’s opportunities to drive the interaction in his or her desired direction. Although the child expresses reluctance toward the activity at the beginning (turn 4), the teacher chooses to continue by guiding and initiating each sub-step toward completion. The moderately high score on the Respect for Child’s Autonomy scale indicates that the teacher allows the child influence and autonomy but also “exerts her will” over the child in a way that shifts the child’s perspective (e.g., turn 9) (Owen & Ware, 1996). This approach influences the emotional tone in periods of the session. Nevertheless, the teacher’s interactions are rated in the upper half of the scale, reflecting a non-intrusive approach.

The last section of the excerpt (from turn 16) illustrates a rather disjointed sequence in which the child does not acknowledge and respond to the teacher’s initiatives (turns 18, 22). Rather, the child poses free initiatives that are not connected to the task (turns 19, 21, 23, and 25). The teacher partly responds to these diversions, but at times, she also appears to misunderstand due to unclear speech (turn 24) and continuously attempts to get the child back on track, sometimes by redirecting her focus of attention (turns 22 and 26). Despite the child’s periodically low involvement, the interaction resulted in a completed house (roughly similar to the model) and a satisfied student. Available background information may elucidate this sequence: this child typically showed restless behavior with limited periods of attention directed toward ongoing activities. According to the teacher, the child generally needs support to be motivated to complete schoolwork by means of close follow-up and concrete instructions. She also required numerous repetitions (of the names of colors, for example) to consolidate knowledge. The turns in the excerpt must be understood against this broader background.

To summarize the presented results, the two types of dyads differed in terms of how teacher directiveness and child engagement were manifested during the observed dialogues. These differences primarily involved the amount of initiatives posed, i.e., how often the teachers led the course of the interaction by explicitly demanding a response from the child and how often the children initiated task progression. In the PreschDyads, low levels of teacher directiveness coexisted with low-to-moderate levels of dyadic asymmetry and a non-intrusive teacher approach. Limited directiveness further coexisted with high engagement levels among the preschool children. In the SpecEdDyads, high levels of teacher directiveness also coexisted with moderate asymmetry and non-intrusiveness. Increased directiveness further coexisted with high child engagement relative to the group of children with Down syndrome. The contrasting

interrelation between teacher directiveness and child engagement in the two types of dyads was highlighted in the presented dialogue excerpts and will be further discussed below after a discussion of the results regarding manifestations of teacher directiveness and child engagement.

Discussion

The overall aim of this comparative study was to investigate the role of teacher directiveness in relation to child engagement in educational dialogues involving PreschDyads and SpecEdDyads. Initially, manifestations of teacher directiveness are discussed in terms of levels and emotional qualities. As expected, the IR analysis revealed a significantly lower level of teacher directiveness (the S-coefficients) in the PreschDyads compared to the SpecEdDyads. This first major result of the study is in line with studies of interactions involving children with disabilities that indicate that these dyads are more adult-driven than are comparable interactions involving typically developing children (Kim & Hupp, 2005; Lieberman et al., 1995). In the context of the current study, this group difference may be explained by different child characteristics in the two groups and the different educational backgrounds of the special education teachers and preschool teachers as well as by the different educational settings in preschools vs. schools. In the preschool setting, informal learning and exploration through play are often emphasized, and the preschool teacher *supports* the child’s development. School learning is traditionally more formally organized and taught, and in most cases, special education teachers initiate activities and lead dialogues toward a specified learning objective. Although elements of these contrastive traditions are likely to have affected the results, we attempted to reconcile these diversities by the choice of task. The observed activity, presented as a joint co-construction task with a clear closure, generally generated educational dialogues that were simultaneously play- and goal-oriented in both groups. Despite a larger proportion of directives

