COLLABORATIVE MODELS OF INSTRUCTION: THE EMPIRICAL FOUNDATIONS OF INCLUSION AND CO-TEACHING

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A summary of inclusion and co-teaching syntheses was conducted to better understand the evidence base associated with collaborative models of instruction. Six syntheses were identified: four investigated inclusion, and two investigated co-teaching. Collectively, the syntheses represented 146 studies. The syntheses investigated research on collaborative models; student outcomes; teachers’ attitudes, beliefs, and perceptions; and students’ perceptions. Common themes of collaborative models were identified across the six syntheses, which included collaborative models; student outcomes; teacher support issues; and attitudes, beliefs, and perceptions of collaborative models. Findings provide an empirical foundation to assist school psychologists in evidence-based decision making. © 2012 Wiley Periodicals, Inc.

Over the past 20 years, a convergence of legislative pressures has challenged educators to find efficient yet effective ways to provide high-quality instruction for students with disabilities. In 1994, the Individuals With Disabilities Education Act (IDEA) made explicit the expectation that students with disabilities would receive their education (to the maximum extent possible) with nondisabled peers, in the general education classroom, and with appropriate supplemental aids and services, otherwise known as the least restrictive environment mandate. Under this mandate, school personnel must determine what supports are necessary to ensure that students are educated in the general education setting to the greatest extent possible. More recently, both No Child Left Behind and IDEA 2004 challenge school personnel to provide evidence-based interventions to students who display inadequate performance in the school setting. School psychologists often serve in key roles to adequately address both the least restrictive environment mandate and the provision of evidence-based practices. The purpose of this article is to provide a summary of research conducted to determine the efficacy and use of inclusion and co-teaching as a means to inform school psychologists’ recommendations during the special education referral and identification process.

The complexities of providing meaningful education to students with disabilities within appropriate educational contexts require a high degree of cooperation between teachers and other school personnel, particularly school psychologists. To ensure that decision making is aligned with evidence-based practices, understanding the research on collaboration in school settings related to inclusion and co-teaching provides an empirical foundation for decision making. Inclusion refers to educational programming wherein students with disabilities learn with their peers in general education classrooms (Gilhool, 1989). Under the inclusion model, students may leave the classroom to receive supplementary services (e.g., speech therapy or individualized instruction from a specialist) but receive their core instruction within the general education classroom (Community Alliance for Special Education and Protection and Advocacy & Protection and Advocacy, Inc., 1992). Inclusion can take place with or without additional support from a special education teacher during core instruction. However, within the inclusion setting, a co-teaching arrangement is often

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established so that a special education teacher works along with the general education teacher to provide needed supports, precluding the need for students with disabilities to leave the classroom to receive specialized assistance.

Common to the many definitions of co-teaching is an expectation that general and special education teachers work collaboratively within the general education setting to teach students with disabilities and those at risk for academic difficulty (Bauwens, Hourcade & Friend, 1989; Murawski & Lochner, 2011; Sileo, 2011). Although the definition may seem simple enough, implementation of co-teaching is often operationalized more broadly. In one of the more common models of co-teaching, the general education teacher maintains all responsibility for delivering instruction whereas the special educator circulates around the room to monitor student performance. In another model, the class is split, so that each teacher delivers instruction to smaller groups of students. Other models of co-teaching are implemented in schools and require differing levels of participation and responsibility from both teachers in the classroom.

Because there is little variability in the definition of co-teaching, but broad variability in its implementation, a critical factor in the success of co-teaching models is the professional relationship formed between teachers prior to and throughout the co-teaching experience (Ploessl, Rock, Schoenfeld & Blanks, 2010; Trent et al., 2003). In many guides on co-teaching (e.g., Hang & Rabren, 2009; Ploessl et al., 2010; Sileo, 2011; Trent et al., 2003), the first step in successful implementation includes establishing a co-teaching relationship by developing goals, expectations, and roles, as well as understanding setting demands (i.e., classroom expectations and student needs). Trent and colleagues (2003) reported that mutually satisfying co-teaching relationships emerge when teachers focus on the technical aspects of co-teaching—in other words, establishing roles and responsibilities—prior to engaging in the co-teaching relationship. This type of communication requires time, a knowledge of co-teaching models (including the best use of each model), and negotiation skills to not only advocate for appropriate instruction that meets student needs but also opportunities that most effectively utilize the expertise of both the general and special educator. Problems arise when the initial negotiation phase breaks down. With this in mind, it should be noted that many special education teachers have not been trained in collaborative models (Kampwirth, 1999), posing potentially serious problems at the early stages of co-teaching implementation.

