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Perspective Taking: Training Procedures in Developmentally Typical Preschoolers. Different Intervention Methods and Their Effectiveness

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Abstract

Perspective taking, defined as the ability to take on the visual, cognitive, and affective perspective of others, is considered a highly adaptive skill, vital for the child's social, intellectual, and emotional development. This article provides a critical analysis of scientific psychological literature from 1995 to the present on the main methods of intervention used to promote perspective taking in developmentally typical preschool children (3–5 years). The focus is on different methodological approaches, and how the cognitive and emotional dimensions that make up this capacity have been developed through specific operational procedures, emphasizing their strengths and critical factors. In particular, it focuses on the intervention methods based on three major analytical perspectives, specifically the cognitive approach [Theory of Mind (ToM)], the behaviorist approach [Relational Frame Theory (RFT)], and finally, the socio-constructionist approach, are compared. Analysis of the collected data has revealed that despite some critical yet controversial factors, it is actually possible to teach and improve perspective taking in preschoolers through different methods, applicable in different contexts and dependent on the involvement of significant adults, such as parents and educators.

Keywords Perspective taking, Training, Preschoolers, Theory of mind, Emotional understanding

Human beings are able to mentally put themselves in the shoes of others and thus to imagine how others perceive, think, and emotionally experience the events of their own lives (Moll and Meltzoff 2011). The term perspective taking has been used to refer to the social-cognitive ability to assume another individual's perspective, to infer thoughts, emotions, and motivations, helping to give sense to the surrounding world (Carpendale and Lewis 2006; Moll and Meltzoff 2011; Sullivan et al. 2008). Taking various suggestions as a starting point (Abrahams 1979; Bonino et al. 1998; Fireman and Kose 2010), it is possible to consider this construct as a variable characterized by three independent components: cognitive, visual, and affective. This consideration is based on some evidence found in the literature. First of all, many authors have created tasks that could measure more than one component of perspective taking at the same time (Abrahams 1979; Kurdek and Rodgon 1975) or have otherwise analyzed and measured this construct focusing on one or two main components rather than all of them (Bonino et al. 1998; Harwood and Farrar 2006; Fireman and Kose 2010). Secondly, already the first researchers of perspective taking experienced moderate or absent correlations between the scores obtained by children in specific tasks for each component (Kitano et al. 1978; Kurdek and Rodgon 1975), demonstrating how it cannot therefore be regarded as a unitary construct. The common characteristic of all three dimensions is the capacity to put aside an egocentric position and take a different point of view: cognitive perspective taking refers to the ability to infer thoughts, motivations, and other

people's intentions, visual perspective taking refers to the ability to make inferences about how an object is seen by a person occupying a different spatial dimension (Moll and Meltzoff 2011; Moll and Tomasello 2006; Vogeley and Fink 2003) and affective perspective taking is the ability to understand the emotional states of other people, particularly when they differ from one's own and, according to some authors, it is the basis of empathy (Farrant et al. 2012; Harwood and Farrar 2006; Hinnant and O'Brien 2007; Smith 2006). Starting from the evidence often found in the literature regarding the difficulties in providing a clear definition of this construct, some specifications regarding the relationship (similarities and differences) between perspective taking and Theory of Mind seem to be appropriate. For many authors, perspective taking overlaps with the concept of Theory of Mind (Baron-Cohen 2001; Baron-Cohen et al. 1985; Eisenberg et al. 2001; Gopnik and Astington 1988; Wimmer and Perner 1983); for others, the term ToM is commonly used to define the cognitive dimension of perspective taking (Barnes-Holmes et al. 2004d); and still for others, perspective taking is one of the components of ToM (Galinsky et al. 2008). With regard to differences: Theory of Mind, referring to the understanding of one's and others' mental states (Self and Other), is a more global construct than perspective taking, specifically focused on the awareness of other people's mental states (Other). Therefore, Theory of Mind is more focused on cognitive aspects (beliefs and desires), compared to perspective taking which is a multidimensional construct, which refers to cognitive, emotional, and visual ones. From the literature, it has emerged that perspective taking plays an adaptive role and is fundamental to the development of intellectual and social abilities (Jenkins and Astington 2000; Weil et al. 2011). The research we reviewed showed that children more adept in perspective-taking tasks are also more competent from an emotional (Dunn and Hughes 2001) and empathetic point of view (Baron-Cohen 2001) and are also very good at interpreting the main social indicators (Downs and Smith 2004). These children are also more adept at understanding the motivations of characters in stories (Baron-Cohen 2001) and distinguishing appearance from reality (Flavell 2004); they manifest more prosocial and altruistic behaviors (Carlo et al. 2010; Dunn and Hughes 2001; Hinnant and O'Brien 2007) and find it easier to establish friendship bonds than peers who are less competent in perspective taking (Klin et al. 2000). On the basis of these considerations, being able to teach perspective taking in early development and, in particular, finding more effective ways of doing so are very significant objectives from an educational point of view. An analysis of the literature showed that various authors have developed different specific interventions aimed at increasing children's perspective taking ability.

Method

Aim

The aim of this review was to carry out a critical analysis of the existing literature on intervention procedures designed to promote perspective taking ability in developmentally typical preschoolers in order to outline a sort of "ideal training" that could effectively promote the ability of perspective taking in these children. More specifically, the main objective was to systematize the different analyzed contributions on the basis of methodological approaches, specific operational procedures and methods and outcomes, emphasizing the strengths, critical aspects, and effectiveness of each intervention. The review examined the scientific literature

on perspective taking in preschoolers aged from 3 to 5 years, the period during which perspective taking emerges (Baron-Cohen 2001; Carpendale and Chandler 1996; Wellman 2002; Wellman et al. 2001; Wimmer and Perner 1983).

Search Parameters

In order to ensure a more systematic analysis, specific bibliographic research strategies were used. The first step involved consultation of the following electronic databases: EBSCO (Psychology and Behavioral Sciences Collection), PsycINFO, PsycARTICLES, SCOPUS, and Science Direct. Because numerous terms have been applied to perspective taking in Psychology, and in recognition of the multi-dimensionality of the construct of perspective taking, it was necessary to use multiple English keywords. These were: perspective taking, Theory of Mind, role taking, mentalizing, empathy, cognitive empathy, emotion, and social understanding, in combination with words that indicated any form of teaching including the terms training, intervention, and treatment or verb forms teach, assess, improve, promote, educated in various versions, and conjugated with appropriate nouns. The search for all these terms also included the words children or preschooler. Within the different combinations of these multiple keywords, those which produced more useful researches were:

“Perspective taking, training, children”, “Theory of mind, training, children”, “Perspective taking, intervention, children”, and “Theory of mind, intervention, children”. During prior consultation of databases, numerous scientific journals related to psychological development, both international (e.g., Child Development, Educational Psychology Review, Electronic Journal of Research in Educational Psychology, Infant and Child Development, Journal of Cognition and Development) and Italian (Psicologia Clinica dello Sviluppo, Giornale Italiano di Psicologia) had been found, together with textbooks. We specify that we consulted books because of the presence of empirical studies inside them (Hülksen 2001; Ornaghi and Grazzani Gavazzi 2009). Subsequent reading of the abstracts of articles and book chapters was used to establish whether the material satisfied the inclusion criteria previously established. The references of these contributions were used to conduct a search by title and author within electronic databases and major web search engines. Given the scope of the research methods and the sources used, the studies included in this review can be considered representative of the procedures used in this field, even though our review could not be exhaustive. In the overall search, 80 empirical articles were included.

