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Response-to-intervention (RTI) as a model to facilitate inclusion for students with learning and behaviour problems

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Many students with learning and behaviour problems are routinely excluded from regular education. Although calls have been made to educate students with these problems in the same settings as their typically developing peers, it remains unclear how best to support their needs for academic and behavioural support. We address this question first by describing response to intervention (RTI), a specific model of prevention and early intervention for learning and behaviour problems. A comprehensive summary of the RTI literature is provided. Second, we will discuss the feasibility and applicability of RTI as *one* approach to facilitate inclusion of students with learning and behaviour problems. Specifically, we will demonstrate how RTI can be used to address at least four barriers to inclusion by (1) providing a clear implementation strategy for inclusion practices; (2) clearly defining the roles, responsibilities and collaboration of general and special education teachers; (3) enabling the allocation of resources for instruction and intervention; and (4) avoiding early and unnecessary labelling of students with learning and behaviour problems. Third, limitations of RTI as a model to facilitate inclusion will be discussed.

Keywords: emotional behavioural disorders; intervention; learning disabilities; prevention; response to intervention

The European Union (EU) officially pledged to ensure an inclusive education system across all school levels (European Union 2011). In an inclusive classroom, students with learning and behaviour problems receive additional individualised support within the general education system. However, the status quo in the EU is that many students with learning and behaviour problems are routinely excluded from instructional activities in the same setting as their typically developing peers (European Agency for Development in Special Needs Education 2010). Regarding the 'quest for inclusive education' (Nilholm 2006, 432), the World Health Organization (2011) identified several key problems concerning the inclusion of students with learning and behaviour problems, suggesting that inclusion is hindered when (1) there is a lack of clear implementation strategies for inclusion; (2) the responsibilities between special and general education teachers remain unclear; (3) teachers do not have the time or resources for teaching students with learning and behaviour problems; and (4) students are unnecessarily labelled and stigmatised as disabled.

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Over the past decade, a model of prevention and early intervention commonly referred to as response-to-intervention (RTI) has gained popularity in the USA. Research studies have demonstrated its great promise in maximising academic and social outcomes for all children (e.g. Tran et al. 2011). RTI may serve as a mechanism to facilitate inclusion because its structures address learning and behaviour problems before significant deficits develop and allow ongoing support of students with learning and behaviour problems within the regular education setting. However, so far the feasibility and applicability of inclusion by means of RTI has not been investigated (Ferri 2012). Hence, in this paper, we will describe RTI as *one* approach to facilitate inclusion of students with learning and behaviour problems. First, we will provide a comprehensive summary of the literature concerning RTI as an approach to prevention and early intervention for learning and behaviour problems, demonstrating how RTI procedures can lead to improvements in academic skills and social behaviour for all students, and how such procedures can dramatically reduce referrals for special education and transfers to special schools. Second, we will describe how RTI procedures may facilitate the inclusion of students with learning and behaviour problems. Specifically, we will demonstrate how RTI can be used to address the aforementioned barriers to inclusion by (1) providing a clear implementation strategy for inclusion practices; (2) clearly defining the roles, responsibilities and collaboration of general and special education teachers; (3) enabling the allocation of resources for instruction and intervention; and (4) avoiding early and unnecessary labelling of students with learning and behaviour problems. Third, limitations of RTI as a model to facilitate inclusion will be discussed.

RTI: prevention and early intervention

Overview of RTI

In the traditional approach to special needs education, students become eligible for special education support if they fulfil the formal classification criteria of a specific disability (e.g. learning disability or emotional-behavioural disorder). Therefore, children with less severe learning or behaviour problems typically do not receive special services. Unfortunately in the absence of supplementary instruction, the gap between many of these children and their peers grows to the point at which they do eventually meet formal criteria and can qualify for services. As this process typically takes several years, the traditional model has been referred to as a wait-to-fail approach (Stanovich 2005).

