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Child development and classroom teaching: a review of the literature and implications for educating teachers☆

Denise H. Daniels[a,*], Lee Shumow[b]

[a]*Department of Psychology and Child Development, California Polytechnic State University, Faculty Offices North Building, San Luis Obispo, CA 93407, USA*

[b]*Department of Educational Psychology and Foundations, Northern Illinois University, DeKalb, IL, USA*

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Abstract

The article presents a framework for explaining how teachers' perspectives and knowledge about child development contribute to classroom practices and considers the implications of that framework for teacher education and for research on teacher education. The framework describes relations among different theoretical views on children's cognitive and social development, the role of the teacher in fostering this development, typical educational practices associated with each view, and qualities of the child that are fostered or valued within each view. A selective literature review identified theoretical perspectives, empirical research that supported posited links, and effects of teacher education course work and instructional experiences on teacher beliefs and practices. Gaps in the research base are highlighted in order to identify needed research. Implications for integrating child development study into teacher education programs are considered.

Keywords: Child development; Teacher beliefs; Developmentally appropriate practice; Developmental theories; Childhood education; Developmental psychology

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* Corresponding author. Tel.: +1-805-756-2106; fax: +1-805-756-1134.

E-mail address: ddaniels@calpoly.edu (D.H. Daniels).

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1. Introduction

More than a hundred years ago, William James (1899/2001) opened his book *Talks to Teachers* with a chapter entitled, "Psychology and The Teaching Art." The issue of how developmental psychology is related to teaching remains an issue today (Brown, 1994; Olson & Bruner, 1996; Renninger, 1998; Sarason, 2001; Sigel, 1990, 1998). There is a widespread assumption that understanding child development contributes to teaching. Many states require a child development course for teacher certification and experts consider child development knowledge to be foundational for teacher preparation (e.g., Comer & Maholmes, 1999; National Commission on Teaching and America's Future, 1996; National Council for Accreditation of Teacher Education [NCATE], 2000). However, precisely why child development knowledge is important for teachers, how developmental perspectives and teaching practices are related, and how best to help teachers learn to make educational decisions from a developmental perspective continue to elude many charged with the responsibility of teaching child development courses to teachers (Sigel, 1990).

The purpose of this article is to draw together theoretical perspectives and extant research that can both inform teacher preparation and direct future research on the role of the child development field in teacher education. Theoretical perspectives on why and how an understanding of child development contributes to educational practice will be presented first. Next, research pertaining to how an understanding of child development contributes to teachers' beliefs and practices will be reviewed. The review includes investigations of the conceptions of children held by both prospective and experienced teachers, the influence of such perspectives on their beliefs about and implementation of educational practices, and the student outcomes valued by and associated with various perspectives. The gaps in the available research will be highlighted in order to foster discussion about the potential importance of these issues and to propose directions for future research. Finally, practicing and preservice teachers will be considered as developing learners. Ideas about how to design and teach child development courses within teacher education programs will be discussed and research needed to advance our understanding of this topic will be recommended.

1.1. Theoretical perspectives: why do teachers need to understand child development?

Developmental and educational theorists have discussed the value of the child development knowledge base for teachers throughout the past century. However, actual educational practice throughout this time period has been modeled on conceptions of learning and development defined by either the behaviorist tradition (Brown, 1994) or by extreme biological views such as entity ideas that intelligence is fixed or maturationist views that children develop on their own. During the past decade, psychologists denounced those prevailing beliefs and practices, endorsing instead educational practices based on current knowledge about how children develop and learn (American Psychological Association [APA], 1997; Brown, 1994; Kuhn, 1997). Consequently, attention has been refocused on "child-centered" practices identified with constructivist, social constructivist, or ecological theories. Although some conceive of the differences among these theories as irreconcilable

(Case, 1998), others see them as complementary (Cobb, 1994). Common threads relevant to education among these theorists include the ideas that effective teaching must be based on understanding the child and the vision of children as active agents in their own education. These theorists will be briefly discussed in historical sequence.

As noted previously, William James (1899/2001) believed that the "fundamental conceptions" of psychology were important to the teacher. James thought that "child study enthusiasts" could help teachers understand the "mental machine" and developmental processes of their pupils. Although James thought that psychological knowledge could not be used to prescribe specific instructional techniques or problem solutions because several different options would be consistent with psychological principles, he believed that teachers could be saved from selecting ineffective "mistaken" methods. He also pointed out several limitations of developmental psychology for teachers that appear as important today as they were when he made them. For one, although knowledge of children is necessary for teachers, good teaching requires more than knowledge of child psychology, a point elaborated recently by Shulman (1990). For another, teachers are not developmental psychologists and they probably do not benefit professionally from studying methodological and analytical details of scientific psychology.

James' contemporary, John Dewey, provided a foundation for constructivism. He believed that teachers must balance an understanding of the habits, traits, and dispositions of individual children with an understanding of the means for arousing children's curiosity (Archambault, 1964). According to Dewey, fostering mental growth requires teachers who can initiate, recognize, maintain, and assess children's inner engagement in subject matter, and who are concerned with how the child's past and present experience can be related to the subject matter so that they may properly direct children's growth. Education to develop mind, not rote recall, means that teachers need a "sympathetic and intelligent insight into the working of individual minds and a very wide and flexible command of subject matter" (Archambault, 1964, p. 238).

Vygotsky (1978), who is now labeled a social contructivist, was thinking along similar lines as Dewey. For him, child development and education were inextricably bound. With the zone of proximal development, he describes a process whereby the teacher who understands children's development can recognize the "buds" of conceptual or skill development as a prelude to guiding the child from a nascent to a more mature form of understanding or skill.

Like Vygotsky, some of Piaget's basic ideas are relevant to the argument that teachers need to understand child development and are especially important given the current drive for schools to foster higher order reasoning and create autonomous learners who are able to function successfully in the rapidly changing information age. These familiar tenets are (a) children's and adults' reasoning differs qualitatively, (b) knowledge is constructed by engaging actively with the physical and social world, (c) abstract thinking is built on concrete experience, and (d) conceptual change occurs through assimilation and accommodation. Piaget (1964) was a constructivist who believed that teachers need to design environments and interact with children to foster inventive, creative, critical thinkers. Kamii (1973), summarizing Piaget's stance on active learning, adds, "the task of the teacher is to

figure out what the learner already knows and how he reasons in order to ask the right question at the right time so that the learner can build his own knowledge'' (p. 203).

Piaget's theory currently receives extensive attention in undergraduate child development classes often taken by education majors, but simplistic interpretations and misapplications of Piaget's ideas to education have led some to apply a constraints perspective in which children are seen as incapable of learning much about processes and content. This unfortunate state of affairs raises issues about how to teach child development more effectively, a topic addressed later in the article.

Ecological theorists such as Bronfenbrenner (1979) point to the importance of the settings and circumstances in which students live for understanding children's behavior and establishing productive programs and policies to promote the development of children and youth. Teachers make many decisions that can be informed by an understanding of the context in which children live. These decisions include curricular and instructional decisions about materials and methods used in the classroom. Teachers' guidance of children's classroom learning can be fostered by understanding how the knowledge, practices, and language socialization patterns within children's families and communities contribute to children's ability to function in the classroom (e.g., Heath, 1983; Moll & Greenberg, 1988), how to communicate and work with children's families (Bronfenbrenner, 1986), as well as how to promote children's participation and positive social relations in the classroom (Juvonan & Wentzel, 1996).

Developmental psychology during the latter part of the 20th century was influenced both by neo-Vygotskian thinking and by the cognitive revolution. Cognitive developmental psychology contributed research findings and ideas about how children learn that have enormous implications for teacher education. For one, in contrast to presenting teachers with global stage models of cognition, studies of problem-solving suggest that teachers need to understand how children approach and solve specific types of problems within content areas and how the development of domain-specific reasoning is linked to ''everyday'' reasoning (Kuhn, 1997). Another line of work underscores the importance of attending to metacognition given the oft-endorsed goals of fostering intentional and competent learners (Brown, 1994). Yet other scholars have drawn attention to the role of discourse and interpretive communities in learning (Fish, 1980; Wertsch, 1991). Finally, others have advanced knowledge about children's theories of mind and epistemology.