in the SpecEdDyads, there were a number of less-expected similarities in the interplays of the two groups. All of the teachers evaluated in both groups were aim-oriented; they ensured that the house was completed and evaluated relative to the model. Furthermore, the teachers in both groups seemed to contribute to the establishment of mutually negotiated interactions, which indicate high-quality relationships that are argued to contribute to children’s learning and development (Hamre & Pianta, 2001; O’Connor, 2010). Both the moderately high scores on the Respect for Child’s Autonomy scale and the unexpectedly low levels of asymmetry in both groups indicate that in general, neither group of teachers dominated the interaction in a controlling or intrusive manner. In other words, the teachers’ directiveness (in terms of high S-coefficients) cannot be interpreted as intrusive or authoritarian. This finding contrasts with previous assertions about the authoritarian and less sensitive role of teachers, especially within special education (Fink 1972; Goodman & Coles, 1992; Rimm-Kaufman et al., 2003). Rather, the coexistence of directiveness and emotional sensitivity occurred within the SpecEdDyads. This finding is in accordance with a main finding in the study by Marfo (1992) involving interactions between mothers and children with developmental delays. Marfo found that directiveness was compatible with warmth, sensitivity, and elaborativeness.

In the following section, manifestations of child engagement in terms of levels and emotional qualities are discussed. The second major result of the study is related to the children’s levels of engagement (the I-coefficients). The preschool children’s levels of engagement were significantly higher than those of the children with Down syndrome. This finding also supports previous findings that children with disabilities tend to take fewer initiatives during interactions with their caregivers (Fidler, 2006; Spiker et al., 2002). A lack of motivation among the children with Down syndrome toward the given construction task could explain this finding. However,

the high levels of emotional involvement (Agency and Persistence) registered in both groups indicate that, despite having fewer initiatives, the children with Down syndrome mostly acted with eagerness and confidence during the problem-solving task. Assessing child engagement solely as the frequency of initiatives, as is the case with IR analysis, can thus provide a misleading picture of teaching situations involving these students. Mahoney and Wheeden’s (1999) conclusion that high levels of teacher directiveness are detrimental to child engagement may be a function of the assessment procedure used, as engagement was evaluated on the basis of the initiatives taken by the child. A similar explanatory interpretation of the data from the current study could have been made if the emotional component of child engagement had been ignored. However, drawing such a conclusion not only would have overlooked vital expressions of active child participation but also would have failed to recognize the bidirectional characteristic of adult-child interactions and the fact that the causality could be reversed. From a dialogical perspective, directiveness may reflect modifications and adaptive qualities of adult behavior attuned to the child (cf. Marfo, 1990; 1992).

The comparative examination of the interrelation between teacher directiveness and child engagement in the two types of dyads revealed that the least directive teacher exchanges in the preschool group involved the most engaged children, whereas the most directive exchanges in the special education group involved the most engaged children with Down syndrome. These contrasting group patterns constitute a third major finding of the study, which suggests that teacher directiveness may serve different functions in interactions involving children with and without cognitive disabilities. Furthermore, extensive use of teacher directives does not necessarily reduce the initiative of children with Down syndrome, as previously argued by Mahoney and Wheeden (1999). The analyses of the extracted dialogue excerpts may contribute

to the discussion of these findings. The excerpt from PreschDyad A provides a partial explanation of why a low-directive teacher approach worked well for typically developing children. The preschool teacher’s exploratory approach, signaling that she did not necessarily know the best solution, created a session of genuine co-construction in which the child participated in the discovery of solutions. The child’s involvement subsequently allowed the teacher to fine-tune her effort in accordance with what has been described as a bidirectional scaffolding process (Stone 1993; van de Pol, Volman & Beishuizen, 2010). For the PreschDyads in general, the children’s eagerness (or inner drive) to commence the task and remain involved until the problem was solved presumably contributed to the low-directive teacher support. In turn, this support enabled the children to experience success by perceiving the achievement largely as their own, which again motivated engagement. The children in this group appeared to have assumed some of the responsibility for regulating their own activity, although the problem-solving interaction was conducted at the interpsychological plane with adult guidance (Wertsch, 1979).