In contrast to the traditional reactive approach to service delivery, RTI is a proactive conceptual framework focusing on prevention and early intervention of academic and behaviour problems (Fletcher and Vaughn 2009; Fuchs and Fuchs 2006; Vaughn and Fuchs 2003). In RTI, evidence-based instruction is provided to all students, and supplemental services can be provided at the first sign of problems regardless of special education eligibility and/or labelling. Hence, RTI models represent a paradigm shift in addressing learning and behaviour problems, from a reactive wait-to-fail approach focused on classification and placement, to a proactive approach focused on prevention and problem-solving (Brown-Chidsey and Steege 2005; Jimerson, Burns, and VanDerHyden 2007).

The main ideas of RTI are: (a) instruction across multiple tiers is evidence-based; (b) all students are regularly screened for academic and behaviour problems;

(c) student response to instruction is assessed frequently; (d) teachers make instructional decisions based on data; and (e) if data indicate the need for more educational support, children move to higher tiers in the model, in which instruction becomes progressively more intense, specific and individualised (Brown-Chidsey and Steege 2005; Burns, Deno, and Jimerson 2007).

Standard-treatment protocols and problem-solving models as two strategies of RTI

Generally, two RTI approaches of prevention and intervention for academic and social problems have emerged: standard-treatment protocols and problem-solving models. *Standard-treatment protocols* list all the steps in the form of an algorithm that 'requires use of the same empirically validated treatment for all children with similar problems in a given domain' (Fuchs et al. 2003, 166). The advantage of standard-treatment protocols is a clear lack of ambiguity, which streamlines decision-making for school staff. With scripted protocols, everyone knows what to do, thus treatment fidelity should be maximized (Fuchs, Fuchs, and Stecker 2010). However, the disadvantage may be that instruction is less specifically tailored to the needs of individual students. In contrast, *problem-solving models* are used to develop differentiated instruction child-by-child (Fuchs and Fuchs 2006). In problem-solving models, a multidisciplinary team designs and implements interventions based on the needs of each individual student. Problem-solving approaches are much more complex than standard-treatment protocols. Practitioners require disproportionately more training, expertise and time to use problem-solving methods. However, the advantage of such models over standard-treatment protocols is that it is more sensitive to individual differences of students.

Most models implemented in practice combine several aspects of both approaches ('hybrid models', see Berkeley et al. 2009), making the dichotomy somewhat arbitrary (Jimerson, Burns, and VanDerHyden 2007). Kovalski (2007) recommends starting with a standard-treatment protocol for all students that is easy to administer and move over to a more individualised problem-solving model when students fail to respond satisfactorily to standard treatments.

RTI as a three-tiered model

Although no single and universally agreed-upon definition of RTI exists (Burns, Deno, and Jimerson 2007), RTI is often conceptualised as a three-tiered model of academic and behavioural support (see Figure 1). The basic logic of RTI can be applied both to behavioural and academic domains. We will focus our description of RTI on academic achievement in general and reading in particular. Using RTI to promote positive social behaviours will be covered in the following section.

Tier 1 represents the universal classroom reading instruction delivered to all students (Fuchs and Fuchs 2006). A key focus in RTI is to ensure that the curriculum provided by general education classroom teachers is supported by research, showing that it is effective for the vast majority of children. Irrespective of the quality of Tier 1 instruction, some children will not make adequate progress in reading and so all children are screened three times a year (fall, winter and spring). As opposed to comprehensive and time-consuming diagnostic measures, measures used in RTI are rate-based measures. Each measure has been designed to be a general indicator of

Academic RTI system**Tier 3: Individual tutoring with high-risk students**

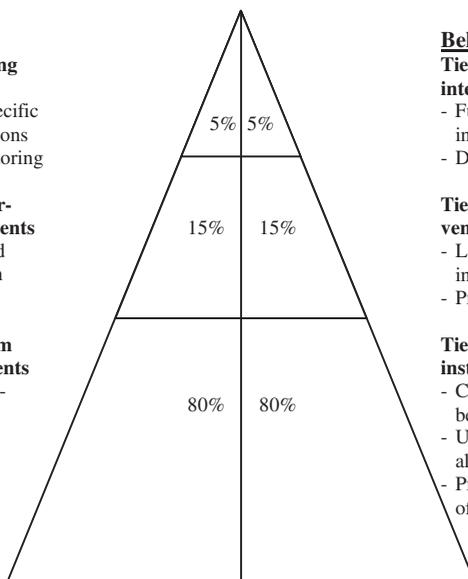
- Intense tutoring with specific individualized interventions
- Frequent progress monitoring