Each perspective, whether the contemporary constructivist, social constructivist or ecological perspective, or the out of vogue entity, maturationist or behaviorist view, suggests certain practices and implies particular qualities that are valued in teachers and students. In turn, as argued in the next section, those views are all operating today and can be linked to classroom practices.

Recently, Olson and Bruner (1996) argued that educational practices are based on teachers' views or ''folk psychologies''—their beliefs about children, learning, and knowledge. Drawing upon contemporary research in child development, Olson and Bruner identified four general models of children and pedagogy typically held by teachers. In their framework, less sophisticated folk psychology perspectives concentrate on children's behavior, view learning as imitation, and conceptualize teaching as presenting information, whereas more

sophisticated views conceive of children as competent and intentional meaning makers and of education as a process of forming, identifying, questioning, weighing, and producing ideas based on evidence subject to scrutiny. They also note that an understanding of children's socioemotional development is necessary for effective teaching but do not identify and explicate those views and associated pedagogy. Most importantly, their framework invites us to conceptualize teachers as developing people, an idea that has often been overlooked.

The current article draws upon and extends Olson and Bruner's framework. Olson and Bruner (1996, p. 24) identify four "folk psychology" concepts of the child as a doer, knower, thinker, or expert with associated ideas about what students acquire in school (skill/ability, knowledge, beliefs, and expertise, respectively) and the abilities that make learning possible (ability to do, learn, think, and contribute to cultural store, respectively). Olson and Bruner also associate views of folk psychology with folk pedagogical views of the roles of the teacher and student (p. 25). In the present article, perspectives are identified from the psychological literature, rather than from folk psychology. Table 1 displays the framework used in the current review. Five general views of mind drawn from the psychological literature—innatist, fixed intelligence (entity), behaviorist, constructivist, and social constructivist—are presented in the first column of the table together with hypothesized relations between those views of the mind of the child, valued qualities of teachers, endorsed classroom practices, and valued qualities of the child in school. The particular classroom practices endorsed and used by those with such views represent an extension of Olson and Bruner's framework.

The identification of teachers' views of children's social–emotional development along with related beliefs and practices represents another extension of Olson and Bruner's framework. Table 1 shows those hypothesized relations between views of the social child, valued qualities of teachers, typical educational practices, and qualities expected of children. Common perspectives include seeing children's social selves in terms of major influences, such as personality traits, family support and teachings, interpersonal relations (acceptance and support) at school, and coping/adaptation across cultural/ecological contexts.

The research supporting the relations displayed in Table 1 is presented in the next section. It is important to note that there is much stronger empirical support for some relations shown than for others; the table serves as an organizational framework to be tested empirically. The table is a heuristic device and does not imply that there is no overlap among categories or that individual teachers can be rigidly placed within one category.

2. Research highlights

What are prospective and experienced teachers' perspectives on child development? How do teachers' developmental perspectives influence their classroom practices and their interactions with students, families, and other professionals? How are their developmental perspectives related to their goals or expectations for students and to the developmental outcomes of their students? In this section, research findings pertaining to these questions are highlighted. Some studies with parents are cited, particularly in cases where research on

Table 1
Hypothesized relations between views of child, teacher qualities, and classroom practices

Views of child	Valued qualities of teacher (role)	Typical classroom practices	Valued qualities of child in school
Fixed ability	Instructor	Ability groups	Academic achievement
Maturationist	Observer, follower	Prepared classroom, play, exploration	Intuition, self-directed efforts, readiness
Behaviorist	Authority, instructional skills, content knowledge	Didactic instruction, isolated practice, rewards, competition	Knowledge of facts, basic skills, effort
Constructivist (Piaget)	Collaborator, guide, architect, knowledge of cognitive development	Child-choice, guided discovery, cooperative learning	Critical thinking, problem-solving, intrinsic motivation
Social constructivist (Vygotsky)	Consultant, knowledge of cultural and psychological tools and children's domain-specific thinking, intersubjectivity	Community of learners, instructional conversation, authentic tasks	Cultural literacy, collaboration, contribution, metacognition, systematic habits of mind
Personality or stage	Diagnostician, remediator or hands-off	Differential treatment of students	Positive social characteristics
Family influence	Role model, reporter to parents, knowledge of social learning	Academic emphasis, rewards for good behavior	Achievement, proper social behavior, self-respect
School relations	Nurturer, parent consultant/resource, knowledge of social development	Student-centered, positive classroom climate, social skills curriculum, cooperative learning	Social competence, self-regulation, healthy school adjustment
Cultural influence or ecological	Liaison with parents and community, knowledge of diverse learners, cultural sensitivity, self-aware (biases)	Parent and community involvement, out-of-school activities, cultural instruction	Connectedness, social cognition, cultural awareness, adaptive habits of coping

Views are not distinct, sequential, or exhaustive.

Table 2
Research on views of children and educational practices

Participants	Findings	Sample studies/reviews	Suggested research
Views of ability			
Teachers	View ability as cause of student performance	Clark & Peterson, 1986	
Prospective and practicing teachers	Student ability is fixed	Moje & Wade, 1997	
Teachers	Fixed or malleable view related to efficacy and control	Midgley et al., 1989	
Variety	Views of intelligence relate to behavior	Dweck, 1999; Sternberg & Kolligan, 1990; Stipek, 2002	Effects of education on fixed against malleable views
Maturationist views			
Teachers	Views relate to educational practices	Smith & Shepard, 1988; Watson, 1996	Effects of scaffolding experiences on views
Behaviorist views			
Prospective teachers	Many endorse behaviorist view and didactic practices; views stable and resistant to change	Clark & Peterson, 1986; Hollingsworth, 1989; Pajares, 1992; Richardson, 1996	Shifts in views related to experiences with constructivist teachers
Teachers and parents	Beliefs in didactic practices relate to teaching behavior and child outcomes	Sigel, 1992; Stipek & Byler, 1997; Stipek, Daniels, et al., 1992; Stipek et al., 1998; Stipek, Milburn, et al., 1992	Relations between views and valued student qualities
Constructivist views			
Teachers and parents	Constructivist views relate to child-centered practices, active instruction	Peterson et al., 1989; Rhine, 1998; Sigel, 1992; Stipek & Byler, 1997; Stipek, Daniels, et al., 1992; Stipek et al., 1998; Stipek, Milburn, et al., 1992	
Teachers and children	Constructivist approaches relate to child motivation, problem-solving	Duckworth, 1987; Hart et al., 1998; Stipek et al., 1995, 1998	Constructivist experiences and learning dispositions (habits of mind) across contexts and time
Teachers and children	Constructivist views relate to learning and school attitudes	Daniels et al., 2001; Wood et al., 1992	
Social constructivist views			
Teachers	Observations of practice imply views not widespread in the United States	Gallimore & Tharp, 1990; Stigler & Hiebert, 1999	Challenges with implementation (e.g., small group learning)
Parents	Use of joint problem-solving activities effective	Lehrer & Shumow, 1997; Shumow, 1998	

(continued on next page)

Table 2 (*continued*)