Inclusion and Exclusion Criteria

The quantity of literature on perspective taking necessitated the adoption of strict inclusion and exclusion criteria. We decided to apply the criteria in the following order. First of all, although there are intervention procedures dating from the late 1970s, this review considered only contributions published between 1995 and 2013. So we excluded previous researches (Bennett and Hiscock 1993; Chalmers and Townsend 1990; Cox 1977; Silvern et al. 1979). (11 excluded) It is now agreed that children’s perspective taking reaches maturity around 4–5 years (Wellman et al. 2001; Wellman and Liu 2004), so an additional criterion was that subjects belonged to the preschool age group (3–5 years). So we excluded studies in which participants were

younger (Meltzoff and Brooks 2008) or older (Goldstein and Winner 2012; Grizenko et al. 2000). (10 excluded) The developmental trajectory of perspective taking is not the same in clinical samples; numerous studies have shown considerable delay in the development of perspective taking in children suffering from various pathologies, together with the need to use tools that are specific to each disorder (Brambring and Asbrock 2010; Hamilton et al. 2009; Nader-Grosbois et al. 2013; Peterson et al. 2005). We therefore included only training conducted on developmentally typical children, excluding studies targeting children who demonstrated any type of problem (physical, cognitive, emotional, behavioral, etc.), e.g., deafness (Wellman and Peterson 2013) or Autistic Spectrum Disorders (Begeer et al. 2011; Charlop-Christy and Daneshvar 2003; Fisher and Happé 2005). (17 excluded) From the literature published within this period, we have selected only empirical studies containing descriptions of and references to procedures and methods including a phase of intervention aimed specifically at the promotion of competence in perspective taking. So we excluded all studies focused on the promotion of abilities near to perspective taking like emotion understanding (Pons et al. 2002) or emotional knowledge and social problem solving (Ştefan and Miclea 2013). (4 excluded) Studies were also required to have used a pretest/training/posttest protocol and to have carried out two measurements of the dependent variable, at baseline and after the intervention. We did not consider publications based on different experimental procedures (Koyasu 1997; Webster-Stratton and Reid 2003). (3 excluded) The application of all these criteria provided 35 eligible publications: 25 research contributions, three reviews, and seven articles.

Types of Training

Accepting the multidimensionality of the construct of perspective taking, it is possible to discern within the literature the use of specific procedures for training and testing each of the individual components. It is interesting to note that there were numerous studies of cognitive perspective taking (22), but many fewer on affective (2) and cognitive-affective (4) perspective taking, and none specifically on visual perspective taking, although there were two studies in which the perceptual aspect of perspective taking was analyzed together with the cognitive (Knoll and Charman 2000) and cognitive-affective dimensions (Cigala and Fangareggi 2011). It was also possible to identify different types of intervention in relation to different theoretical approaches. The main ones were a cognitive perspective [Theory of Mind; ToM; 22 studies] and a behavioral one [Relational Frame Theory (RFT); four studies]. Another theoretical approach was based on a socio-constructivist matrix in which the affective component of perspective taking, defined in terms of emotional understanding and considered as a function of socialization and learning in everyday life contexts, was the focus of investigation (six studies; Table 1).

Interventions to Promote Cognitive Perspective Taking

Cognitive Approach (Theory of Mind)

The ToM approach resulted in interventions based mainly on the promotion of children's development of the understanding of thoughts and beliefs of others (defined also as levels 4 and 5 of perspective taking), and the proper cognitive component (McHugh et al. 2004a; Wellman et al. 2001). These interventions mainly aimed to improve children's performances on false belief comprehension (Wimmer and Perner 1983) and on the appearance-reality distinction (Flavell 1986, 1993). False belief tasks involve predicting the thoughts or actions of someone whose beliefs about the world are mistaken (Amsterlaw and Wellman 2006) and assess a child's ability to reason about the behavioral consequences of holding a mistaken belief (Milligan et al. 2007). The principally used false belief tasks are the location change task (Wimmer and Perner 1983) in which children have to predict where a character will search for an object (e.g., doll) whose location is changed (from a cot to a trunk) during his absence and the unexpected content task (Perner et al. 1987) in which children are shown a familiar container (e.g., candy box) that holds unexpected contents (e.g., pencils) and are asked to predict what a naive observer will think is inside (Amsterlaw and Wellman 2006). As children grow older, more complex false belief tasks can be used to assess Theory of Mind. The traditional change of location and the unexpected content tasks measure understanding of first order false belief, which is understanding one person's own belief. Second-order false belief involves instead a person's belief about someone else's belief (Perner and Wimmer 1985). Developmental psychologists have studied children's understanding of the appearance-reality distinction because this ability serves critical functions in children's adaptation to their social and physical environments (Sapp et al. 2000). The appearance-reality tasks mainly used deceptive objects (Flavell 1986). In these tasks, children were presented with a deceptive object whose appearance belied its true nature (Miller 2006), (e.g., an imitation rock made out of a sponge-like material or a box that looked like a leather-bound book or an imitation pencil made out of rubber) and were then asked to identify the real and the apparent identity of the object (Abelev and Markman 2006; Melot and Angeard 2003). Within this approach, it was possible to distinguish two different types of intervention: training studies (19 studies) and microgenetic studies (three studies) (Table 1).

Training Studies

One of the most effective methods available to researchers for evaluating how it is possible to promote perspective taking is research that relies on specific procedures, referred to as "training studies". The advantage of this design is that it is possible to establish a direct causal relationship between a particular teaching experience and subsequent performances on certain tasks (Knoll and Charman 2000; Lohmann and Tomasello 2003; Miller 2006).

Table 1 Main intervention studies' characteristics

Authors	Theoretical approach	Dimension of perspective taking	Type of intervention	Intervention			
				Duration	Type	Activities	Procedure
Appleton and Reddy 1996	ToM	Cognitive	Training	2 weeks	Group	Perspective-taking tasks	Conversation + Feedback and explanations
Slaughter and Gopnik (I) 1996	ToM	Cognitive	Training	2 weeks	Individual	Perspective-taking tasks	Evidence-based feedback
Slaughter and Gopnik (II) 1996	ToM	Cognitive	Training	2 weeks	Individual	Perspective-taking tasks	Evidence-based feedback
Slaughter 1998	ToM	Cognitive	Training	2-3 weeks	Individual	Perspective-taking tasks	Evidence-based feedback
Clements et al. 2000	ToM	Cognitive	Training	N.A.	Individual	Perspective-taking tasks	Feedback and explanations
Knoll and Charman (I) 2000	ToM	Cognitive	Training	2 weeks	Group 3-4 children	Perspective-taking tasks	Discussion and reflections + Feedback and explanations
Knoll and Charman (II) 2000	ToM	Cognitive + Visual	Training	2 weeks	Group 3-4 children	Perspective-taking tasks	Discussion and reflections + Feedback and explanations
Bames-Holmes 2001	RFT	Cognitive	Training	Some weeks	Individual	Deictic frame's protocol	Feedback
Hültsken 2001	ToM	Cognitive	Training	2 weeks	Individual	Perspective-taking tasks	Evidence-based feedback
Wahl 2001	ToM	Cognitive	Microgenetic	10 weeks	Individual	Perspective-taking tasks	Feedback
Guajardo and Watson (I) 2002	ToM	Cognitive	Training	5 weeks	Group 3-4 children	Story telling	Discussion and drama
Guajardo and Watson (II) 2002	ToM	Cognitive	Training	5 weeks	Individual	Story telling	Discussion and drama
Pillow et al. 2002	ToM	Cognitive	Training	1 day	Individual	Perspective-taking tasks	Explanatory conversation
Hale and Tager-Flusberg 2003	ToM	Cognitive	Training	2 weeks	Individual	Story telling	Sentential complements + Feedback and explanations

Table 1 (continued)