The excerpts from the SpecEdDyads provide explanations for why teacher directiveness may serve constructive functions in particular contexts. For example, the frequent directives posed by the teacher in SpecEdDyad B appeared to serve as *supportive behavioral directives*, as described by Flynn and Masur (2007). Without interfering with the child’s focus of attention, the teacher led the child toward new insights relevant to the ongoing task and used directives as a cognitive involvement strategy. In addition, the excerpt from SpecEdDyad C illustrates teacher directives that may resemble the notion of *intrusive directiveness* because they redirected the child’s attention (Flynn & Masur, 2007). In the context of the current study, however, the dominant approach should likely be seen as an active decision by the teacher to lead the child

away from unproductive task solutions to more productive ones with the aim of completing the task. As described in the literature, children with Down syndrome show a tendency to avoid new tasks (Fidler, 2006; Wishart, 1993), and this teacher’s dominating strategy may reflect an extended interpsychological phase in which the child is guided through the procedure of performing a task before fully understanding it (Wertsch & Sammarco, 1985). It appears reasonable to presume that the transition from intermental to intramental functioning is delayed when cognitive disabilities interfere with the intersubjectivity that constitutes the foundation of learning through social interaction. Because this process of internalization is slow and sometimes burdensome, some children and youth with Down syndrome are in need of both extended and more extensive and varied forms of scaffolding in learning situations, as the current data show. The wide variation in communicative functioning among children with Down syndrome compared to that of the typically developing children appears to be one of the contributing factors to the different roles that directives hold. Support for this conclusion is evident in the work by Marfo (1992), who found that children’s competence was a significant source of variation in maternal directiveness.

Limitations

Limitations concerning group matching, the sample sizes, and the length of observations are relevant to the interpretation of the results of this work. Test performance indicated higher cognitive levels among the typically developing preschool children compared to the schoolchildren with Down syndrome, which may have influenced the results. Children who function at a 3-year-old level cognitively may need greater support during problem-solving tasks – even after modifications – than those who operate close to a 6-year-old level. However, cognitive group matching, with the consequence of a wider gap in chronological age, might have

made the same type of task less motivating for one of the groups (i.e., too intricate for younger preschool children despite typical development or too childlike for older schoolchildren with Down syndrome). Furthermore, the results are based on two small samples, and in the qualitative analyses, complex issues were studied with reference to selected cases. Thus, caution should be used in generalizing the conclusions to other contexts and samples (e.g., whole-class instruction). Rather, the findings should be regarded as exploratory and should be interpreted in consideration of the observational context of the study (i.e., one-to-one problem-solving teacher-child interactions). We have therefore provided detailed contextual information in the methods section. A small and diverse sample may uncover and even highlight individual differences by allowing in-depth analyses and the understanding of intricate human interactions, but the relatively short observations of the current study provide only a snapshot of teacher-child interactions at one time point. The long-term implications of teacher directiveness with respect to children’s motivation and problem-solving skills should be investigated in future studies.

Conclusions

In the current study, we have investigated the qualities and functions of teacher directiveness as it relates to child engagement in educational dialogues involving two types of teacher-child dyads. Directives appear to serve different functions in different interactions depending on the individual child and teacher. Some of the ways that differences between individual children influence the interactions were revealed by combining a between-group design with within-group qualitative investigations. The results suggest that teacher directives are more essential in interactions in which the child’s initiative is diminished or in which intersubjectivity is challenged due to difficulties such as those often associated with Down syndrome. Although all of the children participated in the activity, some of the children with

Down syndrome struggled with sustained and focused engagement. In such cases, teacher directives may enhance engagement by channeling the child’s attention and actions in a constructive direction, leading to joint problem solving. This scaffolding strategy did not imply intrusiveness; rather, positive emotional and adaptive qualities characterized the teachers’ approach in both groups. For typically developing five- to six-year-olds, a low-directive teacher approach appears to match their emerging need for self-regulation.