School psychologists are poised to support collaborative models of co-teaching in several ways. First and foremost, school psychologists often lead discussions about appropriate placements for students with disabilities. Knowledge of different co-teaching models will assist school psychologists in determining what will best meet each student’s need. Second, once inclusion and potentially co-teaching are designated as an instructional delivery method of choice, the school psychologist possesses unique skills that can aid in early planning and continued support of the co-teaching model. For example, most school psychologists are knowledgeable about collaborative consultation—a method of assisting consultees in decision making and carrying out plans that are in the best interest of students (Kampwirth, 1999). Unique interpersonal skills that are taught and practiced within collaborative consultation training include active listening, empathy, assertiveness, questioning to gain information, and negotiating an outcome that is mutually beneficial. Using these skills, school psychologists may be able to facilitate teacher meetings in the beginning stages of establishing co-teaching arrangements to help teachers engage in: (a) sharing information regarding teaching style, classroom expectations, and so forth; (b) negotiating roles that are mutually beneficial; and (c) considering which co-teaching model best meets student needs.

Admittedly, although school psychologists possess unique skills that may be used to support inclusion and specifically co-teaching implementation, there still exists a question about the effective components of co-teaching models that should be promoted. As a body of research begins to
accumulate, a useful method for identifying convergent findings are the techniques of meta-analysis and synthesis of research. These techniques provide a systematic review of a body of research through explicit search procedures, study inclusion criteria, and analysis of findings. Several syntheses and meta-analyses reviewing the efficacy of inclusion and co-teaching have been written over the past 2 decades. Using a similar approach to one that identified effective instructional practices for students with learning disabilities (Vaughn, Gersten, & Chard, 2000), this review provides a descriptive summary, or synthesis of syntheses, to describe important findings related to both inclusion and co-teaching. Because the topics are highly related, we believe that synthesizing findings from both will provide useful information to school personnel related to the broader topic of facilitating teacher collaboration within the schools as a means to improve student outcomes.

**Method**

**Study Selection**

We included synthesis or meta-analysis articles about co-teaching and inclusion that met the following eligibility criteria: (a) investigations focused on co-teaching or inclusion, (b) reviews included either quantitative or qualitative studies, and (c) investigations were peer-reviewed. We excluded studies that examined the use of paraprofessionals and/or instructional adaptations (e.g., Giangreco, Edelman, Broer, & Dole, 2001; Scott, Vitale, & Masten, 1998).

**Literature Search**

We identified studies between 1990 and 2010 that involved the review, meta-analysis, or research synthesis of a body of studies that add to the understanding of the collaborative nature of co-teaching and inclusion in classrooms. We systematically searched ERIC and PsychINFO databases, using the following search terms: co-teaching, collaborative teaching, cooperative teaching, team teaching, mainstreaming, inclusion, synthesis, and meta-analysis. In addition, we completed a hand search of four major journals, including Exceptional Children, Remedial and Special Education, Journal of School Psychology, and Psychology in the Schools, published from 2007 through 2010.