Authors	Theoretical approach	Dimension of perspective taking	Type of intervention	Intervention			
				Duration	Type	Activities	Procedure
Melot and Angeard 2003	ToM	Cognitive	Training	2 weeks	Individual	Perspective-taking tasks	Feedback and explanations
Lohmann and Tomasello 2003	ToM	Cognitive	Training	2 weeks	Individual	Story telling	Sentential complements + Feedback
McHugh et al. 2003	RFT	Cognitive	Training	N.A.	Individual	Deictic frame's protocol	Feedback
Peskin and Astington 2004	ToM	Cognitive	Training	4 weeks	Group	Story telling	–
Amsterlaw and Wellman 2006	ToM	Cognitive	Microgenetic	7 weeks	Individual	Perspective-taking tasks	Feedback and explanations
Flynn 2006	ToM	Cognitive	Microgenetic	6 months	Individual	Perspective-taking tasks	–
Omighi and Grazzani Gavazzi 2009	ToM + Socio-constructivist	Cognitive + Affective	Training	8 weeks	Group 5–6 children	Story telling	Discussion (launch technique)
Tenenbaum et al. 2008	Socio-constructivist	Affective	Training	4 weeks	Individual	Story telling	Explanatory conversation
Esteban et al. 2010	ToM + Socio-constructivist	Cognitive + Affective	Training	2 weeks	Group	Story telling	Discussion and reflections
Cigala and Fangareggi 2011	ToM + Socio-constructivist	Cognitive, Visual, Affective	Training	9 days	Group	Story telling	Discussion and drawing and drama
Davlin et al. 2011	RFT	Cognitive	Training	Some weeks	Individual	Deictic frame's protocol	Feedback
Grazzani Gavazzi and Omighi 2011	Socio-constructivist	Affective	Training	8 weeks	Group 6–7 children	Story telling	Discussion (launch technique)
Omighi et al. 2011	ToM + Socio-constructivist	Cognitive + Affective	Training	8 weeks	Group 5–6 children	Story telling	Discussion (launch technique)
Weil et al. 2011	RFT	Cognitive	Training	Some weeks	Individual	Deictic frame's protocol	Feedback

N.A. Not available data

Participants The number of participants considered in the studies varied from a minimum of 22 children (Knoll and Charman 2000) to a maximum of 138 (Lohmann and Tomasello 2003). In reference to age, all studies considered in this review investigated preschoolers (3–5 years), but we have distinguished between those which focused their attention on only one age, in particular, 3 years old (Appleton and Reddy 1996; Knoll and Charman 2000; Lohmann and Tomasello 2003) and 4 years old (Peskin and Astington 2004), and those which have extended the investigation to the entire age group (Ornaghi and Grazzani Gavazzi 2009), as well as the majority of the authors who analyzed children of two adjoining cohorts, either 3 or 4 years old (Clements et al. 2000; Esteban et al. 2010; Guajardo and Watson 2002; Hale and Tager Flusberg 2003; Melot and Angeard 2003; Ornaghi et al. 2011; Slaughter 1998; Slaughter and Gopnik 1996) or 4–5 years old (Cigala and Fangareggi 2011; Pillow et al. 2002). Most of the studies were conducted on European children, from England (Appleton and Reddy 1996; Clements et al. 2000; Knoll and Charman 2000), Italy (Cigala and Fangareggi 2011; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011), Germany (Hülken 2001; Lohmann and Tomasello 2003), France (Melot and Angeard 2003), and Spain (Esteban et al. 2010), while the remainder involved American preschoolers. It's important to underline the necessity to select participants by means of specific parameters. The unsatisfactory results achieved by early studies of procedures designed to promote perspective taking (Flavell et al. 1981; Flavell et al. 1986; Taylor and Hort 1990) were, in fact, attributed to the lack of adequate inclusion criteria for choosing participants (Clements et al. 2000; Knoll and Charman 2000). So, later studies established different criteria for a preliminary selection of the samples. The main inclusion criterion related to the baseline level of perspective taking was to make sure that children did not already possess the abilities they should have acquired during the intervention (Knoll and Charman 2000). Some studies therefore excluded children who were already skilled in perspective taking in the pretest phase, in order to avoid the masking of potential positive effects. In some researches, preschoolers were included on the basis of incorrect responses on all perspective-taking tasks presented (Knoll and Charman 2000; Lohmann and Tomasello 2003), while in others, the presence of errors on a significant proportion was sufficient for inclusion (Guajardo and Watson 2002; Hale and Tager-Flusberg 2003; Melot and Angeard 2003). Preliminary questions were sometimes used to establish children's understanding of perspective-taking tasks in terms of both language and content, prior to the administration of the pretest (Peskin and Astington 2004; Slaughter 1998; Slaughter and Gopnik 1996).

Procedures and Methods The children were assigned to an experimental condition, either a training condition or a control condition, in order to obtain balanced groups in terms of number, age, and gender. It is interesting to note that the number of experimental conditions varied across studies; the majority used one or two experimental conditions, and only a small number used three (Hale and Tager-Flusberg 2003; Lohmann and Tomasello 2003). The use of multiple experimental groups depends on the researchers' willingness to compare different intervention procedures in order to identify the most effective one. In some cases, the creation of more than one group was motivated by teaching every group a specific perspective-taking task (usually false belief and appearance-reality; Hülken 2001; Knoll and Charman 2000; Melot and Angeard 2003; Slaughter

1998; Slaughter and Gopnik 1996), while in other studies, every group was exposed to different activities, in order to identify which was the best way to teach children to pass a specific task (Clements et al. 2000; Hale and Tager-Flusberg 2003; Pillow et al. 2002). All the studies used some procedures with children who did not receive training (control condition); in some researches, they were not involved in any activities (Cigala and Fangareggi 2011; Guajardo and Watson 2002; Pillow et al. 2002), in others, they were assigned tasks related to concepts other than perspective taking (e.g., numerical conservation tasks; Appleton and Reddy 1996; Hülksen 2001; Slaughter 1998; Slaughter and Gopnik 1996). In the interventions based on listening to stories followed by discussion, children in the control groups listened to the stories but did not participate in the discussion (Esteban et al. 2010; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011). In the studies focused on the presentation of perspective-taking tasks during training, control groups were subjected to other type of perspective-taking tasks, different from pretest and posttest (Clements et al. 2000; Lohmann and Tomasello 2003; Melot and Angeard 2003; Peskin and Astington 2004), and in just one case, no control group was used (Hale and Tager-Flusberg 2003). Studies generally used the same instruments in pretest and posttest, although similar but not the same tests were sometimes used to avoid familiarization effects. The posttest was usually conducted in a different session, between 1 and 5 days after the last training intervention session was administered. Only one study (Pillow et al. 2002) administered both the training phase and posttest on the same day. As regards the management of the intervention, in some studies (Hale and Tager-Flusberg 2003; Lohmann and Tomasello 2003), the experimenter typically took the lead in the intervention. There were also studies in which training was conducted directly by teachers, following appropriate instruction by the experimenter (Esteban et al. 2010) or the specific procedure administered by the researchers was supplemented by training provided by teachers in the classroom and by parents at home in order to promote the persistence of the newly acquired skills and their generalization to different contexts (Peskin and Astington 2004). The total duration of the intervention, generally related to the number and the frequency of the sessions, varied between 2 and 4 weeks, although there were cases in which it was reduced to a single day (Pillow et al. 2002) or extended over 2 months (Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011). Usually, one or two sessions were conducted, once or twice a week, but in some cases, training was daily (Peskin and Astington 2004). The number of tasks administered in each session also varied from one (Hülksen 2001; Slaughter 1998; Slaughter and Gopnik 1996) to five (Pillow et al. 2002). The average session duration was 15–20 min, depending on the nature of the proposed activity. Some studies planned individual sessions of training (Appleton and Reddy 1996; Hülksen 2001; Pillow et al. 2002; Slaughter 1998; Slaughter and Gopnik 1996); other studies preferred group sessions (Knoll and Charman 2000; Peskin and Astington 2004; Ornaghi and Grazzani Gavazzi 2009; Esteban et al. 2010; Ornaghi et al. 2011) and other ones used both methodologies (Guajardo and Watson 2002). Another difference across studies was the choice of the setting; some researchers, in fact, conducted the intervention in laboratory conditions (Appleton and Reddy 1996; Hülksen 2001; Pillow et al. 2002; Slaughter 1998; Slaughter and Gopnik 1996), while others preferred instead the naturalistic context of the kindergarten (Cigala and Fangareggi 2011; Guajardo and Watson 2002; Peskin and Astington 2004; Ornaghi and Grazzani Gavazzi 2009; Esteban et al. 2010; Ornaghi et al. 2011).