These conclusions have important implications for practice in terms of everyday teacher-child communication as well as teacher training and professional learning. Additionally, the conclusions allow us to question the adequacy of the theoretical distinction between *intrusive* and *supportive directiveness* established in the field of early development (Flynn & Masur, 2007). In some learning contexts, actions that are typically labeled as inherently intrusive types of directiveness (e.g., attention-directing actions) may be supportive of a child’s needs and may guide the learner to mastery and increased self-confidence.

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Table 1

The Initiative-Response Category System of Dialogue Turns (Linell et al., 1988)

Turn category	Turn description	Example from current dataset	Scale value ^a
Strong initiative ^{b,c}	Explicitly soliciting turn, which demands a response	<u>Which color should we begin with?</u>	6
Weak initiative ^c	Turn that is asserting or suggesting something that does not demand but rather invites a response	<u>Something is missing</u>	5
Strong initiative with a remote link ^{b,c}	A strong initiative and a response to a specific turn earlier in the dialogue (not the partner's preceding turn)	The teacher asks the child to place two red blocks side by side where she is pointing. The child picks up and places one red block. The teacher confirms (<i>Yes, good!</i>). The child picks up another red block and asks the teacher: <u>And then this one, right?</u>	5
Meta-communicative strong initiative ^{b,c}	A strong initiative and a response linked to the preceding turn in a way that comments on or challenges the form and/or function of the partner's utterance	The child expresses difficulties with placing one of the blocks by making a noise (<i>aaaah</i>). The teacher says: <u>Could you please put into words what it is you are thinking?</u>	5

Demonstratively self-linked strong initiative ^{b,c}	A strong initiative and a response linked to the speaker's own preceding turn in a way that clearly ignores an intermediate initiative posed by the partner	The teacher asks the child to find a green block. The child responds inadequately by asking where her brother is. Teacher picks up a green block and asks the child: <u>Is this green?</u>	
Weak initiative with a remote link ^c	A weak initiative and a response to a specific turn earlier in the dialogue (not the partner's preceding turn)	The teacher tells the child that there are two types of green, light and dark, and asks the child to find a dark green block in the pile. The child replies by removing the misplaced light green block from the house. The teacher confirms this action and waits. The child says <u>light green block</u> while searching in the pile	4
Meta-communicative weak initiative ^c	A weak initiative and a response linked to the preceding turn in a way that comments on or challenges the form and/or function of the partner's utterance	The child places the first block of the roof on the top of the house. The teacher says: <u>Remember that it is always best to begin at the bottom and then build upwards</u>	4
Demonstratively self-linked weak initiative ^c	A weak initiative and a response linked to the speaker's own preceding turn in a way that clearly ignores an intermediate	The teacher tells the child to look at a particular part of the model (<u>Look at this one</u>). The child continues her attempt to find another	4

	initiative posed by the partner	block in the pile and says: <u>No red ones</u>	
Expanded response with strong initiative ^{b,c}	A response to the partner's preceding turn and a strong initiative	The child places a block on the house. The teacher says: <u>Good, that's right. And then on top of that one?</u>	4
Self-linked strong initiative ^{b,c}	A strong initiative linked to the speaker's own preceding turn, such as a repetition or a simple reformulation. Typically occurs when the partner's intermediate utterance is not accepted as an adequate response	The teacher asks the child if the model and the house look equal. The child responds that she thinks so. The teacher says: <u>Are the roofs completely equal?</u>	4
Remote response	Turn that responds to a prior initiative posed by the partner earlier in the dialogue and is accepted as adequate	None of the dialogue turns in the current dataset were given this code	3
Closure	A turn that closes or proposes to close the current topic with no further initiative	<u>Great! That's it. Good job</u>	3
Expanded response with weak initiative ^c	A response to the partner's preceding turn and a weak initiative	The child tries to attach a block to the house. The teacher says: <u>I think it goes the other way around</u>	3