Participants	Findings	Sample studies/reviews	Suggested research
Social constructivist views			
Teachers and students	Use of instructional conversations and collaborative learning approaches effective	Brown, 1994; Kucan & Beck, 1997; Tharp & Gallimore, 1988	Views of child mind and adult–child relations—related to stable use of practices
Views of personality			
Teachers	Some focus on personality and stage explanations	Buchanan et al., 1990; NCRTE, 1991; Paulson et al., 1997	
Teachers	Beliefs in attention to individual differences related to practices	Bussis et al., 1976; McCombs & Whisler, 1997	
Parents	Views of fixed personality relate to reactions	Miller, 1995	Teacher views of fixed against malleable personality
Teachers	"Dogmatic" views of child related to expectations	Murrone & Gynther, 1991	Implications of fixed or malleable views for educational practices
Views of family influences			
Teachers and student teachers	Many emphasize family effects on student achievement	Kagan, 1992; NISACA, 1999	Effects of shift in emphasis on teacher behavior and instruction
Teachers	Ambiguous views on parent involvement in school	Baker, 1997; Morris & Taylor, 1998; Shumow & Harris, 2000	
Teachers and parents	Teacher attitudes influence parent involvement	Eccles & Harold, 1993; Hoover-Dempsey & Sandler, 1997	
Prospective teachers	Comfort and confidence with parents enhanced in teacher education program	Morris & Taylor, 1998	Descriptive studies on conditions for successful teacher–parent interactions
Views of school relations			
Teachers	Value nurturing and respectful teacher–student relations	Clark, 1995	Teacher definitions and demonstrations of supportive relationships
Children	Views of teacher support related to motives and attitudes	Birch & Ladd, 1997; Daniels et al., 2001; Perry et al., 1999	
Teachers	Difficulty helping children support each other in cooperative groups	Sharan & Sharan, 1992	Teacher views of role and skill in fostering peer relations
Views of cultural influences			
Prospective and novice teachers	Simple views of student differences; assume students similar to selves	Hollingsworth, 1989; Kagan, 1992; Zeichner & Hoeft, 1996	
Prospective teachers	Explain societal influences on ethnic and gender differences	Avery & Walker, 1993	Differences between teachers with simple and complex views
Prospective teachers	Educational programs can enhance cultural sensitivity and reduce ethnocentrism	MacPhee et al., 1994; Zeichner & Hoeft, 1996	Stability of views and influences on teacher–student interactions and student adjustment

teacher perspectives is lacking. First, studies focused on examining perspectives on the child's mind will be presented; then, studies that examine perspectives on the child's social and emotional development will be reviewed. Directions for future research are suggested throughout.

Teacher perspectives on child and adolescent development have been characterized in a number of different ways in the literature. Some researchers, particularly those who have attempted to capture prospective and experienced teachers' views of development using open-ended methods, conclude that such views are often idiosyncratic or eclectic and not well specified or connected to theories of learning and development taught in formal educational settings (e.g., Clark, 1995; Clark & Peterson, 1986; Richardson, 1996). Furthermore, those researchers find that teachers often believe that it is through experience, not formal schooling, that one learns about teaching, learning, and child development (e.g., National Center for Research on Teacher Education [NCRTE], 1991; Richardson, 1996).

Other researchers distinguish between adult perspectives on child development by their emphasis on causal factors or connection to formal theories. For example, teachers may see development as primarily influenced by innate and fixed factors (e.g., biological maturation, intelligence, personality), environmental factors (e.g., behaviorist view of learning, home vs. school influences), and/or interacting factors (e.g., constructivist, social constructivist, ecological views). Psychologists and educators regard the latter, complex understandings necessary for teaching children to adapt to and prosper in the world today. Some studies provide support for systematic relations among these different views of development, educational and child rearing practices, and valued child outcomes; however, the number of studies demonstrating expected influences is modest (e.g., Miller, 1995; Richardson, 1996; Sigel, 1992). Sample studies on teachers' views of children's cognitive development and learning and appropriate educational practices are listed in Table 2 and discussed next.

2.1. Perspectives on the child's mind

The research highlighted in this section comes from a vast literature on teacher beliefs, narrowed significantly here by concentrating on prospective and practicing teachers' views of student thinking and development. Research on views of ability and intelligence is presented, followed by research on views of biological/maturational and environmental influences on learning, and then by research on constructivist perspectives.

2.1.1. Views of ability

Teachers in the United States see ability as a major cause of student performance in school (e.g., see Clark & Peterson, 1986), and distinguish between intellectual and interpersonal ability (Murrone & Gynther, 1991). Folk theories of intellectual ability play a critical role in achievement behavior, particularly in cultures where intellectual competence is prized (e.g., Covington, 1992; Tobin, Wu, & Davidson, 1989). Adults often embrace either an incremental or entity concept of intelligence or ability (e.g., see Dweck, 1999, for a review). An incremental concept implies that intelligence is a malleable quality that can be developed

through effort. In contrast, an entity concept suggests that intelligence is a fixed, internal characteristic of a person; this concept is associated with the belief that characteristics are innate (Levy & Dweck, 1996, reported in Dweck, 1999). Numerous studies show that, in general, an incremental view of intelligence is more adaptive than a fixed view because it fosters persistence in the face of challenge (e.g., see Dweck, 1999).

Some research suggests that prospective and practicing teachers see student ability as fixed (Moje & Wade, 1997). Other studies indicate that teachers differ in the extent to which they view intellectual ability as fixed or incremental and that their views on this topic influence how they interact with students. For example, one study showed that teachers who view math ability as fixed feel less efficacious and have a greater need for controlling student behavior than those who view math ability as malleable (Midgley, Feldlaufer, & Eccles, 1989). Anecdotal evidence also suggests that teachers with strong beliefs in fixed ability or IQ use competitive approaches that focus their students on validating or protecting their self-perceptions instead of learning (Covington & Beery, 1976; Dweck, 1999). Consistent with these findings, cross-cultural studies show that American teachers are more likely than Japanese teachers to emphasize raw ability as a factor in student performance and implement competitive practices that accentuate individual differences (Stevenson et al., 1990; Tobin et al., 1989). However, recent research (discussed later) indicates that although many American teachers consider innate ability to be a factor in student achievement, they are more likely to emphasize family environment in explaining individual differences (National Institute on Student Achievement, Curriculum, and Assessment [NISACA], 1999).

Considering the extensive research on how views of intelligence affect achievement-related behavior (e.g., Dweck, 1999; Sternberg & Kolligan, 1990; Stipek, 2002), it is surprising that more studies have not examined how such views change with experience and education. For example, it might be important to study changes in preservice teachers' views of intelligence after exposure to contemporary theories of intelligence (e.g., Gardner, 1983; Sternberg, 1985) and ecological models (e.g., Bronfenbrenner & Morris, 1998) that emphasize the dynamic interplay of innate and contextual forces on development. Those theories are often incorporated in current child development textbooks and courses. Unpublished research showing that college students' views of intelligence can be altered through use of case studies highlighting multiple against innate explanations of development (Bergen, 1992, cited in Dweck, 1999) suggests that this is a promising direction for research.

2.1.2. Maturationist views

Educational practices have also been associated with other biological-based views of development. Maturationist views emphasize the child's innate knowledge, natural progression through stages, innate tendencies to explore and make sense of the world, and competencies developed within critical or sensitive periods of life (see Watson, 1996, for distinctions between maturationist views). Teachers who base their practices on maturationist views (e.g., Montessori preschools) set up environments and activities addressing children's stage-related developmental needs, and then play a relatively passive role, only "interfering" with children's self-directed activity on occasion (Loeffler, 1992; Watson,

1996). As discussed earlier, a stage view of development described as, "either we are too early and they cannot learn it, or we are too late and they know it already" (Duckworth, 1987, p. 31), is a common misconception of Piagetian theory, and might result in the mistaken idea that children are better left to learn on their own. Indeed, Smith and Shepard (1988) found that teachers with maturationist views of development were more likely to recommend retention (allow them to "catch up" with time) rather than remediation for kindergartners than teachers with other views of development. Other studies also lend support for the notion that "developmental readiness" (maturationist) views are associated with retaining or delaying school entry rather than with providing developmentally appropriate educational opportunities for children (Watson, 1996). More studies examining this issue are warranted. Given the current emphasis on achievement, it would be especially interesting to see if teachers with maturationist views can be taught to scaffold children's learning and development and whether that experience would influence the views of such teachers.

2.1.3. Behaviorist views

At the other extreme, a behaviorist view assumes that children do not develop on their own; rather development consists of learning sets of relatively passive responses to environmental stimuli, such as the teacher. Teachers' behaviorist views of children's thinking and learning have been studied more extensively than other views. Beliefs associated with the behaviorist view include the ideas that children are not intrinsically motivated to learn what adults deem important, and that their recollection of pieces of knowledge given to them by the teacher is a valued developmental outcome. A behaviorist view may represent an advance over an innatist position in that it encourages teachers to take responsibility for children's learning. However, developmental psychologists, most notably Piaget (1964), warn of the dangers of teaching children to simply reproduce others' thinking; instead, teachers are urged to utilize children's natural curiosity to foster their creativity, inventiveness, and critical thinking.