Finally, of all the intervention studies analyzed, only three conducted a follow-up after the posttest phase. The timing of follow-up assessments varied: 2 weeks (Appleton and Reddy 1996), 1 month (Guajardo and Watson 2002), and 6 months (Cigala and Fangareggi 2011).

Training Variables A comprehensive analysis of the procedures used to promote cognitive perspective taking showed that the training variables varied considerably. Some studies focused on presenting false belief and appearance-reality distinction tasks to children on the concepts of belief and desire (Hülksen 2001; Slaughter and Gopnik 1996), deceptive objects (Clements et al. 2000; Melot and Angeard 2003; Slaughter 1998), or unexpected transfer (Clements et al. 2000; Melot and Angeard 2003), using modified versions of those shown during the pretest and posttest phases. These tasks were accompanied by detailed explanations (Clements et al. 2000; Melot and Angeard 2003) or followed by delivery of evidence-based feedback (Hülksen 2001; Slaughter 1998; Slaughter and Gopnik 1996). In parallel, training programs using discursive interaction as an intervention instrument were developed; these studies made language central to the promotion of perspective taking (Kloo and Perner 2008; Miller 2006; Milligan et al. 2007). Interventions have involved language in various different ways; some have engaged children in reflection and group discussions about the actions or thoughts of characters involved in short films about the unexpected transfer of objects (Appleton and Reddy 1996), while others have involved reading a book or using puppets (Knoll and Charman 2000). Recently, there has been considerable interest in the question of which aspect of language (syntactic, semantic, or pragmatic) best facilitates the development of perspective taking in children. Three fundamental research hypotheses can be identified, all centered on the relationship between cognitive perspective taking and a specific linguistic competence. Authors who have taken the syntactic approach (Astington and Jenkins 1999; de Villiers and de Villiers 2000; de Villiers and Pyers 1997, 2002) suggest that the fundamental prerequisite for the acquisition of perspective taking in children lies in syntax, i.e., the grammatical form in which mental states are described to children. Various aspects of syntax have been investigated, including basic forms such as word order (Astington and Jenkins 1999), and more complex constructions such as relative clauses (Smith et al. 2003) and sentential complements (de Villiers and de Villiers 2000; de Villiers and Pyers 2002; Hale and Tager-Flusberg 2003; Lohmann and Tomasello 2003). Other studies have expressed concerns about the importance attributed to syntax and claim that syntactical competence is not the only linguistic skill useful in the promotion of cognitive perspective taking (Ruffman et al. 2003; Slade and Ruffman 2005). The semantic hypothesis holds that learning and mastering terms related to mental states (think, believe, and know) plays an important role in the development of perspective-taking competence (Astington 2000; Bartsch and Wellman 1995). These terms even defined “psychological lexicon” or “metacognitive lexicon” and have been given to words and phrases which refer to one’s own and other’s mental states (Lecce and Pagnin 2007; Ornaghi and Grazzani Gavazzi 2009). A series of longitudinal studies has shown that the use, by mothers or teachers, of a psychological lexicon when reading illustrated stories to children, appears to be associated with the children’s success on perspective-taking tasks (Bertsch et al. 2009; Esteban et al. 2008; Symons et al. 2005). More specifically, it seems that the frequency and variety of metacognitive terms present in stories is tied to children’s performance on false belief tasks (Adrián et al. 2005,

2007). Evidence such as this was used to develop intervention procedures to investigate whether systematic exposure to stories containing several mental terms facilitates the development of cognitive perspective taking and the understanding of the meaning of those terms (Peskin and Astington 2004). Other studies have supplemented the reading of stories in which the thoughts and feelings of the characters were emphasized through the use of a metacognitive lexicon, by engaging children in adult-led group discussions to encourage their active participation (Cigala and Fangareggi 2011; Esteban et al. 2010; Guajardo and Watson 2002; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011). These interventions followed the pragmatic or “conversational” approach (Hutto 2007; Siegal 2008) which proposes that the key to perspective taking is the pragmatic aspect of children’s discursive linguistic interactions. According to the pragmatic perspective, it is through the exchange of views that takes place in discourse with other people that children come to understand that individuals possess a subjective view of the world, based on their own experiences, and that this may or may not be shared by others (Harris 1996, 2008; Symons 2004; Turnbull and Carpendale 1999; Turnbull et al. 2009; Veneziano and Hudelot 2006). This pragmatic interpretation is connected to the cultural approach of Nelson (2005, 2007), which emphasized that participating in conversations about feelings and thoughts in which the interlocutors focus on each other’s emotional and mental states (Dunn et al. 2000) promoted perspective taking in children (Carpendale and Lewis 2004, 2006; Hughes and Leekam 2004). Some intervention studies into this approach (Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011) involved children in language games like the “wordlaunching” technique (Ciceri 2001)¹ and included various target terms related to mental states in conversations with the aim of encouraging children to use these terms actively, instead of just listening passively to others’ use of them. In other studies (Esteban et al. 2010), interactions between children were promoted using questions posed during the narration of a story. Finally, in two other studies (Cigala and Fangareggi 2011; Guajardo and Watson 2002), conversations were stimulated and led first through discussions and reflections and then with related activities, such as drama and drawings. Children were encouraged to imagine the main characters from the stories they had heard and to put themselves in each character’s position. These authors pointed out that the choice of these particular tasks (discussion, reflections, drama, and drawing) had a double significance: they were known to the children because they are commonly used in kindergarten and they also allowed the children to decentralize themselves and to assume roles and identities very different from their own.

Effectiveness of Training and Discussion A critical analysis of the results of individual programs showed that some intervention techniques were more effective than others. If we consider training studies based on the provision of feedback to the child, some authors (Hülksen 2001; Slaughter 1998; Slaughter and Gopnik 1996) concluded that showing children concrete evidence that justifies and explains the correctness or otherwise of their responses represents the most effective way to increase their skill in cognitive perspective taking. The effectiveness of the feedback technique is also demonstrated by the generalization of the concepts taught during training in nonspecifically trained tasks, indicating improved conceptual understanding (Hülksen 2001; Slaughter 1998; Slaughter and Gopnik 1996). This conclusion was challenged by some researchers (Clements et al. 2000; Knoll and Charman 2000), who firstly pointed out that the tasks used during training and posttest