Tier 2: Small-group intervention with at-risk students

- Intensive and specialized small-group intervention
- Progress monitoring

Tier 1: Regular classroom instruction with all students

- Universal effective classroom instruction
- Universal screening of all students
- Progress monitoring of at-risk students

**Behaviour RTI system****Tier 3: Individualized interventions high-risk students**

- Function-based individualized interventions
- Daily progress monitoring

Tier 2: Small-group intervention with at-risk students

- Low intensity behavioural interventions
- Progress monitoring

Tier 1: Regular classroom instruction with all students

- Clear expectations for behaviour
- Universal screening of all students
- Progress monitoring of at-risk students

Figure 1. Three tiered RTI approach in academic and behaviour domains.

academic progress in an area of basic academic skills (e.g. reading, mathematics, spelling and writing). This approach is commonly referred to as curriculum-based measurement (Shinn 2007b). An example in reading would be oral-reading fluency, wherein students are asked to read a grade-level passage for one minute, and both the number of words read correctly and number of errors is recorded. Raw reading scores are compared to either national representative norms, local norms of the school or school district, or criterion-referenced benchmarks (Fletcher and Vaughn 2009; Shinn 2007a). Students are identified as *at risk for reading failure* when they perform below cut-off scores based on pre-specified criteria (e.g. below the 20th percentile).

Typically, grade-level teams meet and use the universal screening data to identify students who would most benefit from Tier 2 instruction. For these students, Tier 2 instruction is provided to supplement instruction provided in Tier 1. It is estimated that 20% of all students will require supplements to Tier 1 instruction to make adequate progress toward end of the year instructional goals. However, when a larger portion of students is identified as at-risk, the quality of general instruction at Tier 1 should be investigated. Hence, universal screening serves two purposes. That is, it is used to identify students who require supplemental instruction, and to provide information concerning the quality of the Tier 1 programme.

In *Tier 2*, evidence-based reading intervention is delivered in small groups (typically in groups consisting of three to eight students) for 20–40 min at least three times a week, sometimes daily, for 8–10 weeks (Fletcher and Vaughn 2009; Kovalski 2007). Instruction at this level is systematic and explicit and designed to provide additional opportunities to practise target skills (Fuchs and Fuchs 2006). For example, an intervention for first-grade students might involve drill and practice to increase student sight-word vocabulary and practise decoding unfamiliar words. Students receiving Tier 2 intervention are assessed more often using curriculum-based

measurements (once per week or every other week) to monitor their response to intervention.

If children do not show adequate progress to Tier 2, the intervention can be adjusted or replaced (Brown-Chidsey and Steege 2005). In the above example, progress-monitoring data may have revealed that some children were not demonstrating adequate response to the additional practice in sight words and decoding. One way to operationalise adequate response is to use progress-monitoring data to predict whether the student will meet the end of the year benchmark (Shinn 2007b). It is possible that some children had not developed all of the requisite skills for decoding, and the intervention might be supplemented with instruction targeting letter–sound correspondence. It is also possible that those students might benefit from additional sessions that might still be provided in small groups. Such adjustments can be made in the context of Tier 2, and progress monitoring continues to assess whether the changes result in the child being on track to meet the end of the year benchmark. If students do not show adequate progress in Tier 2 despite this adapted supplemental instruction, the need for more intensive Tier 3 intervention is indicated.