Self-linked weak initiative ^c	A weak initiative linked to the speaker's own preceding turn as a repetition or a simple reformulation. Typically occurs when the partner's intermediate utterance is not accepted as an adequate response	Teacher asks the child what more they need. The child replies that they need a white block. Teacher says: <i><u>I think we need black ones</u></i>	3
Pre-initiative ^b	Turn lacking substantial content but involving a strong initiative (such as a proposal) to open a new topic	None of the dialogue turns in the current dataset were given this code	3
Adequate response	A response linked to the partner's previous turn, which is accepted as satisfactory. No initiative	Teacher asks the child what comes next. The child responds by <i><u>pointing out the next step on the picture of the house model.</u></i> The teacher nods	2
Deferring question	A turn linked to the partner's preceding turn but postpones rather than provides an adequate response to that turn, e.g., requesting repetition, confirmation, or clarification	The child holds up a long block. The teacher asks: <i><u>Is that the right size?</u></i>	2
Inadequate response	A turn linked to the partner's preceding turn but treated as NOT satisfactory.	Teacher points at the model and asks the child what she wants to put next	

No initiative		to the blue one. The child responds <i><u>Red</u></i> . The teacher asks her to look closely at the model	1
Interrupted speech and unintelligible utterances	Such turns do not count in the dialogue and are not included in the participants' total number of turns		0

Note. In the IR analysis, the coding often depends on the dialogical context. Thus, the examples describe the context when needed, while the coded turn is italicized and underlined.

^a Of relevance only to the measure of dyadic asymmetry

^b Included in the S-coefficient

^c Included in the I-coefficient

Table 2

Teacher Directiveness in the Two Types of Dyads: The S-Coefficients of the IR Analysis and the Respect for Child’s Autonomy Subscale of the Qualitative Rating Scale

		PreschDyads	SpecEdDyads	<i>t</i>	<i>d</i>
S-coefficient	Mean	37.3%*	46.8%*	0.040*	1.23
	<i>SD</i>	6.7%	8.5%		
	Range	25.6% - 46.7%	33.6% - 57.8%		
Respect for autonomy	Mean	5.1	5.3	0.778	0.162
	<i>SD</i>	0.90	0.95		
	Range	4 - 6	4 - 7		

Note. *t* = independent samples t-test; *d* = Cohen’s d.

* $p < .05$.

Table 3

Child Engagement in the Two Types of Dyads: The Mean I-Coefficients of the IR Analysis and the Mean Scores on the Combined Agency and Persistence Subscales of the Qualitative Rating Scale

		PreschDyads	SpecEdDyads	<i>t</i>	<i>d</i>
I-coefficient	Mean	56.3%	40.0%	0.023*	-1.39
	<i>SD</i>	10.9%	12.5%		
	Range	40.7% - 70.7%	16.3% - 55.2%		
Agency and persistence	Mean	6.3	5.9	0.403	-0.463
	<i>SD</i>	0.49	1.21		
	Range	5.5 - 7	3.5 - 7		

Note. *t* = independent samples t-test; *d* = Cohen’s *d*.

* $p < .05$.

Supplementary Figure 1

Illustrations of the assigned construction task. The SpecEdDyads were provided with a concrete model of the house to copy (shown on the left). The PreschDyads were provided with a picture of the house to copy (shown on the right).

Supplementary Table 1

Transcription Conventions Applied to the Present Article (Modified From Linell, 2009, pp. 465-466) With Examples From the Current Dataset

Convention mark	Explanation	Example
[	Left brackets placed directly above each other mark the onset of overlapping talk	C: Three blue ones [how are they T: [Mm
=	Indicates that the utterances are latched onto each other without any interjacent pause	T: And then= C: =a yellow block
(2)	Numbers in parentheses mark timed pauses (here: 2 seconds)	Huh? (2) Which color?
(.)	A dot in parentheses marks a micro-pause	It looks almost equal (.) However, not quite
(xxx)	Denotes undecipherable talk	Now the rain can come (xxx)
(word)	Words in parentheses indicate that the transcriber is uncertain about the correct transcription	Then, we need to find (these three)
(())	Double parentheses signal nonverbal actions	And then? ((points at the picture))
(...)	Denotes that part of the transcript is excluded from the excerpt	T: No, what can we do to make them equal? (...) T: If you look at the sides of the house