were very similar in format and structure, suggesting that claims of generalized benefits from interventions should be thoroughly investigated. Secondly, there was lack of information on the performance of these tasks in the pretest, such that it is not possible to exclude the presence of a preliminary knowledge level in these areas in the group of subjects participating in the training. Studies which provided children with a detailed explanation of the reasons for the correctness or other wise of their responses, in spite of simply giving feedback about the correctness of their answers (Appleton and Reddy 1996; Clements et al.2000; Hale and Tager-Flusberg 2003; Melot and Angeard 2003) also produced improvements in cognitive perspective taking. The authors concluded that this method allowed children to rework their knowledge from other peoples' perspective. This account is important because it addresses the underlying mechanisms of feedback interventions. During the training children who received feedback followed by explanations were informed not just whether, but why their responses were correct or incorrect. When a child answers correctly the feedback does not introduce new concepts; it merely provides explicit confirmation of concepts the child has already mastered and used to solve the task. However, when the child replies incorrectly the explanation that follows the feedback provides new information. It appears that what makes this method effective is not the presentation of new concepts but the reprocessing of metacognitive experiences from the feedback; this allows the child to generalize knowledge of mental functioning and acquire new insights (Melot and Angeard 2003). Evidence of generalization effects of training emerged in some studies (Clements et al. 2000; Melot and Angeard 2003), where the intervention directly affected performance on the trained task, and where the training had an indirect effect on performance of a task which had not been specifically trained for. Confirmation of the effectiveness of feedback followed by explanations is also provided by studies that looked at discursive language interactions (Appleton and Reddy 1996; Hale and Tager-Flusberg 2003). In Appleton and Reddy's intervention study (1996), children in the experimental group showed better performances on cognitive perspective-taking tasks posttest and at a 2-week follow-up, demonstrating a generalization effect with this training method. During conversations with individual preschoolers about false belief tasks, the researchers avoided the use of negative feedback, only confirming interpretations and providing explanations, emphasizing positive processing of answers by the children. These results confirmed the hypothesis of Slaughter and Gopnik (1996) that positive feedback is more effective than corrective feedback, as the highest scores were obtained by children who had been provided with positive feedback. Unlike previous studies, Knoll and Charman's (2000) study showed that combining both feedback presentation methods (positive and corrective) after reading stories was effective in helping children to solve perspective-taking tasks, but they did not find any generalization effect. Based on the evidence of Wellman and colleagues (Bartsch and Wellman 1995; Wellman and Lagattuta 2004) that the early production of psychological explanations is one of the main predictors of subsequent understanding of false belief, Pillow et al. (2002) showed that the effort made by children to provide an explanation for their own and others' beliefs played an important role in promoting perspective taking. However, the authors (Pillow et al. 2002) stated that the shortness of the training period, a single encounter, and the conduction of post test assessments in the same session, as well as the lack of a follow-up evaluation, makes it probable that the results achieved were due to a momentary insight rather than lasting learning. The studies which intended to

identify which of the linguistic components could have a greater influence on the ability of perspective taking, demonstrated how presenting to the children tasks containing linguistic forms such as the sentential complements, is a sufficient, but not necessary procedure for the improvement of perspective taking in preschoolers (Miller 2006). In fact, these interventions, although they did produce improvements in perspective taking, have been less effective than procedures in which the phrases presented to the children contained sentential complements and other linguistic forms (Hale and Tager-Flusberg 2003; Lohmann and Tomasello 2003). Peskin and Astington (2004) showed that presenting children with illustrated stories which had been modified to include numerous metacognitive terms was less effective than the presentation of stories that lacked metacognitive terms and in which mental states therefore remained implicit. The authors suggested that this outcome might have resulted from the control group children's acquisition of a deeper understanding of others, because they were required to actively construct their own interpretation of the stories, as the characters' mental states were only presented in an implicit form. Some authors (Ornaghi and Grazzani Gavazzi 2009) have suggested that these results can be interpreted as an indication that passively listening to stories containing a mental lexicon is not sufficient for improving understanding and accelerating the development of cognitive perspective taking. These authors suggested that to practice these terms and actively using them in everyday conversations with adults and peers, was what increased understanding of the internal states and the psychological lexicon. This hypothesis has received support from several intervention studies with kindergarten children which were based on linguistic interaction among peers after storytelling, in which the experimenter emphasized the use of a psychological lexicon (Cigala and Fangareggi 2011; Esteban et al. 2010; Guajardo and Watson 2002; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011). The study of Esteban et al. (2010) found this training method to be partially effective; at the posttest children obtained higher scores on only one of the two false belief stories presented, the one involving unexpected transfer. The authors attributed these results to the structure and the content of the story itself and suggested that different stories could promote different skills in children, according to the wishes, beliefs and emotions of the characters. From the studies of Ornaghi and colleagues (Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011) emerged that positive performances in perspective-taking tasks have been obtained by 4-year-old children, but not by those of 3- and 5-year olds. This result, according to the authors, does not represent a limitation of the intervention; rather it confirms that this is the critical age for the development of this ability (Wellman et al. 2001). The lack of a significant training effect in 5-year-old children is attributable to a ceiling effect; these children had already mastered first order false belief tasks at pretest. The lack of training effect in 3-year-old children was attributed to immaturity. Conversational activities such as reflection, drawing and drama have been shown to facilitate an increase in perspective taking ability (Cigala and Fangareggi 2011; Guajardo and Watson 2002). Cigala and Fangareggi (2011) showed that skills acquired during intervention can be maintained, using a follow-up assessment conducted 6 months after the posttest. These authors emphasized that the effectiveness of their procedure depended on the use of activities and methods with extremely high "ecological validity" for the preschoolers in the context of kindergarten education. It is interesting to note that, unlike previous studies, the study of Guajardo and Watson (2002), which included both individual and group training, produced positive

effects only after one-to-one conversations with the experimenter. The authors identified some possible causes of the unsatisfactory results of the group training: the inclusion criteria did not include assigning to the experimental group only children who had obtained poor scores in preliminary tests of perspective taking. The group discussion may not have allowed all the children the same opportunity to express their ideas and may have been a very distracting environment for children of that age, and the use of many different perspective-taking tasks, in order to obtain more information, may have been redundant and caused confusion. Despite the positive effects of the individual training, the authors pointed out some weaknesses of the procedure: firstly, the control group did not discuss neutral topics, therefore it was not possible to establish whether the effectiveness of the intervention was due to the discussion of mental states or simply the exchange of opinions, regardless of content. Secondly, a 1 month follow-up failed to demonstrate persistence of the acquired skills.

Microgenetic Studies

The other type of intervention based on the ToM approach which is used to promote perspective taking in preschoolers is microgenetic studies. A microgenetic study has several fundamental characteristics: the unit of analysis is the individual; observations are conducted before, during and after (rather than only before and after) a period of rapid change in a developmental domain and at a very high frequency, in other words at intervals considerably shorter than the time span over which the developmental change of interest usually occurs; the observed behaviors are analyzed both quantitatively and qualitatively, with the aim of clarifying the underlying processes of change (Flynn et al. 2004; Miller and Coyle 1999). Microgenetic studies differ from training studies in several important aspects. Firstly, while training studies are focused on establishing the degree to which it is possible to directly teach children new perspective taking skills, the microgenetic approach is more interested in evaluating how children can build a more sophisticated understanding of others (Siegler 1995). In addition, many training studies evaluate changes in over a relatively short period of time, whereas microgenetic studies describe changes over a wider period, often several months (Amsterlaw and Wellman 2006). Finally, training studies are generally characterized by a pretest/intervention/posttest design, without ongoing valuation of changes during training. This provides only basic information about the conditions in which the changes have occurred and, unlike microgenetic research, does not permit a detailed description of how these changes between the pre and posttest phases were achieved (Kuhn 1995; Miller and Coyle 1999). Through our research we found three microgenetic studies aimed at the promotion of perspective taking. Flynn's microgenetic study (2006) of perspective taking in preschoolers focused on the characteristics and processes underlying the transition to understanding false belief, with the aim of determining whether this ability develops gradually, through small, progressive improvements, or suddenly and quickly. An analysis of the answers given by children to multiple false belief and appearance-reality tests revealed that the children initially explained the behavior of others on the basis of their factual knowledge, then went through a period of confusion in which they were unable provide an explanation, before reaching the stage where they were able to use false beliefs to explain the behavior of others. Using the same experimental procedure as a previous study (Flynn et al. 2004), 42 3-year-old English preschoolers were exposed to eight cognitive perspective-taking tasks during six microgenetic sessions over a 6-month period; no significant improvements in the