**Coding Procedures**

We approached the data through a grounded theory framework, which focuses on generating theoretical explanations that are “grounded” in data, through actions, interactions, and social processes. Because phenomena continually evolve in response to changing conditions, a key characteristic of grounded theory research is to build change into the research method. This approach provides a systematic way of reducing a large body of data into a concise conceptual framework that can describe or explain a phenomenon. We began coding data using an analytic process, referred to as “open coding” (Corbin & Strauss, 1990), which makes use of constant or systematic comparison of data. To utilize this method, the first author initially read the syntheses and meta-analyses broadly, noting overall conceptual themes that emerged across the literature (i.e., teacher and student attitudes, beliefs, and perceptions of collaborative models), from which we identified a set of broad categories. The first and second author then scrutinized the data for properties and commonalities that characterized each category (i.e., challenges of using collaborative models), developing subcategories. We continually referred back to the data, noting interrelationships and multiple connections between categories and subcategories. Through this systematic, iterative process of sifting, cross-referencing, and questioning the data, we were able to examine and synthesize a diverse body of both quantitative and qualitative information.
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RESULTS

Syntheses Features

A total of six syntheses were identified, based on the established criteria. A meta-analysis by Murawski and Swanson (2001) and a meta-synthesis by Scruggs, Mastropieri, and McDuffie (2007) focused on co-teaching. Three syntheses focused on perceptions of inclusion (Avramidis & Norwich, 2002; Klingner & Vaughn, 1999; Scruggs & Mastropieri, 1996), and one focused on effectiveness of inclusion (Manset & Semmel, 1997). The collective body of research included 146 studies. See Table 1 for a summary of syntheses features. Using findings from the six syntheses, the following categories provide an organizational structure for summarizing findings across studies and syntheses: collaborative models; student outcomes; teacher supports, and attitudes, beliefs, and perceptions of collaborative models. Table 2 summarizes which syntheses contributed to each category.

Collaborative Models

Collaborative teaching models (i.e., general education teacher co-planning and/or teaching with the special education teacher) are implemented in a variety of instructional arrangements: whole class–teacher led, two heterogeneous groups, two homogeneous groups, station teaching, whole class plus small group, and whole class team teaching (Friend, Reising, & Cook, 1993; Sileo, 2011). Table 3 summarizes these different arrangements. The most frequently cited model according to Scruggs and colleagues (2007) was the whole class–teacher led, which is also referred to as “one teach, one assist” model, with special education teachers frequently being placed in the more subordinate role of assistant. This subordinate role of assistant being assigned to special education teachers was consistently reported across different grade levels and frequently included responsibility for addressing any behavior difficulties displayed by students. Less frequently cited models according teacher surveys were team teaching, station teaching, and alternate teaching (Scruggs et al., 2007).

Manset and Semmel (1997) concluded that when inclusion teachers were simply provided suggestions by instructional leaders, there was no clear indication that effective strategies or advantageous use of specialists in the classroom occurred. However, inclusion models that facilitated curricular changes designed to provide direct and intensive basic skills within general education instruction and tutorial programs for students with disabilities were found to be effective. Manset and Semmel concluded that appropriate use of technical support must be required in the general education classroom through in-service training, specialists serving as consultants, tutors, and co-teachers. An instructional program to support inclusion consisted of modified curriculum, formative evaluations, redistribution of resources, and a designated means of collaboration (Manset & Semmel, 1997).

Student Grouping. Student-grouping strategies designed to facilitate peer-to-peer discussion and instruction were consistently reported as potentially effective collaborative strategies (Klingner & Vaughn, 1999; Manset & Semmel, 1997; Scruggs et al., 2007). A review of student perceptions of inclusion (Klingner & Vaughn, 1999) indicated that students valued the opportunity to provide and receive help from their peers through working with partners and small group activities. Students preferred these modes of grouping to whole-class instruction or being asked to work independently. A review of teacher perceptions of inclusion (Scruggs et al., 2007) also indicated that, in some cases, peer tutoring and cooperative learning were used effectively in co-taught classrooms. Manset and Semmel (1997) cautioned against grouping strategies that consisted simply of students with disabilities being “pulled aside” on a regular basis within the general education classroom. Despite these findings, when general education teachers were surveyed, a considerable number indicated a preference for strategies associated with whole-class instruction (Scruggs et al., 2007).
Table 1  
*Syntheses’ Features*