A general conclusion from research on teacher cognition is that many prospective teachers lean toward a behaviorist perspective (e.g., Clark & Peterson, 1986; Hollingsworth, 1989), believing that learning occurs through didactic instruction. Those beliefs are quite stable across time and contexts (e.g., Pajares, 1992) despite educational efforts to change them (e.g., Richardson, 1996). Many psychologists and educators are concerned about this state of affairs because such beliefs lead to classroom practices and child outcomes not currently favored because those practices do not prepare children to function in the information age. These concerns are warranted—research has shown that teachers' beliefs in traditional education approaches are consistent with their frequent use of didactic practices (e.g., workbooks) in the classroom (Stipek & Byler, 1997; Stipek, Milburn, Galluzzo, & Daniels, 1992). Likewise, parents' endorsement of traditional educational practices (direct instruction) are compatible with their reported formal (as opposed to informal) teaching practices at home (Stipek, Daniels, Clements, & Milburn, 1992), as well as their use of directive, structuring behavior with children in laboratory settings (Sigel, 1992).

In some circumstances, children learn more basic skills (e.g., number and word recognition) in programs emphasizing didactic rather than child-centered approaches (based on

constructivist views) (e.g., Schweinhart & Weikart, 1988). Thus, teachers who prize content knowledge and basic skills can accomplish these goals through didactic instruction. However, research also demonstrates that, compared to children in child-centered classrooms, children in didactic classrooms have lower motivation, less perceived competence, and more negative attitudes toward school (e.g., Stipek et al., 1998; Stipek, Feiler, Daniels, & Milburn, 1995). Most importantly, those costs do not appear to be outweighed by impressive, long-term gains in achievement in basic skills (Stipek et al., 1998). Given those findings, several studies are recommended. Further research needs to establish whether teachers who endorse behaviorist beliefs and utilize didactic practices value students' motivation, perceptions of competence, and positive attitudes toward school. It also would be interesting to ascertain whether behaviorist views of preservice teachers change if they student teach with a constructivist cooperating teacher.

2.1.4. Constructivist views

Research has also shown that teachers' constructivist views of the child's mind are consistent with their (child-centered) educational practices (e.g., Rhine, 1998); and a few studies show that such practices foster valued child qualities such as motivation to learn and problem-solving. For example, studies show that preschool and kindergarten teachers who endorse child-centered approaches are more likely to use a variety of engaging, authentic activities in their classrooms (Stipek & Byler, 1997; Stipek, Daniels, et al., 1992; Stipek, Milburn, et al., 1992). Other studies, too, demonstrate links between constructivist views of the mind and use of activity-based instructional approaches (e.g., Duckworth, 1987; Peterson, Fennema, Carpenter, & Loef, 1989). Similarly, parents' constructivist beliefs are related to their use of active problem-solving strategies with children (Sigel, 1992).

Some studies have produced compelling findings that educational programs based (at least to some extent) on constructivist views of learning encourage valued child outcomes. For example, children in child-centered programs demonstrate greater motivation to learn (Stipek et al., 1995), lower anxiety (Hart et al., 1998), and higher problem-solving and language skills (Stipek et al., 1998) than children in didactic programs. Similarly, some evidence suggest that children in constructivist-based science classes ask more creative questions and persist longer on projects than children in traditional science classes (e.g., Duckworth, 1987).

Research also indicates that children internalize views of themselves as learners based on these educational practices. Olson and Bruner (1996) explain that "... each form of pedagogy implies a conception of learners that may in time be adopted by them as the appropriate way of thinking about themselves, their learning, indeed, their ability to learn. The choice of pedagogy inevitably communicates a conception of the learner. Pedagogy is never innocent" (p. 23). For example, children in problem-oriented (constructivist) classrooms report that understanding and collaboration promote mathematics learning (contemporary perspective), whereas children in traditionally taught mathematics classes report that conforming to the ideas of others and working quietly promotes learning (traditional perspective) (Wood, Cobb, & Yackel, 1992). Furthermore, a recent study indicates that children's motivation and attitudes toward school are related to contemporary and traditional perspectives on learning

expressed by children (Daniels, Kalkman, & McCombs, 2001). Together, these studies suggest that the educational practices children experience shape their developing self-perceptions as learners and potentially their "habits of mind" or customary ways of engaging the world (Keating, 1996).

In summary, a modest case for use of a constructivist approach is supported in that it promotes valued child qualities (motivation, creativity, problem-solving). However, psychologists and educators are not entirely willing to forego didactic approaches that may enhance some basic skills and knowledge (e.g., Stipek et al., 1998; Tharp & Gallimore, 1988). The social constructivist perspective, based on Vygotsky's theory of the developing mind in society offers an alternative, albeit overlapping, framework for understanding children's thinking and learning. Many contemporary developmental and educational psychologists believe that it is this view of the child that will provide teachers with the necessary tools for fostering children's learning and development (e.g., Anderson et al., 1995; Rogoff, Matusov, & White, 1996; Tharp & Gallimore, 1988).

2.1.5. Social constructivist views

Throughout the decade, we have heard pleas for helping teachers develop a "contemporary psychological" or social constructivist perspective (Anderson et al., 1995; Brown, 1994; Marshall, 1996; Tharp & Gallimore, 1988). Although there are many examples of social constructivist approaches (see Moll, 1990; Rogoff, 1998), we focus here on several distinctive aspects. Social constructivist views underscore the idea that a child's mind is a product of their experiences and interactions with others and with cultural tools in their daily life. Another related idea emphasizes that development depends upon the extent to which a child has the opportunity to solve problems with adult guidance or in collaboration with more skilled peers, rather than by working independently on less challenging problems (Vygotsky, 1978). Vygotsky's (1978) description of the zone of proximal development implies that teachers who guide students' problem-solving need to understand children's domain specific thinking. Yet another feature of social constructivism is the importance of language in mediating activity participation and understanding, particularly in internalizing habits of mind (Wertsch, 1991).

To our knowledge, there has been little systematic study of teachers' endorsement of social constructivist beliefs. We do not know to what extent teachers endorse the importance of interaction with more skilled adults or peers as a catalyst for cognitive development, but we can infer from several observational studies that this perspective is not widespread in the United States. Gallimore and Tharp (1990) note that very little interactive teaching occurs in the classrooms they have observed or appears in the research on teaching they have reviewed. Rather, most teachers seem to assign work for students to complete silently and independently, or depend on the initiation–response–evaluation (IRE) pattern of interaction with students (Tharp & Gallimore, 1988). Stigler and Hiebert (1999) observed that American teachers of mathematics tend to use practices and valued qualities consistent with a behaviorist perspective while Japanese teachers use practices consistent with a social constructivist perspective. The Japanese teachers present authentic problems, lead discussions, point out relationships, and appear to "believe students learn best by first struggling

to solve mathematics problems, then participating in discussion about how to solve them'' (p. 91).

No studies were found concerning whether teachers believe it is important to know the typical paths children might take in the development of more sophisticated problem-solving strategies. Educators may be interested in developmental sequences that are more closely related to classroom learning than what cognitive developmental psychologists ordinarily emphasize in their descriptions of children's developing abilities in different domains (see chapters in Sigel, 1998). However, some evidence suggest that adults who have access to knowledge of the strategies that children typically use to solve mathematics are more effective at assisting children to solve difficult problems than are adults who are not aware of that information (Lehrer & Shumow, 1997; Shumow, 1998). Those adults were directive on occasion, but they tended to follow the directive statements they made by transferring cognitive responsibility immediately back to the children (Lehrer & Shumow, 1997). In contrast, adults who were unfamiliar with children's thinking became and remained directive when children struggled. Shumow (1998) demonstrated that providing parents with a simplified version of developmental trajectories together with joint problem-solving activities to do with the children for homework became more sophisticated at guiding children's problem-solving. Further, those parents who had the opportunity to discuss their children's problem-solving strategies with a ''teacher'' (researcher) who observed the child in their classroom, transferred problem-solving responsibility to their children more often than parents who did the reading and activity only (Shumow, 1998).