children's performance were observed. These results suggested that simple exposure to false belief tasks, even in over a relatively short period of time, might not be effective in promoting the development of cognitive perspective taking. The same unsatisfactory results were obtained when children were only provided with feedback on their performances (Wahl 2001). The answers given by 36 3-year-old children in 10 weekly sessions to 60 false belief and appearance-reality tasks were analyzed. In the initial task of each session the children received explicit feedback about their solutions in the form of confirmation of right answers and correction of erroneous ones. For each task that required a feedback a new task was given without feedback that determined the level of understanding of the child's perspective taking. The results showed that repeated exposure to the tasks, followed only by explicit feedback, did not lead to improvements in preschoolers' perspective taking. Drawing on this research Amsterlaw and Wellman (2006) applied the microgenetic method to the promotion of perspective taking, both through the use of feedback and providing explanations of the tasks; they used the standard false belief paradigm throughout the study. Over a period of seven consecutive weeks a group of 36 3-year-old American children were presented with 24 tasks in which they were asked to predict the result of each test. The experimenter provided implicit feedback about their predictions and the children were asked to explain the events of the false belief task. The sample was divided into two experimental groups which were differentiated by session length (12 two-test sessions vs. six four-test sessions) and the frequency with which the children were required to provide explanations (after all the tests vs. after half the tests). Only the first experimental group (more shorter sessions and more frequent requests for explanations) showed improvements in perspective taking, an effect the authors attributed to the differences in the structure of the "training" or "operational" phase, suggesting that teaching was more effective if distributed over a larger period of time and when children were required to provide an explanation after each test. It is therefore possible to underline how an ideal microgenetic research allows researchers to regularly and continuously evaluate the developmental changes in children's skills, combining it with experiences that promote these developmental changes under investigation (Amsterlaw and Wellman 2006).

Behavioral Approach: Relational Frame Theory

The recently developed RFT perspective (Hayes et al. 2001), considers perspective taking as an important behavior, necessary to the development of appropriate social skills, and holds that it can be taught by specific procedures borrowed from the behaviorist approach (Gould et al. 2011; Weil et al. 2011). According to RFT, the development of perspective taking is reflected in a progressive increase in the ability to answer questions correctly about relational stimuli defined in a deictic frame, that describe a comparison between two different points of view (Barnes-Holmes et al. 2001; Barnes-Holmes et al. 2004c; McHugh et al. 2004b). The term 'deictic' refers to a heterogeneous collection of linguistic forms that can only be understood by reference to some of the contextual components of their production, not defined by formal characteristics but related to an individual's (usually the speaker's) perspective. Proponents of RFT claim that three different classes of relational stimuli are crucial to the development of perspective taking skills: interpersonal, spatial and temporal. Interpersonal deixis refers to the communicating participants, which are the speaker and the listener (I-YOU). Spatial deixis refers to expressions describing the speaker's location during the act of communicating

(HERE–THERE), and temporal deixis refers to expressions describing the time of the communication using temporal adverbs (NOW–THEN) (Barnes-Holmes et al. 2001; 2004d). Mastery of these relationships implies the ability to vary one’s perspective in both spatial and temporal dimensions. Children learn the distinction between these relational stimuli through

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daily exchanges in which they are invited to talk about the perspective of one individual and compare it with another. During the course of everyday interactions, significant adults shape the children’s responses, often unconsciously, through hints (prompting) or reinforcements in the form of verbal answers that describe their own and others’ perspectives, thus producing in the children a class of active perspective taking behaviors which they are able to generalize to multiple stimuli (Hayes et al. 2001; Rehfeldt et al. 2007). As part of a complex program of research on perspective taking in children, Barnes-Holmes (2001) developed a protocol consisting of 62 relational scenarios presented in a sequential order, based on the three types of relational frame administered in increasing order of complexity: simple, reversed and double-reversed. Simple relations require a change in the perspective of a single frame (e.g., “I’m sitting here on the black chair and you’re sitting there on the blue chair, where are you sitting? Where Am I sitting?”), reversed relations include an explicit reversal of a simple deictic relation (e.g., “I’m sitting here on the black chair and you’re sitting there on the blue chair. If I was you and you were me, where would you be sitting? Where would I be sitting?”), while the double-reversed relations requires the reversal of two simple relations (e.g., “I’m sitting here on the black chair and you’re sitting there on the blue chair. If I was you and you were me, and if here was there and there was here, where would I be sitting? Where would you be sitting?”). This protocol was used with children of different ages, and preschoolers were found to produce more errors than older children, in fact, the errors within a task tended to decrease with increasing age. The relations that were most difficult to resolve involved spatial and temporal deictic frames such as HERE–THERE and NOW–THEN. The more complex relational frames, reversed and double-reversed, also produced more errors (McHugh et al. 2004a). Drawing on these findings, interventions aimed at teaching or implementing perspective taking behaviors through involving children in various communicative exchanges that would directly teach the deictic structures presented in the protocol were developed (Barnes-Holmes et al. 2004a; Barnes-Holmes et al. 2004b). Our review of the literature identified four training studies on developmentally typical preschoolers which used this type of intervention (BarnesHolmes 2001; Davlin et al.2011; McHugh et al.2003; Weil et al.2011); some common methodological characteristics of these studies is described below.

Participants, Procedure, and Methods

Firstly, all four studies were characterized by a small experimental group (1–3 children), the lack of a control group and the structuring and administration of the training; although it took place in a kindergarten, it was administered to children individually, in a separate classroom. All these studies administered the full experimental protocol at pretest and posttest to evaluate the children’s perspective taking skills before training and to detect any increase in their perspective taking abilities following the intervention. In some studies,

exactly the same protocol was used pretest and posttest (Barnes-Holmes 2001; Davlin et al.2011; McHugh et al. 2003), while in others, different exemplars were used (Weil et al. 2011). In one study (Weil et al. 2011), the RFT protocol was supplemented with false belief tasks (levels 3, 4, and 5) of the type more usually used by ToM researchers at both pretest and posttest, to investigate whether the RFT protocol showed comparable properties to the classic false belief tasks as a tool for assessing cognitive perspective taking. The level of skill identified at pretest was the starting point for the intervention. This consisted of training with multiple exemplars (Multiple Exemplars Training: MET) during which the child was provided with direct reinforcements of their responses produced to particular stimuli. After a reinforcement history had been established, it was expected that children would become capable of responding to new stimuli without direct reinforcement (Barnes-Holmes et al. 2004c; Ingvarsson and Morris 2004; McHugh et al. 2012). More specifically, the children were presented with various scenarios using different exemplars from those included in the pretest and posttest protocols, followed by a contextual hint (cue), two questions referring to both perspectives of each deictic relations, and corrective feedback in response to the answer given. Weil et al. (2011) provided children with social and tangible positive reinforcement (token system) or corrective feedback only after their second response and regardless of the correctness of the first, while Davlin et al. (2011) provided reinforcement after each question, and corrections were made in an “encouraging” style, by providing the child with the correct beginning to the response. The duration of the intervention phase in RFT research has been variable; as the structure of the protocols provides for the administration of scenarios in increasing levels of relational complexity (simple, reversed and double-reversed) and progress to a higher level occurs only when the child is sufficiently proficient at solving tasks on the preceding level (least 80 % correct), the duration of each phase is dictated by the course of each child’s learning. The intervention phase was comprised of as few as six or nine sessions (Davlin et al. 2011) and as many as 16 or 65 sessions (Weil et al. 2011), although it should be noted that only one child required 65 training sessions. The authors suggested that this slower acquisition of perspective taking may have been partly due to lack of siblings, as the slowest child was an only child and the other two children, who had brothers, needed fewer training sessions (16 and 21 sessions). These data are consistent with previous reports suggesting that interacting with siblings in the early stages of development provides children with continuous training opportunities in taking another person’s perspective (Cassidy et al. 2005).