<table>
<thead>
<tr>
<th>Article</th>
<th>Method/Subject</th>
<th>Years Included</th>
<th>Number of Studies</th>
<th>Number of Student Participants</th>
<th>Number of Teacher Participants</th>
<th>Study Types</th>
<th>School Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klingner &amp; Vaughn (1999)</td>
<td>Synthesis–inclusion</td>
<td>NR</td>
<td>20</td>
<td>760 (high-incidence disabilities) 4,659 (total)</td>
<td>N/A</td>
<td>Qualitative–student perceptions of educational practices used in the general education setting that include students with LD</td>
<td>Elementary (n = 7)    Secondary (n = 10) Combination elementary/secondary (n = 3)</td>
</tr>
<tr>
<td>Murawski &amp; Swanson (2001)</td>
<td>Meta-analysis–co-teaching</td>
<td>1989–1999</td>
<td>6</td>
<td>1,617</td>
<td>15 (Sped) 28 (Gen Ed)</td>
<td>Quantitative–data reported that enabled the calculation of effect sizes for student outcomes</td>
<td>Elementary (n = 3)    Secondary (n = 3)</td>
</tr>
<tr>
<td>Scruggs et al. (2007)</td>
<td>Synthesis–co-teaching</td>
<td>1989–2006</td>
<td>32</td>
<td>95</td>
<td>228 (Sped) 258 (Gen Ed)</td>
<td>Qualitative–interviews, observations, documents, biographies, focus groups, and journals</td>
<td>Elementary (n = 18)    Secondary (n = 17)</td>
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</table>

*Note.* NR = not reported; N/A = not applicable; LD = learning disabilities; Sped = special education; Gen Ed = general education.
Co-Teaching and Inclusion Models

Table 2

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<tr>
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<tr>
<td>Student Outcomes</td>
<td></td>
<td>X</td>
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<tr>
<td>Teacher Support Issues</td>
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<td>X</td>
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<td>X</td>
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<tr>
<td>Resources</td>
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<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Planning time</td>
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<tr>
<td>Training</td>
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<td>Attitudes, Beliefs, and Perceptions of Collaborative Models</td>
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<td>Students’ Perceptions of Collaborative Settings</td>
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</table>

Student Outcomes

Only two of the syntheses identified for this review established criteria that required the studies to include student outcomes as part of the design (Manset & Semmel, 1997; Murawski & Swanson, 2001). Of the 146 studies that were identified as part of the six syntheses reviewed, only 17 included information specifically about student outcomes. The findings from Manset and Semmel (1997) and Murwaski and Swanson (2001) reported mixed results in regard to student outcomes for inclusion and co-teaching models.

The synthesis by Manset and Semmel (1997), which focused on inclusion models, indicated that inclusive programs were effective for some students with disabilities. However, due to methodological limitations of the included studies, conclusions about the superiority of inclusion models compared with pull-out models of instruction were not possible. Primarily, studies used pretreatment–posttreatment matched designs to determine effectiveness of inclusionary programs, with limited information provided about matched schools (i.e., match based on free and reduced lunch data). For studies that reported findings for typically performing students, gains were consistently in favor of the inclusion treatment conditions. Of the studies reviewed, three programs (Jenkins et al., 1994; Schulte, Osborne, & McKinney, 1990; Slavin, Madden, Karweit, Livermon, & Dolan, 1990) reported significantly larger gains over comparison conditions for students with mild disabilities and low-achieving students. Common features of these programs included a focus on explicit teaching practices, individualized instruction emphasizing basic skills, and frequent testing.

A caveat to the findings of the programs described as effective by Manset and Semmel (1997) must be mentioned to fully understand the context within which these student outcomes occurred. One part of the criteria for the Manset and Semmel synthesis was “specify as a primary intent the full-time mainstreaming of students with mild disabilities” (p. 158). In other words, students with mild disabilities and low achievement did not receive all of their instruction in the general education setting. The authors noted in the discussion that students with mild disabilities did not return to general education classes full time during the duration of the studies.