The classroom conversations that teachers facilitate depend on the track, with students in higher level classes exposed to far more sophisticated classroom conversations about text than children in lower tracks (Gamoran, Nystrand, Berends, & LePore, 1995). This suggests that teachers believe that ability, not interaction, drives learning. Several scholars have developed classroom literacy programs aimed at getting teachers to make use of language (conversation) as a tool in learning to construct meaning about text. Originally developed to facilitate the literacy skills of native Hawaiian children, the Kamehameha Elementary Education Program (KEEP) focused explicitly on helping teachers to conduct instructional conversations (e.g., Tharp & Gallimore, 1988). Another program, reciprocal teaching, assists students in internalizing strategies to comprehend content area (science and social studies) texts by modeling and talking aloud about strategies for comprehension monitoring during reading and by having students participate and discuss the use of those strategies while engaging with text (e.g., Brown, 1994). Other collaborative think aloud programs have been developed to help students comprehend texts and develop an understanding of how to approach and think about text (see Kucan & Beck, 1977, for a review). Teachers participating in those programs communicate with students in ways other than the traditional IRE sequence and invite students to take on more authority and responsibility.

Socioculturally based, collaborative learning programs also have been designed for mathematics, science, and social studies classrooms. For example, the Community of Learners (COL) project (see Brown, 1994) involves the orchestration of classroom environments to allow for and foster meaningful, collaborative learning. COL projects involve

conducting research to answer student questions, taking turns obtaining and discussing text and other materials needed, and utilizing resources and experts outside the classroom. Whether practices teachers develop while participating in the programs just described are sustained over long periods and across a variety of activity settings and influence teacher conceptions of the child's developing mind, and adult–child relations (Rogoff, 1998) are questions for future research.

Scholars who advocate a neo-Vygotskian perspective have developed and implemented programs based on the social constructivist perspective because they expect the practices associated with this view will benefit students. There is some evidence that social constructivist practices are beneficial to students. The extremely successful mathematics learning of the Japanese, as compared to American students, has been attributed to instructional practices (Stigler & Hiebert, 1999). KEEP has demonstrated effectiveness in promoting the reading achievement of children in laboratory and public schools (Tharp & Gallimore, 1988). Teachers who used think aloud programs helped students develop learning strategies or metacognitive skills ("habits of mind") to aide in their learning, and facilitated dramatic improvement in students' independent reading comprehension (Kucan & Beck, 1997). Finally, noted outcomes of collaborative approaches to learning are the students' "confidence in their own developing knowledge and their belief that this is something the community will respect and value" (Brown, 1994, p. 8). There are a considerable number of problems with small group learning, a form of classroom organization often utilized within collaborative classroom communities (Blumenfield, Marx, Soloway, & Krajik, 1996). Too little attention has been focused on how to help teachers understand and develop practices to address those and other challenges with implementing social–cultural approaches. More research needs to investigate how to accomplish those important goals.

2.1.6. Summary

In this section, research was reviewed that suggest some connections between adult views of the child's developing mind and educational practices (see Table 1). For example, evidence suggests that teachers' views of the child's innate intelligence and natural propensity to learn and develop may shape how they view their roles as educators and their classroom practices. Research also indicates that prospective and practicing teachers' endorsement of a behaviorist or a constructivist view of the child's mind relates to the roles, values, and practices they embrace. Next, research on teachers' views of the child's social qualities and development and the relevance of these views for educational practices is presented.

2.2. Perspectives on the social child

In addition to understanding the mind of the child (learner), teachers must also understand that each student is an individual who is developing a sense of self and relationships in a variety of contexts, notably the family, school, and community (e.g., Bronfenbrenner, 1986; Olson & Bruner, 1996). This ecological perspective involves seeing children's development as taking place within a complex system of relationships and contexts. Taking an ecological

perspective should encourage consideration of a wide range of possible ways to intervene, adapt instruction, and respond flexibly to individual children's social and emotional needs as well as their intellectual needs (e.g., Gutierrez & Sameroff, 1990; MacPhee, Kreutzer, & Fritz, 1994; Sameroff & Feil, 1985). In a rare study of teachers' developmental explanations, Smith and Shepard (1988) found that most kindergarten teachers referred to either maturational or environmental influences; only a few explained student development as a complex interaction between the psychological nature of the child and the educational environments provided. A simplistic or restricted view of development may limit teachers' consideration of alternative ways to educate and intervene with children. In contrast, several studies have shown that parents embrace multiple theoretical perspectives on child development (e.g., constructivist, social learning, psychoanalytic). For example, in one study, mothers accepted more than one possible explanation of a child's described behavior (e.g., McGillicuddy-De Lisi, 1992). That might be important because mothers who provide more complex explanations of child development have children with higher levels of intelligence (Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987). The little research on teachers' perspectives on social development presented next suggests that, in contrast to parents, teachers' developmental perspectives are often simple, inaccurate, and become more stereotyped and pessimistic with experience. However, a few studies indicate that educational programs designed to enlighten teachers can succeed (e.g., Cassidy, Buell, Pugh-Hoese, & Russell, 1995; MacPhee et al., 1994; Morris & Taylor, 1998).

In this section, findings from research on prospective and practicing teachers' views of the social child in educational settings are presented whenever possible. The first two views presented of the social child—as primarily influenced by dispositional characteristics and family—have some basis in research. The next views presented are expanded views of the child as influencing and influenced by relations in other major social contexts, such as the school and community. Unfortunately, we were unable to find evidence that teachers embrace such contemporary ecological views advocated by educational and developmental psychologists. We include these views and related practices in hopes that teachers will espouse these in the future (if they do not already) and recommend that researchers attend to such social cognitions in future studies.

2.2.1. Personality or stage perspective

Some teachers see development as primarily influenced by personality characteristics of individuals or of groups of individuals (e.g., in a particular stage of life). For example, a national study showed that teachers explained differences among learners primarily in terms of personality (e.g., shyness); they rarely provided interactive explanations, such as how teachers' responses to students' characteristics may contribute to differences in their self-perceptions and learning (NCRTE, 1991). Research also shows that teachers tend to view students in terms of perceived life stage characteristics. For example, one study showed that some middle-level teachers endorsed stereotyped views of adolescents (e.g., as overly concerned with appearance and friends, having difficult relationships with adults); experienced teachers were more likely to hold these views than novice teachers and parents (Buchanan et al., 1990).

Similarly, a recent study found that middle and secondary teachers endorse myths of adolescence that contradict general developmental knowledge, especially regarding their social relations (Paulson, Marchant, Rothlisberg, Peterson, & Nichols, 1997). Teachers recognized gaps between the developmental knowledge they possessed and what they considered important to know, however, they disagreed with experts about the areas in which they were knowledgeable. For example, teachers believed that they did not know enough about cognitive development and diversity (e.g., gender and ethnic differences), but that they did understand adolescents' social relationships. However, teachers' responses to questions about development indicated that they were most knowledgeable about diversity and least knowledgeable about adolescents' social relationships (held stereotyped views).

Unfortunately, we have little evidence of how a focus on personality or stage characteristics is revealed in educational practices. Research does indicate, however, that parents' beliefs about children's personality or temperament are instantiated in their interactions with children, and influence children's behavior. For example, Miller (1995) reviews studies showing that parents become especially upset when they attribute negative behavior to a child's disposition (personality characteristic) and feel they must respond, perhaps because they expect such behavior to reoccur without intervention. Furthermore, research suggests that parents' dispositional attributions for social skills may be related to their children's poor classroom behavior.

We may reasonably assume that teachers also adapt their behavior and instruction to perceived personality differences in children, but studies are needed to confirm this conjecture. Research does show that teachers differ in the degree to which they believe educators should attend to individual differences in students' emotional needs and interests (e.g., Bussis, Chittenden, & Amarel, 1976; McCombs & Whisler, 1997). Moreover, these beliefs are consistent with their practices and reflected in children's attitudes toward school (McCombs & Lauer, 1997). Future studies should examine whether teachers hold fixed or malleable concepts of the personality or life stage characteristics that they attribute to students. A related study suggests that this is an important question to pursue. Murrone and Gynther (1991) found that teachers portrayed as "dogmatic" thinkers were more biased in their expectations of elementary children considered more or less interpersonally and intellectually competent than teachers portrayed as less dogmatic (i.e., flexible in thought). As with views of intelligence, fixed or malleable concepts of personality characteristics may be more predictive of teacher behavior than the particular category or label applied.