Training Variables

Some studies used the original version of the protocol (McHugh et al. 2003), while others used reduced or modified forms of the original protocol (Barnes-Holmes 2001; Davlin et al.2011; Weil et al. 2011). Barnes-Holmes (2001) used only the interpersonal and spatial deictic frames, while Weil et al. (2011) used only 12 trials in each training session, four randomly ordered trials for each of the three deictic relations. Finally, Davlin et al. (2011) adapted the original protocol to present the deictic relations within a context that was more familiar to children, such as the reading of a story, rather than through isolated scenarios. Their procedure consisted of 37 tasks in which the deictic relations were relevant to the children’s everyday experiences. One aim of the study was to determine whether the positive results obtained with the RFT approach could be

generalized to real life contexts. The children were asked to use interpersonal, spatial and temporal deictic structures to differentiate their perspective from those of characters in 11 different stories. In particular, the interpersonal deictic relation I-YOU was to be replaced with I-CHARACTER.

Effectiveness of Training and Discussion

These studies have shown that the RFT approach is effective in promoting perspective taking ability. At posttest, children generally showed an increase in the proportion of correct resolutions of the deictic relations compared to the pretest, suggesting that they had acquired a new class of operant. The study of Davlin et al. (2011) provided evidence for generalization of the training effect. In this study, children showed posttest improvements in the resolution of tasks, contained within a further ten stories that were similar to those read during training but used different contents. These positive results suggested that the intervention helped children acquire greater perspective taking ability, which was potentially generalizable to real life events in which it is necessary to understand others' perspectives. Weil et al. (2011) demonstrated generalization between tasks: they detected improvements in the performance of cognitive perspective-taking tasks, mainly as a result of training with reversed and double reversed relations, confirming that the ability to master these two deictic relations was the key to understanding deception (McHugh et al. 2007a) and false belief in others (McHugh et al. 2007b). Despite these positive results, the researchers following this approach have emphasized the need for studies on a larger number of children (Weil et al. 2011) and new intervention protocols which can be used outside an experimental setting, in more naturalistic contexts in order to ensure generalization to real life contexts (Gould et al. 2011; Heagle and Rehfeldt 2006).

Interventions to Promote Affective Perspective Taking

Affective perspective taking is considered the ability to understand the emotional state of someone else (Harwood and Farrar 2006). Thus defined, affective perspective taking is situated within the understanding of emotions, a broader construct of emotional competence (Corsano and Cigala 2004; Saarni 1999), which includes different components: emotional expression, emotional recognition, emotional understanding, and emotional regulation (Saarni 1999). Understanding one's own emotions and those of others implies the attribution of meaning to affective mental states in a way which can guide the individual's actions during social exchanges (Harris 2008). Empirical works aimed at promoting affective perspective taking has used the same methodology as that used in interventions targeting cognitive perspective taking abilities.

Training Studies

Our review of the literature found far fewer intervention studies targeting affective perspective taking than cognitive perspective taking. Although we identified 21 eligible studies relating to cognitive perspective taking, we found only six dealing with affective perspective taking, of which only two focused specifically on the affective dimension (Grazzani Gavazzi and Ornaghi 2011; Tenenbaum et al. 2008) and four analyzed affective and cognitive perspective taking together (Cigala and Fangareggi 2011; Esteban et al. 2010; Ornaghi

and Grazzani Gavazzi 2009; Ornaghi et al. 2011; Table 1). There are numerous descriptive studies of intervention in affective perspective taking conducted in an educational context, but as these did not use a pretest/intervention/posttest design, they have not been considered in this review.

Participants

Most studies used samples of 80–90 children, with the exception of Cigala and Fangareggi (2011), where the sample was comprised of 32 preschoolers, although of the 84 children in the study of Tenenbaum et al. (2008), only 48 belonged to the preschool age group (5 years). Some studies investigated affective perspective taking in children of 3, 4, and 5 years (Grazzani Gavazzi and Ornaghi 2011; Ornaghi and Grazzani Gavazzi 2009), while others worked with 3- to 4-year-old preschoolers (Esteban et al. 2010; Ornaghi et al. 2011) or 4- to 5-year olds (Cigala and Fangareggi 2011). Studies have been conducted in Italian (Cigala and Fangareggi 2011; Grazzani Gavazzi and Ornaghi 2011; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011), Spanish (Esteban et al. 2010), and Anglo-American (Tenenbaum et al. 2008) populations.

Procedure and Methods

All the studies used a conversational, linguistic approach, with story reading followed by discussion being the main intervention method. All the studies, with the exception of the study of Tenenbaum et al. (2008), used a single experimental group and a control group. In some cases, children in the control group took part in free-play activities; in others, no activities were provided (Cigala and Fangareggi 2011; Esteban et al. 2010). Most studies evaluated the emotional dimension of perspective taking using the Test of Emotion Comprehension (TEC; Pons and Harris 2000); the Italian studies used an Italian version, validated by Albanese and Molina (2008). Esteban et al. (2010) used a modified version of the desire–belief–emotion task (Harris et al. 1989). In most studies, interventions were led by one or two researchers or by teachers who had been instructed by the researchers (Esteban et al. 2010). Training was conducted individually (Tenenbaum et al. 2008), in small groups (Cigala and Fangareggi 2011; Grazzani Gavazzi and Ornaghi 2011; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011) or with an entire class (Esteban et al. 2010); and the duration varied from a minimum of 2 weeks (Cigala and Fangareggi 2011) to a maximum of 2 months (Grazzani Gavazzi and Ornaghi 2011; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011) with training sessions taking place two or three times a week. Only one intervention study scheduled a follow-up (Cigala and Fangareggi 2011), 6 months after the posttest.

Training Variables

All the studies reviewed were conducted within the naturalistic context of kindergarten and were based on the “conversational” approach (Hutto 2007; Siegal 2008), which emphasizes that participating in communicative exchanges about mental states is not only related to thoughts and beliefs but also to feelings and emotions and promotes perspective taking, particularly affective perspective taking (de Rosnay and Hughes 2006; Laible and Song 2006). Some authors have stressed the importance of using an emotional lexicon on the grounds that it serves two main functions: firstly, it allows the communication of emotional experiences via speaking about

feelings; secondly, given that language can be used to encode and communicate emotions symbolically, it facilitates an increase in awareness and processing of emotional experiences. Use of emotional language may therefore be considered a manifestation of perspective taking, if perspective taking is conceived as a progressive awareness of one's own and others' internal states (Harris 2008; Taumoepeau and Ruffman 2006). Interventions typically used discussion following the reading of a single story (Esteban et al. 2010) or more stories based on illustrated books in which the emotions of the protagonists are emphasized (Cigala and Fangareggi 2011; Grazzani Gavazzi and Ornaghi 2011; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011; Tenenbaum et al. 2008). In one study (Cigala and Fangareggi 2011), the children participated in drama activities and drawing following the story reading and group discussion, in order to actively describe the various emotional states experienced by the story's characters in different scenarios. Grazzani Gavazzi and Ornaghi's study (2011) aimed to investigate whether engaging children in conversations referring to emotional states (active use of emotional language) could play a significant role in increasing both their knowledge of emotional terms and, more broadly, their understanding of others' emotions. The study used the procedure that had proved effective in previous studies of cognitive perspective taking conducted by the researchers (Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011). Children in the experimental group took part in a language game which used the "word launching" technique (Ciceri 2001) to encourage them to talk about the emotional terms used in the story they had just heard. During these conversations, the researcher encouraged the children to use target words with questions and comments, making sure that everyone played an active part in the discussion. The children in the control group listened to the same story but were then invited to play freely with games provided by the researchers. The games were chosen to divert the children's attention from the content of the story and provide minimal incentive for conversation relating to the story or the characters involved. Tenenbaum et al. (2008) also used story reading, followed by guided conversation in which an adult provided an explanation of the different situations presented in the stories (explanatory conversation). In the control condition, the children were asked to summarize the events of the story. In one experimental condition, the children were asked to identify and explain the emotional reactions of the protagonist in each story in response to prompts from the researcher, and in the other experimental condition, the researcher provided an explanation of the various emotional reactions of the story's protagonist. These different experimental manipulations were chosen to investigate whether knowledge acquired independently would result in greater understanding than knowledge provided by more experienced communicators.