The meta-analysis by Murawski and Swanson (2001), which focused on co-teaching models, identified six studies with enough information to calculate effect sizes for student outcomes. The
Table 3
Collaborative Model Teaching Arrangements

<table>
<thead>
<tr>
<th>Type of Co-Teaching</th>
<th>Description</th>
<th>General Education Teacher Role</th>
<th>Special Education Teacher Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Class, Teacher Led</td>
<td>One teacher is responsible for whole-class instruction while the other teacher monitors student work or provides short (1- to 2-minute) instructional support during independent work times</td>
<td>Lead teacher</td>
<td>Support</td>
</tr>
<tr>
<td>Two Heterogeneous Groups</td>
<td>The class is split into two equal groups of about 10–12 students. Groups are not created based on student need and instead remain heterogeneous. Each teacher delivers the same material to his/her group. This model provides opportunity for increased student participation and interaction with a teacher</td>
<td>Lead teacher</td>
<td>Lead teacher</td>
</tr>
<tr>
<td>Two Homogeneous Groups</td>
<td>The class is split into two groups based on students’ performance in a subject area. This model is most often used when a group of students requires re-teaching while another group is ready for extension activities.</td>
<td>Lead teacher (usually extension lesson)</td>
<td>Lead teacher (usually re-teaching lesson)</td>
</tr>
<tr>
<td>Station Teaching</td>
<td>4–5 work stations are set up throughout the classroom. Small groups of 3–5 students rotate among the work stations. Several groups may be heterogeneous, whereas 1 or 2 groups are homogeneous based on instructional need. Each teacher leads instruction at a table, providing every student in the class an opportunity to engage in small-group instruction with a lead teacher</td>
<td>Lead teacher</td>
<td>Lead teacher</td>
</tr>
<tr>
<td>Whole Class + Small Group</td>
<td>The lead teacher instructs the whole class while the support teacher works with a small group of students who may require re-teaching or alternative teaching methods. The small group may remain inside the classroom or leave the classroom for a quieter location</td>
<td>Lead teacher of whole class</td>
<td>Lead teacher of small group</td>
</tr>
<tr>
<td>Whole Class Team Teaching</td>
<td>Teachers work together cooperatively to teach a whole-class lesson. One teacher may take the lead role, while the other interjects information or questions, makes clarifications, or re-states information to increase understanding among all students</td>
<td>Lead teacher</td>
<td>Lead teacher</td>
</tr>
</tbody>
</table>

Friend et al., 1993; Sileo, 2011.

Dependent measures varied substantially: grades, math and reading achievement, attitudes, absences, behavioral referrals, and social outcomes. A large mean effect size (ES = 1.59) was reported for reading/language arts achievement and a moderate mean effect size (ES = 0.45) was reported for math achievement, both of which were calculated from four effect sizes, reported in three studies (Klingner, Vaughn, Hughes, Schumm, & Elbaum, 1998; Rosman, 1994; Self, Benning, Marston, & Magnusson, 1991). A small to moderate mean effect size (ES = 0.32) was reported for grades, which was calculated from three effect sizes reported in two studies (Lundeen & Lundeen, 1993; Walsh & Snyder, 1993). Murawski and Swanson (2001) also reported a small effect size (ES = 0.08) for social outcomes, which included measures of peer acceptance, friendship quality, self-concept, and social skills all derived from one study (Vaughn, Elbaum, Schumm, & Hughes, 1998). Overall, for social outcomes and academic outcomes combined, the total mean effect sizes for all studies
included as part of the Murawski and Swanson meta-analysis were moderate (ES = 0.40) in favor of co-teaching models.

**Teacher Support Issues**

*Resources.* Appropriate support services, such as materials, equipment, and access to specialized personnel, tended to assist in alleviating the apprehension often expressed by general education teachers about their and students’ success within inclusion models (Avramidis & Norwich, 2002). Teachers who participated in co-teaching models expressed a need for administrative support (Scruggs et al., 2007). Overall, teachers reported a lack of adequate resources for inclusion. Specifically, teachers reported adequate access to materials and inadequate access to personnel to support inclusion (Scruggs & Mastropieri, 1996). One solution to address the needs of inclusion teachers was to consider decreasing the student-to-staff ratio in those settings (Manset & Semmel, 1997).