2.2.2. The child-in-the-family

Other studies suggest that rather than stressing individual differences in intelligence or personality as a factor in development, teachers believe that family influences are the factor in development. Results of a recent national study showed that parents often explain individual differences in achievement in terms of interactions between genetic and family influences; in contrast, teachers mainly attribute differences to family support (NISACA, 1999). Likewise, studies show that student teachers emphasize family influences on student

adjustment and achievement, and grow more pessimistic with time in their views of teachers' abilities to counteract negative influences of home and family (see Kagan, 1992, for a review).

Although teachers see the critical role that parents play in their children's achievement, they do not want parents to interfere (take partnership roles) in children's academic schooling. For example, in a qualitative study of teacher perceptions of parent involvement (Baker, 1997), teachers expressed desires for parents to monitor, but not assist with, homework, spend time helping at school, and respond to teacher requests for help with misbehavior. They also wanted parents to love and encourage their children, and teach values, self-respect, and proper social behavior at home—so that these skills or dispositions would not have to be taught or remedied in school. They did not want parents to question their curricular choices and teaching strategies. In other words, teachers might perceive a division of responsibilities—parents for the social and emotional lives of children, teachers for their academic lives.

Notably, teachers rarely mentioned that parental involvement was limited by the quality of interactions between the school and home; only a few noted that parents might not always feel welcome or comfortable. In another study of teacher perspectives on parent involvement, teachers working in low-income neighborhoods did note barriers to successful home–school relations, but placed the major responsibility of maintaining communication on parents (Shumow & Harris, 2000). Teachers in this study had received little or no preparation for working with parents during their teacher education programs. This finding is consistent with findings from other studies (see Morris & Taylor, 1998). Furthermore, research suggests that some middle-income teachers have negative, stereotyped views of minority parents as unconcerned and unresponsive as well as negative views of single parents (Morris & Taylor, 1998). Since teacher attitudes toward parents contribute to parents' decisions to become involved in school and to student outcomes (see Eccles & Harold, 1993; Hoover-Dempsey & Sandler, 1997), educators and researchers advocate including courses on working with families in teacher preparation programs. Recent research suggests that such course work enhances prospective teachers comfort and confidence levels in working with parents (Morris & Taylor, 1998). More descriptive studies are needed to determine under what conditions such coursework pays off.

However, fostering respectful teacher–parent relationships may provide limited benefits if the goal is merely for parents to cooperate with teachers and send socialized children to school. Teachers must also realize their own contributions to children's social and emotional development and see parents as partners in the process of education. The following perspectives espouse multidimensional roles for teachers.

2.2.3. The child-in-relations in school or the social developmental perspective

Developmental and educational psychologists point to the powerful influence of both teacher–student and peer relationships on student adjustment and learning and to the interconnections between children's social and academic lives in school (see Berndt, 1999; Bronfenbrenner, 1986; Juvonan & Wentzel, 1996; Ladd, 1996; Perry & Weinstein, 1998; Pianta, 1999). Pianta (1999) explains that supportive relationships with teachers meet

children's emotional needs, allowing them to regulate their behavior and develop skills essential for negotiating peer and academic demands. "Relationships . . . are in large part the infrastructure of school success not only for high-risk children but also for all children" (p. 63). Bronfenbrenner (1986) refers to a similar concept and advocates for a caring curriculum ("the fourth R") in schools. Various educational and psychological professional organizations and taskforces (e.g., APA, 1997; National Association for the Education of Young Children, 1995; National Middle School Association, 1995) recommend fostering positive teacher–student and peer relationships to enhance student motivation and learning in the classroom. For example, an APA Task Force established 14 learner-centered psychological principles for optimizing student learning, motivation, and development; central among these is the creation of a positive school climate and supportive interpersonal relationships (APA, 1997). Despite this attention, we know relatively little about how teachers view their roles and practices meeting children's socioemotional needs.

Research supports that quality interpersonal relationships have positive influences on students' attitudes toward school and learning. For instance, recent research indicates that primary students, perceptions of their teachers' learner-centered practices (support of individuals) predict their acceptance of classmates and achievement (Perry, Donahue, & Weinstein, 1999), as well as relate to their interests in schoolwork and learning (Daniels et al., 2001). Studies also show that kindergartners who have intimate relationships with their teachers (based on teacher judgments) demonstrate positive attitudes toward school (Pianta & Sternberg, 1992) and self-direction (Birch & Ladd, 1997). Such findings are not limited to primary grades. For example, McCombs and Laeur (1997) found that middle school teacher perceptions of their learner-centered practices (positive relationships with students) predicted student reports of self-efficacy, use of active learning strategies, and motivation (curiosity and task mastery).

One study suggests that practicing teachers acknowledge the importance of nurturing and respectful relationships for good teaching in the classroom (e.g., Clark, 1995). Based on interviews with 60 teachers, Clark (1995) summarized teachers' views of a good teacher as, ". . . capable of expressing love, care, and respect in 150 ways . . . takes children seriously . . . finds that which is good in . . . students, individually and collectively . . ." (p. 15). Research also suggests that preservice teachers may oversimplify and emphasize caring for children as the only important quality of a good teacher (e.g., Kagan, 1992). However, in a recent journal issue focused on a "social developmental perspective" of school adjustment, Wentzel (1999) noted that we do not yet understand how teachers define and demonstrate supportive caring relationships at school.

Although research shows that children who are accepted by peers (e.g., Ladd, 1996) and have positive stable friendships (e.g., Berndt, 1999) are better adjusted and achieve more in school, we know very little about teachers' views of their roles and practices meeting children's social/emotional needs with peers, or how their own relationships and behavior with students affect peer relationships. We do know, from related research on cooperative group learning, that children's learning is fostered when they are taught interpersonal skills (e.g., Johnson & Johnson, 1989), and that teachers sometimes have difficulty helping children support each other, especially if they have not experienced such learning activities

themselves (e.g., Sharan & Sharan, 1992). Teachers may assume, like many others, that social skills do not need to be practiced or taught (Comer & Wood, 2000). Teachers also may not view it as their responsibility to help children develop positive social competencies and peer relationships, evidenced by their frequent ignoring of harassment of students (Thomas, 1997).

We would expect increased attention to questions concerning teachers' views and support of children's socioemotional development and peer relations as researchers become more involved in collaborative learning communities (described earlier), and in efforts to show how children's social interests can be used to enhance their academic interests (e.g., Hidi & Harackiewicz, 2000). We may also see increased attention to teachers' understandings of the importance and establishment of healthy interpersonal relations for school adjustment, as this perspective may be necessary for developing the cultural sensitivities that national teaching organizations advocate. Child developmentalists, such as Comer and Wood (2000), stress that without commonality in the ethos of home and school, it is difficult for children to form relationships with teachers essential for their development and learning. Successful school interventions (demonstrating positive cognitive and socioemotional outcomes) involve acknowledging variation in students' cultural backgrounds, engaging parents with teachers in school governance and decision-making, and finding ways to intersect home and school values. Thus, teachers' diversity perspectives, described next, may derive from their motives to create supportive interpersonal contexts for children.

2.2.4. The child-in-culture or diversity perspective

Recall that in the Buchanan et al. (1990) study discussed earlier, teachers considered themselves least knowledgeable about issues concerning diversity and schooling effects on students. This perception exists despite major efforts made at the national level to provide guidelines for preparing teachers to teach culturally diverse students (e.g., see Zeichner & Hoeft, 1996, for a review). Research suggests that there is both cause for concern and hope for improvement. For example, studies indicate that novice teachers' views of children are often inaccurate because they assume that their students possess learning styles, aptitudes, interests, and problems that are similar to their own (Hollingsworth, 1989; Kagan, 1992). Furthermore, recent research suggests that prospective teachers hold simplistic views of student differences, have little knowledge about different cultural groups, may have negative attitudes toward those groups, view diverse backgrounds of students as a problem, and have lower expectations for the learning of ethnic minority students (see Zeichner & Hoeft, 1996). Interestingly, one study suggests that some prospective teachers explain ethnic and gender differences in achievement in terms of complex, broader societal influences (Avery & Walker, 1993). More research is needed to understand why some teachers take a more complex perspective than others.