Effectiveness of Training and Discussion

The training studies described confirmed that it is possible to increase children's affective perspective taking ability through participation in conversations focused on emotions. Grazzani Gavazzi and Ornaghi's study (2011) showed that participation in conversations and language games, particularly for 4- and 5-year-old children, resulted in greater mastery of an emotional lexicon which is presumed to enable greater understanding of the emotional states of others. Specifically, through discussion and explanation of terms referring to mental states, such as desires, beliefs, and emotions, during interactions and conversations with other people, the children were able to actively co-construct with adults and peers a better understanding of others (de Rosnay

and Hughes 2006; Garfield et al.2001; Hughes et al. 2007; Siegal 2008). Tenenbaum et al. (2008) showed that understanding other people's emotional perspectives is influenced both by listening to explanations given by an adult and by actively explaining the emotional content of stories rather than simply listening to the story. These authors emphasized the two points of weakness of this intervention: firstly, although the experimenter-child dialogs were modeled on spontaneous parent-child interactions, they were still more artificial. Secondly, because the child's explanations were guided by the experimenter's prompts, the study was unable to explore how effective totally spontaneous explanations would be at promoting children's understanding of emotions. Some general conclusions can be drawn from the studies we reviewed. All the studies found improvements in aspects of emotional understanding which were not directly targeted during intervention, indicating some generalization. In fact, the stories presented during the intervention phases differed considerably from the stories in the TEC which was administered pretest and posttest. The lack of follow-up assessments in these studies means that it is not possible to draw conclusions about the persistence of newly acquired emotional skills over time. The one study which conducted a follow-up assessment (Cigala and Fangareggi 2011) found that 6 months after the intervention, the effects were persistent.

Conclusions and Future Developments

In this review, we have tried to analyze and systematize studies conducted over the last 18 years, which have focused on interventions to promote perspective taking ability. Of the 28 interventions we reviewed, 23 had a positive outcome, and only five were less effective, either from a lack of generalization of trained skills or with improvements in only one of the targeted dimensions of perspective taking (Esteban et al. 2010; Flynn2006; Guajardo and Watson 2002; Knoll and Charman 2000; Wahl2001). In particular, from the present work, it is possible to identify some crucial elements in determining the effectiveness of interventions. The most effective method seem to be those in which the child plays an active role. This active position has been achieved in various ways in every different type of intervention: reworking metacognitive experiences of feedback to acquire a new insight (Appleton and Reddy 1996; Clements et al.2000; Hale and Tager-Flusberg 2003; Melot and Angeard 2003), asking children to provide a first person explanation (Pillow et al. 2002), or engaging children in conversations and reflective interactions (Esteban et al. 2010; Knoll and Charman 2000; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011; Peskin and Astington 2004) sometimes supplemented with drama activities and drawing (Cigala and Fangareggi 2011; Guajardo and Watson 2002). The ecological validity of intervention procedures may be another factor in their effectiveness. Some authors stressed the benefits of using procedures and methods which were familiar to the children and fitted well in the school context in which the training took place (Cigala and Fangareggi 2011; Esteban et al. 2010; Ornaghi and Grazzani Gavazzi 2009; Ornaghi et al. 2011). In this sense, we believe that training with a small group of children, conducted in a familiar context, such as school, and through the use of methods known to them, such as drawing, drama, and conversation, could facilitate the acquisition of skills and especially the possibility to maintain and generalize the achieved progress. The introduction of a follow-up phase is fundamental to evaluate the maintenance over time of any progress. In particular, many authors highlighted the lack of follow-up assessments to investigate the medium- to long-term effects of interventions as a limitation of much of the

research. The lack of evaluation of the duration or persistence of improvements produced by training is one of the most important weaknesses in this body of research and should be addressed in future work. Daily exercise of perspective taking among children and between children and adults, which should take place routinely in familiar contexts, such as school and family is another crucial point highlighted by some authors to support interventions (Grazzani Gavazzi et al. 2011). In this way, the effectiveness of episodic intervention, mostly conducted by people external to the developmental contexts, is strengthened by the constant and continuous work of children in daily contexts, coordinated and promoted by significant adult figures. This is possible by transferring some competences to teachers. "Transfer" means not only teaching some skills to teachers, but to work with them so that they succeed in gaining a clear understanding of the construct in question, in order to recognize it in the daily activities and experiences that are offered to the children. So the promotion of perspective taking skills should become the teachers' explicitly stated goal in their teaching programs. The analysis of the different interventions shows that the majority of studies have considered, in the pretest and posttest, only variables obtained through child's answers to individual tasks. Behavioral variables directly observed in school contexts are considered by few studies as indicators of the effectiveness of the intervention (Cigala and Fangareggi 2011). In a recent study (Cigala and Fangareggi 2011), researchers found significant relations between prosocial behavior (helping, consoling/encouraging, and sharing) and aggressiveness, demonstrating that children who obtained higher scores in perspective-taking tasks showed more prosocial behavior and less aggressiveness. We suggest that future research must consider direct behavioral measures, like naturalistic observations, to verify the effectiveness of intervention with the aim to underline the existence of the relationship between perspective taking ability and socioemotional skills. Finally, our analysis shows how not many studies (Cigala and Fangareggi 2011) have considered all the dimensions of perspective taking and in view of the positive results of specific interventions, we would recommend the development of intervention programs which provide activities aimed at strengthening all three dimensions of this ability: visual, cognitive and affective. In conclusion, we highlight the need to transfer the construct of perspective taking, more familiar with the disciplines of psychology, particularly developmental psychology, to an educational context. In fact, perspective-taking ability concerns everyday educational practices that can be put in place, not by professionals or specialists, but rather by teachers themselves, who are in direct and daily contact with children. Therefore, the development of further psycho-educational interventions in collaboration with kindergarten teachers would be helpful. It would be important to institute specific refresher courses for teachers to explain, first of all, the meaning and the role of perspective taking and then to support them in structuring activities to promote this ability in children. As has already been emphasized, it would be particularly useful intervention programs based on activities known and understood by teachers, as these intervention programs could be more easily replicated and incorporated into the curriculum. Promoting the ability to interact positively with others in early childhood remains an important educational challenge. Theoretical frameworks suggest that preschool age is a particularly suitable time for early interventions, through which promoting socioemotional competence may

help to address aggressive behavior before it crystallizes into a permanent behavioral pattern (Cigala and Fangareggi 2011; Spence2003; Webster-Stratton and Reid 2003).

¹ The word launching technique consists of saying a word contained in the story that has just been read, and inviting children to freely express either the meaning of the word itself or the emotions that the word evokes in them, encouraging conversation among the children rather than just with the adult.

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