*Planning Time.* Across the inclusion and co-teaching literature, teachers consistently reported the need for structured planning time for all personnel involved in instruction (Manset & Semmel, 1997; Scruggs & Mastropieri, 1996; Scruggs et al., 2007). Effective planning time allows for structured opportunities for teachers to collaborate about instruction through the use of facilitators, administrators, and formalized processes (Manset & Semmel, 1997). Teachers who participated in co-teaching models identified planning time for collaboration with colleagues as essential (Scruggs et al., 2007), yet approximately 25% of teachers did not believe sufficient planning time was designated for inclusion (Scruggs & Mastropieri, 1996).

*Training.* Similar to planning time, teachers consistently reported the need for training to effectively implement inclusion and co-teaching models (Avramidis & Norwich, 2002; Scruggs & Mastropieri, 1996; Scruggs et al., 2007). Scruggs and Mastropieri (1996) reported that approximately 30% of all teachers surveyed believed that general education teachers do not have enough expertise and training on inclusion models and that teachers consistently expressed the need for training of co-teaching models (Scruggs et al., 2007).

**Attitudes, Beliefs, and Perceptions of Collaborative Models**

Researchers have addressed the attitudes, beliefs, and perceptions of teachers about collaborative models, with the rationale that teachers’ beliefs are likely to influence teachers’ motivation and thus the quality of their practice within collaborative models. A similar rationale was provided for determining students’ perceptions of collaborative models, recognizing that if the goal is to increase the acceptance and inclusion of students with disabilities in general education settings, then the perceptions of peers matter.

*Teachers’ Perceptions of Collaborative Settings.* Teachers’ views on collaborative models were mixed and appear to vary according to several factors. Although early surveys (prior to 1994) indicated teacher attitudes were not favorable toward inclusion, later surveys indicated that teachers who had the opportunity to participate in inclusion reported more favorable attitudes (Avramidis & Norwich, 2002). Carefully planned collaborative instruction that includes students with disabilities may assist in teacher attitudes being more positive (Avramidis & Norwich, 2002).

Scruggs et al. (2007) concluded that teachers often perceived social benefits to students who participated in co-taught classrooms, and some evidence suggested that teachers perceived improved cooperation between students with diverse needs. In co-taught classes, teachers consistently reported social benefits to students were more apparent. According to Scruggs and Mastropieri (1996), about 50% of general education teachers and 65% of special education teachers agreed that inclusion for
part of the school day provides benefits to students. A very small percentage of teachers, however, agreed that full-time inclusion would provide benefits over pull-out resource programs provided part of the day. Avramidis and Norwich (2002) found some evidence to support the notion that as a student’s age increases, teachers may be less supportive of inclusion for students with disabilities. However, this may be the case because teachers in the upper grades have a tendency to place more emphasis on subject matter requirements rather than individual student development, as is the case in the primary grades.

Teachers’ attitudes and perceptions were influenced strongly by the nature and severity of disabilities for students participating in collaborative models (Avramidis & Norwich, 2002; Scruggs & Mastropieri, 1996). Teachers’ support of inclusion varied according to the intensity and severity of student needs (Scruggs & Mastropieri, 1996). Teachers tended to report more positive attitudes toward the inclusion of students with physical and sensory impairments than those with learning or behavioral disabilities (Avramidis & Norwich, 2002). Scruggs and Mastropieri (1996) concluded from several surveys of inclusion that teachers were concerned that students with disabilities may create unique problems within the general education setting and that significant changes may be necessary to accommodate all students’ needs. Overall, teachers who accepted responsibility for teaching students with diverse needs tended to be successful in implementing inclusion (Avramidis & Norwich, 2002).

Scruggs and colleagues’ (2007) review of co-teaching reported that teachers expressed both caution and concern that students must possess adequate academic and behavioral skills for the co-teaching to be effective. Although overall, teachers reported beneficial experiences as participants in co-teaching (Scruggs et al., 2007), they cautioned about “forced co-teaching” by school administrators. Teachers expressed a belief that co-teaching should be voluntary and based on compatibility of teachers who display high levels of effort, flexibility, and compromise (Scruggs et al., 2007).