Teacher educators have attempted to address the problem of naive perspectives through teacher preparation. To that end, attempts have been made to incorporate a sociocultural knowledge base (described earlier), a self-examination of their own cultural experiences as well as attitudes towards other cultural groups and values, and an examination of the

cultures of the home and community of their students (Zeichner & Hoeft, 1996). The goal of some of these programs is to help prospective teachers develop cultural sensitivities, dispositions to find out about student experiences in the contexts in which they are teaching, and competencies adapting their instructional practices to such contexts and experiences.

There is some anecdotal evidence to suggest that programs like these are effective in helping some prospective teachers develop cultural sensitivities (see Zeichner & Hoeft, 1996). Similar studies have shown that college students' ethnocentrism declines and they are better able to distinguish poverty from ethnicity as a developmental risk factor if they take a series of human development courses incorporating multicultural content (MacPhee et al., 1994). However, very little evidence exists showing that changes in preservice or in-service teacher perspectives and dispositions are long lasting or that they actually influence instructional practices or the success of their students (Zeichner & Hoeft, 1996).

Unfortunately, in recent reviews of the literature, Spencer (1999) suggests that we still do not know much about teachers' preparation for dealing with children from diverse cultures, particularly their ability to facilitate school adjustment. She proposes a "developmental, culture-sensitive, and context-sensitive" framework for understanding children's school adjustment, particularly their "responsive coping" strategies. She encourages teacher educators to help teachers develop clinical insights into their own and students' attitudes and prepare "trust-deserving contexts" for student learning.

Spencer's attention to fostering coping strategies is reminiscent of Keating's focus on developing effective habits of coping. Keating (1996) argues that, "we may well discover that habits of coping that are most important for health and well-being—maintaining social connectedness and exercising reasonable control over one's choices—are similar to, and perhaps even homologous with, the broad habits of mind that shape the acquisition of competence" (p. 477). Keating goes on to suggest that we must move from traditional views of diversity and competence to concerns with how to arrange educational environments to support the development of such habits of mind and coping. Such views correspond nicely with those expressed by social constructivists.

To assist children with developing healthy habits of mind and coping requires not only new roles and competencies for educators, but also alternative views of valued child outcomes and the purposes of schooling. Contemporary educational and developmental psychologists envision shifts from conceptualizing children in terms of their abilities, potential, and skills to conceptualizing children in terms of *their* understandings of the physical and social world as well as about their thoughts, beliefs, and theories (Olson & Torrance, 1996). Olson and Torrance propose that this new view allows teachers and children to "share an understanding of learning and thinking" or intersubjectivity. Thus, children can eventually develop tools or strategies they need to manage their own learning and coping in a self-conscious, systematic way.

2.2.5. Summary

Perspectives reviewed include seeing children's social selves in terms of major influences, such as personality traits, family support and teachings, interpersonal relations (acceptance

and support) at school, and coping/adaptation across cultural/ecological contexts. Some developmental/educational psychologists share the last two perspectives, which are not necessarily shared by teachers. The views presented, though not assumed to be distinct from one another nor embraced in the extreme, are reasonably associated with different valued child outcomes and recommended teacher roles and practices. We have included these "reasonable associations" in Table 1 for the purpose of stimulating research in this area. For this purpose, we have added Table 2, outlining pertinent findings from sample studies reviewed here along with some of our suggestions for future research. Our assumption is that, as teacher educators, we will be better prepared to assist prospective teachers if we work from a research-supported framework for understanding or anticipating teachers' beliefs, values, practices, and expectations of children as well as the impact of those on children's development.

Implementing practices based on sophisticated understandings of development is difficult, even for dedicated and knowledgeable teachers. Teachers often feel tension between the press to emphasize facts and skills and the need to work toward broader developmental and process goals (e.g., Bussis et al., 1976; Clark & Peterson, 1986; Stipek & Byler, 1997; Wien, 1995). This problem is intensified because teachers lack the support of an "agreed upon body of knowledge, skills, and value" that individuals in other professions, like law and medicine, share (Elkind, 1998, p. 186). As we have seen, many teachers may have limited knowledge of child development, primarily based on their own experiences in the classroom. There may be several explanations for this limitation, including the lack of accessible literature clearly linking developmental research and theory to specific educational practices, and the inherent difficulties with making and effectively communicating about these links (see Renninger, 1998; Sigel, 1998, for a discussion and suggestions). Yet, we also have cause for optimism, as Elkind (1998) concludes, "Child and adolescent development is the most solid and substantial basis upon which to build curricular, assessment, and teaching skills ... With child development as a common core of training, teaching could become a true profession" (p. 186). Current teacher education initiatives—reforms—echo this argument (e.g., NCATE, 2000). Our final section is devoted to suggestions for teacher educators and for research about educating teachers about child development.

3. Implications for teacher education

We have outlined theories pertaining to why understanding a child's development should influence pedagogy and inspected evidence that it does. The final issue examined is how to assist teachers in developing more sophisticated beliefs about children (e.g., social constructivist, ecological) and correspondingly sophisticated educational practices. We will briefly discuss our roles as developmental psychologists and teacher educators, and provide a few suggestions for incorporating developmental psychology in teacher education programs as a starting point. We are not suggesting that only the most complex, sophisticated, or contemporary perspectives be advocated in teacher education programs. Instead, knowledge of a variety of developmental perspectives and implications is probably best (e.g., Stott &

Bowman, 1996). According to Miller (1989), such knowledge prevents "tunnel vision in researchers or professionals working with children. A rigid, egocentric perspective on children's behavior can be avoided if one shifts from theory to theory in an effort to understand this behavior" (p. 437).

Some research has examined how to help teachers learn about and apply developmental perspectives, but we know very little about how to accomplish these goals. We suggest that developmentalists are uniquely qualified to undertake the challenges inherent in studying and planning to support teachers' development because our expertise and research skills fit with the task. More research is needed before strong recommendations can be made.

Much of the available research on attitude and behavior change among preservice teachers presents a pessimistic view. A number of scholars have reported disappointing results in that teacher education programs have failed to help preservice teachers develop more sophisticated beliefs and practices (see Richardson, 1996, for a review). Other scholars have found that some, but not other, preservice teachers develop beliefs consistent with practices endorsed by theoretically based staff developers. Not surprisingly, these studies usually find that preservice teacher's movement toward more sophisticated perspectives can be predicted by their prior beliefs. This has led some (Haberman & Post, 1998) to suggest that teacher education programs should screen their applicants. Others (Richardson, 1996) point out that elements of successful constructivist programs for staff development could be, but rarely have been, incorporated into preservice teacher education. Program design, evaluation, and research on incorporating such elements into preservice teacher education is desperately needed.

Research needs to focus on three general areas—how to reveal teacher thinking about child development and their roles in fostering this development, how to best incorporate a developmental perspective into teaching, and how to support teachers' developmentally appropriate practices. First, if we are to teach child development in a way that will help teachers use that knowledge to effectively guide children's learning and development, we will need to understand their thinking about children as it relates to their views of teacher roles and appropriate educational practices and student outcomes. We also need to consider their personal interests and values regarding the use of knowledge about child development (see Patrick & Pintrich, 2001). This is precisely why the research reviewed above is important. Frameworks like the one presented here can inform our teaching by helping us to conceptualize our students' thinking and where we are guiding them. The framework needs to be tested by research, and modified and elaborated where necessary. But, given a framework, we ourselves need to teach our classes in a manner that provides us access to prospective teachers' thinking about children, and with the commitment to help teachers develop more sophisticated perspectives about children and their roles in helping children develop adaptive habits of mind and coping.