**Students’ Perceptions of Collaborative Settings.** Equity and fairness of treatment were consistent findings of research on students’ perceptions of inclusion. Klingner and Vaughn (1999) summarized students’ perceptions of inclusion based on survey research and reported that students consistently stated a belief that all students should be assigned the same homework and that modified grades were unfair. However, all students wanted teachers to consider their strengths when considering factors for assigning grades. Students perceived grades as a meaningful form of feedback. The construct of grades was not always understood as well by students with disabilities compared with typically achieving peers. Students considered adaptations of instruction and materials for students with disabilities as an acceptable classroom practice.

Klingner and Vaughn (1999) also summarized a series of findings, noting students’ beliefs, attitudes, and perceptions of classroom practices that were effective. Students reported the benefit of helpful assignment routines, including clear directions, repetition of directions, explanation and examples, assistance, listing resources, time considerations, and clear descriptions of purpose, benefit, and evaluation criteria. Middle-school students reported learning strategies, purpose statements, study guides, outlines, and hands-on activities as effective. Overall, student survey results indicated that students preferred classrooms with instructional routines and materials that supported active involvement, assistance, choice, social interaction, creativity, variety, activities, and challenges.

**DISCUSSION**

This review provides a descriptive summary or synthesis of syntheses to interpret findings related to both inclusion and co-teaching, with the intent of informing school psychologists and other educational decision makers about the extant research on this topic. Our view was that both inclusion
and co-teaching relate specifically to developing programs for students with disabilities, and thus, research addressing both of these topics provides useful information to school personnel focusing on facilitating teacher cooperation within schools as a means to improving student outcomes.

The analysis of the syntheses reported in this article indicates that the most typical model for implementing inclusion was one in which the general education teacher provided the majority of instruction and the special education teacher, typically in a subordinate role, provided support to students and suggestions to teachers. What evidence is there that this model, although prevalent, is more effective than other models? Recognizing that fewer than 15% of the 146 studies included in these syntheses provided data on student outcomes, and very few studies systematically manipulated the influence of co-teaching on students with and without disabilities, the most promising interpretation of the data is that co-teaching is likely to be associated with small gains when implemented appropriately. Findings from these syntheses also suggest that when specialists “recommend” improved instructional practices to teachers (such as the model in which the general education teacher provides most of the instruction and the special education teacher provides support), instructional changes are unlikely to be realized in the classroom. However, when the specialists coordinate curriculum changes, significant changes are more likely to occur. School psychologists may want to consider how to focus their role and the role of the special education teacher on facilitating these curriculum changes, determining their implementation in classrooms, and monitoring their influence on students’ academic and social outcomes. An example of this type of curriculum change is the use of alternative grouping formats, such as small groups, peer-pairing, and cooperative groups, as a means to accomplish academic and behavioral goals. Students view these alternative grouping formats positively, and the formats are associated with improved outcomes for students (Elbaum, Vaughn, Hughes, & Moody, 1999). Another example is provided by Scruggs et al. (2007), who identified that instructional practices associated with improved outcomes for students were rarely observed in co-teaching classrooms. These instructional practices, such as principles of effective instruction, differentiated instruction, appropriate curriculum, mnemonic instruction, effective grouping, and strategy instruction have considerable research supporting improved outcomes associated with their use. School psychologists can influence change in their settings by recommending professional development or coaching for teachers that supports use of effective and differentiated instruction, evidence-based curriculum, and appropriate grouping practices, so that all students, particularly those with special needs, are provided an effective education.

One of the critical determinants of the success of coordinating instruction for individuals with disabilities is the extent to which there are adequate resources to support collaborative models such as co-teaching and inclusion. In particular, teachers value support from key personnel, such as school psychologists and principals, and sufficient time to communicate and plan with their instructional partners. Planning and teaching “on the fly” are recognized as problematic and not associated with the coordinated, effective implementation needed. School psychologists are critical links between general and special education and can facilitate meetings among key personnel; they can provide the type of instructional and behavioral recommendations that will assist teachers in resolving problems in their classrooms. Furthermore, because these syntheses revealed that students with special needs benefit from curriculum adjustments and explicit instruction, school psychologists can use both observational tools and problem-solving approaches to ensure that these practices are recommended and implemented.

In 1968, Dunn asked an important question about services for students then identified as mildly retarded: “Is much of it ‘justifiable’”? As a result of his highly influential article, service models and identification procedures for individuals with disabilities were questioned, and self-contained special education classrooms were largely dismantled and replaced by resource rooms. In the last few decades, resource rooms have been increasingly replaced, with an emphasis on “inclusive”
education programs that rely heavily on co-teaching and coordination between general and special education.

How much more do we know now about effective services for individuals with disabilities than we did more than 40 years ago, when Dunn’s ideas were published? We know that teachers’ attitudes toward and perceptions about individuals with disabilities as students in their educational setting have improved, although not nearly as much as we would like. We are struck by the number of general education teachers who do not perceive that they are adequately prepared to teach individuals with disabilities in their classrooms. This is an opportunity for school psychologists to assume a leadership role, along with other specialists (e.g., speech and language pathologists, special education teachers) to develop an agreed on focus of the most influential instructional practices to implement and support in classroom settings and to establish the appropriate professional development for teachers.

In 1994, Fuchs and Fuchs published a seminal article on the inclusive schools movement and its influence on special education. They wrote more than 15 years ago, “Special education has big problems, not least of which is that it must redefine its relationship with general education.” (p. 305). One of the prominent ways in which special education has redefined its relationship with general education is through increasingly more coordinated services, often through models in which general education teachers provide the majority of instruction for students with disabilities in the general education classroom. The effects of these collaborative models vary, based on the instructional and behavioral needs of students; however, there are several critical features highlighted in this research that can provide important information for school psychologists to more effectively support effective cooperation between general and special education teachers.

**Implications for Practice**

Response to Intervention (RTI) is largely an initiative in general education to prevent learning and behavior problems, to provide for early identification of students with special needs, and to facilitate ongoing screening and progress monitoring (Vaughn & Fuchs, 2003). How do the cooperative models reviewed in this article relate to RTI? This is a particularly important question for school psychologists who are often in a lead role within both RTI models and inclusion models. One potential concern is that both RTI approaches and inclusion models might be implemented in the same school independently with little consideration of how they might be integrated. For example, schools might implement an inclusion model for students with disabilities with the general education teacher in the lead role and the special education teachers in a support role (most common model). They might also implement an RTI model in which general education students at risk are provided intervention (Tier 2) or intensive intervention (Tier 3), depending on their needs. Potentially problematic is that students not identified as needing special education (Tier 2, Tier 3) would be provided more research-based practices than those students with special needs in the inclusion model would. School psychologists might serve in a lead role to integrate the RTI and inclusion models to ensure than research-based interventions are provided to all students—both general and special education students.

School psychologists can also serve in a leadership role to guide policy, professional development, and practice to ensure that strategies associated with improved outcomes in collaborative settings are implemented, including: (a) effective, specific, and intensive interventions for students with academic needs, including special education students; (b) coordination between cooperative models (e.g., co-teaching, inclusion) and RTI models; (c) appropriate student grouping within general education classrooms to ensure that peer-to-peer learning (e.g., peer-pairing, small-group learning) occurs in structured and effective ways; and (d) guidelines for effective coordination of models, including adequate planning time for general and special education teachers.
Limitations

This article relies on extant data from more than 100 studies and six syntheses to provide guidance to school psychologists on effective collaborative models. Specifically, the focus of the research studies was on how general and special education teachers collaborate and their perceptions of these collaborative models. The emphasis of these studies was not specifically on the role of the school psychologist in these collaborative models. Thus, the findings we summarized and their implications are derived largely for general and special education teachers. However, we recognize that the school psychologist is often in a critical role to both inform general and special education teachers and school-wide practice. Thus, informed psychologists can advantage outcomes for students with special needs by facilitating the implementation of the findings from these syntheses.

REFERENCES

References marked with an asterisk indicate studies included in the synthesis.