Constant and consistent monitoring of what our students are thinking is crucial. In other words, like the recommendations for teachers, we propose to enhance our understandings of our college students' social cognitions and developmental perspectives (develop intersubjectivity) so that we will be in a better position to assist our students with reflecting on, expanding, or challenging such perspectives. Methods of making their thinking visible in

college classes include assigning and monitoring written responses to class reading and activities or their interpretation of vignettes or cases about children (Daniels, Kalkman, Defrates-Densch, & Kirchen, 2000; Sudzina, 1997). Students can also be asked to individually record their stance on a developmental issue or the attributions they assign to a child's described behavior, and then to share their view by asking for a show of hands endorsing that perspective or until their ideas are exhausted. Such strategies also provide the students with the opportunity to reflect upon the qualities they value in children. Undoubtedly, there also are others ways to access their thinking.

Second, we need to identify what teachers need to know about children and what dispositions we would like them to take when making decisions in their classrooms. This is an issue that deserves concerted attention and reasoned debate both within our field, with other teacher educators, and with practicing teachers who are responsible for educating children. Currently, textbook publishers influence these decisions at least as much as, if not more than, evidence that the knowledge, concepts, and explanations presented contribute to practice.

We would like a developmental perspective to be part of a teacher's repertoire. At the least, taking a developmental perspective means attempting to perceive the world from the child's perspective. This coincides with the view of Olson and Bruner (1996) who posit that "the first step in 'equipping' teachers (or parents) for their task is to provide them access to the best available understanding of the mind of the child" (pp. 12–13). Duckworth (1987) recommends that teachers should conduct careful observation and child interviews. There is some evidence to suggest that access to specific models of learning and development helps to attune teachers to children's thinking and helps them to develop more sophisticated beliefs and practices. Gearhart, Saxe, and Stipek (1995) found that teachers who focused on student thinking during staff development changed their practice to include students in more sustained mathematical inquiry than did teachers who planned collaboratively without access to research knowledge about student's mathematical thinking. Research on Cognitively Guided Instruction also found that research-based knowledge about children's typical developmental trajectories in mathematical reasoning was effective when combined with having teachers consider how that knowledge applies to teaching (Fennema et al., 1996). Rhine (1998) identifies these two research programs as exemplars of merging developmental knowledge and application to teaching. Both programs worked with practicing teachers, so we continue to know little about how preservice teachers might benefit from this combination of factors.

Another aspect of a developmental perspective is that individual and sociocultural differences are defined as "normal" or "expected." Earlier in the 20th century, age-graded norms were overemphasized so that teachers, like everyone else, operated on the basis of devaluing differences. As developmentalists, we have learned a great deal about diversity and about how genetic and cultural–familial factors interact to influence development. Unfortunately, we know little about how to prepare teachers to use practices that accommodate individual and cultural differences, but promising work in this area has been done by MacPhee et al. (1994), Moll (1990), Moll, Amanti, Neff, and Gonzalez (1992), and Tharp and Gallimore (1988).

Third, we need to know how to support teachers' development and construction of knowledge about children. There are many promising ideas about how to improve teachers understanding of children but all these need more research support than is currently available. Several of those ideas are presented briefly, not as an exhaustive list, but rather to illustrate what these approaches might look like in a college classroom. One idea is exemplified by Heath's (1983) work with practicing teachers in a graduate class. She had them work as ethnographers studying their own behavior, practices, and values and questioning the source and implications of those characteristics. Teachers then turned to studying and analyzing the children in their classes. As a result of the teachers' experience as ethnographers, "they became more practiced and more skilled in observing patterns of behavior in groups of children ... (as) preparation for the next step—adapting materials and methods to help bring all children closer to a realistic chance for school success" (p. 273). Another idea is to have teachers analyze examples of developmental concepts appearing in classroom contexts or in children's schoolwork (e.g., reports, stories). For example, moral reasoning as described by either Kohlberg or Gilligan can be ascertained in classroom discussions or in papers about literature and history, and perspective taking can be observed in conflict resolution situations and in classroom discussions. In both of the mathematics projects mentioned above, teachers are shown videotapes of children doing mathematics work allowing them to see examples of children's strategy development. Whether viewing selected episodes on videotape constrains or enhances understanding in comparison to conducting guided observation assignments remains open to investigation.

As described by researchers studying KEEP (Gallimore & Tharp, 1990; Tharp & Gallimore, 1988), teachers participating in the project learn to assist children's performance and to conduct instructional conversations through instructional conversations with consultants during "observation and conference activities." Consultants observe instruction (either in person or view videotaped lessons), take data on students' engaged time, and provide feedback to the teacher. During the weekly conferences, the feedback is discussed and planning decisions are made cooperatively. Both teachers and consultants comment on the taped lessons and, in response, the consultant provides additional feedback and cognitive structuring, asks questions, reinforces, and instructs. As teachers develop expertise, they have internalized these processes and can thus provide much of the feedback and direction to themselves in a process Gallimore and Tharp (1990) call "self collaboration." However, it is important to note, that one conclusion from the teacher education component of the KEEP project is that teacher development requires extensive, ongoing support (Au & Carroll, 1997).

Some research about preservice teacher education suggests that it is important for the prospective teachers to identify their beliefs about development and subsequently submit the beliefs to challenge (Hollingsworth, 1989; Richardson, 1996). This could take the form of having students write about the ideas or research findings in the assigned reading that run counter to their own experiences and ideas. Students can then be asked to explain likely reasons for the discrepancy. Of course, instructor feedback on such reaction papers is crucial. An underlying theme of such an exercise is to lead students to the realization that,

although personal experience is a powerful shaper of individual beliefs, it does not necessarily generalize to others or across particular cohorts or groups of people. Another way to prompt belief confrontation is to have students discuss controversial educational issues or cases informed by the developmental theory and research that they are studying. For example, students could be asked to discuss courses of action that they should take when one child in a class is being bullied by another child or whether and how to make performance standards and evaluations "fair" given a diverse group of students. Students must be expected to substantiate their responses with knowledge from the class. Through discussion of such issues, beliefs come to the surface and are subjected to reason and argument. Students are exposed to multiple perspectives in hearing the analysis of others. As professors, our role is to monitor viability of the reasoning and knowledge used in the student arguments as well as to question and guide students to consider ideas or perspectives that were either not raised or given short shrift. There is theory to support these suggested methods, but much needs to be done in substantiating their efficacy in college child development classes.

Several things seem certain. We will not accomplish this alone or in one isolated class. It will require collaboration and coordination with others responsible for teacher education, with content area specialists, and with settings where developmentally appropriate practice occurs. It is highly unlikely that we can assist teachers' growth and development by "giving them notes" in large anonymous lecture halls, as one of our colleagues described his job, or by providing feedback by posting Scantron examination results. Rather, it requires us to have a deep and flexible understanding of both content and learners. It is difficult and demanding to teach the way we are suggesting. It will require, as well, some change in the way that we think of ourselves. Renninger (1998) suggests that such a change requires a shift in the fields of developmental psychology and education. "For both researchers and teachers, this shift involves reconstructing working knowledge about what is currently known about how students and teachers learn and the implications of this for how students must be taught ... In this way, research in developmental psychology will not only come from practice, but it will be understood as essential to practice" (p. 259). Utilizing practices and participating in designing learning experiences that support the development of teachers and helping each other to create and use knowledge about the development of teachers are worthy pursuits for the field of child development. Most importantly, it provides a way to promote the healthy development of numerous children where most of them spend much of their time, in school.

In addition to helping teachers acquire a developmental perspective, teacher educators must also be aware of barriers in implementation and create ways to help teachers argue for developmentally appropriate practices and against practices that are inappropriate and may lead children to develop maladaptive habits of mind and coping. The best policy is to arm teachers with an understanding of child development and education that grows with new knowledge and with the ability to incorporate and criticize various perspectives, as well as the recognition of the values on which educational practices are based (Stott & Bowman, 1996). This is the worth of an understanding of child development. Such an understanding requires intelligent minds (Dewey, 1895/1964), interprofessional communication, and an accessible,

pertinent knowledge base uniting developmental research and practice (Sigel, 1998). Thus, we need to develop our own abilities and dispositions to support the intelligent minds of teachers.

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