If Tiers 1 and 2 were implemented appropriately, one would still expect that about 5% of students would require *Tier 3* intervention to make adequate progress. There are several reasons why students might require the level of support provided by Tier 3. First, the Tier 2 intervention might have either not targeted the appropriate skill, or it did target the appropriate skill, but was not provided at an adequate level of intensity. In Tier 3, a multidisciplinary problem-solving team carries out a more individualised and complex problem-solving model. Tier 3 involves an in-depth identification and intervention process of special learning needs with comprehensive evaluation and frequent-progress monitoring, in order to find interventions, remediation or curriculum adaption to best address the needs of individual students. In Tier 3 assessment, other problems such as intellectual disabilities, adjustment difficulties, seeing or hearing impairments, or autism should be ruled out. Then, an intervention plan directly tailored to the individual needs of a child is employed.

In a problem-solving model, the problem of a student is defined as the discrepancy between what is expected and what is observed (see Christ 2008). After the problem-solving team has measured and quantified the problem, a range of plausible interventions is developed and systematically tested over time by graphing the students' response to intervention. With these data, intervention effectiveness is corroborated or rejected using single-case research design methodology (Barnett et al. 2004; Brown-Chidsey and Steege 2005; Christ 2008; Fuchs and Fuchs 2006; Shinn 2007b). Due to the individuality of each problem-solving model, every model implemented in schools may look somewhat different. For example, in Iowa, a four-step problem-solving process is used (define the problem, develop a plan, implement the plan, evaluate the plan), while Nebraska conducts five steps (problem identification, problem analysis, goal setting, plan implementation and plan evaluation), whereas North Carolina implements seven problem-solving steps (describe performance profile, develop assessment plan, analyse assessment plan, generate goal statement, develop intervention plan, implement intervention plan and analyse intervention plan) (for more examples and descriptions of problem-solving models, see Berkeley et al. 2009, and Part IV in the *Handbook of Response to Intervention* by Jimerson, Burns, and VanDerHyden 2007).

The intervention provided in Tier 3 is more individualised and intense than in Tier 2 with smaller groups of students (one to four) and increased teaching time (45–60 min daily) for up to 20 weeks (Vaughn et al. 2007). When children make adequate progress and perform above benchmark, they should be referred back to Tier 1 or 2 and their learning progress is monitored in order to assess the stability of responsiveness.

If children do not show adequate progress to the highly individualised and intensive interventions afforded in Tier 3, problem-solving teams may choose one of the following five options for each individual child (Vaughn and Fuchs 2003): (1) continuing the diagnostic trial period in Tier 3 until an effective intervention is found; (2) using alternative curricula with de-emphasised academic and behavioural goals; (3) placing the student in another school with more resources and specialists; (4) placing the student in general education with special education accommodations to achieve good skills in other domains despite basic skill limitations in specific areas; and (5) placing the student in a more restrictive environment (special classes or special schools).

Intervention and assessment in the behavioural domain

RTI is used to support students with problems in both academic learning and/or social behaviour (see Figure 1). The overall architecture of the three-tiered RTI models in the academic and the behaviour domain is quite similar (Barnett et al. 2006; Burns, Deno, and Jimerson 2007; Gresham 2007; Hawken, Vincent, and Schumann 2008). In *Tier 1*, research about school-wide positive behaviour support provides strong evidence that defining, explicitly teaching and reinforcing behavioural expectations increase social skills and decrease problem behaviour (Lewis et al. 2010). Teachers need to have a clearly defined, brief, positively-stated and memorable set of rules that are taught through examples and non-examples, to praise and reinforce their use, and to install predictable consequences for violation of these rules. In *Tier 2* intervention, the behavioural expectations are re-taught and practised, perhaps supported by scripted social-skill trainings (e.g. daily point card systems, social skills groups, homework clubs, restitution programmes, token systems, behavioural contracts, self-management strategies, etc.) that can be administered easily (Hawken, Vincent, and Schumann 2008; Lewis et al. 2010, Volpe and Fabiano 2013). In *Tier 3*, intense individualised behaviour support plans are developed through functional behaviour assessment to experimentally explore the function, and to replace problematic behaviours with socially appropriate replacement behaviours (Hawken, Vincent, and Schumann 2008; Lewis et al. 2010).

There are several different approaches to *universal screening* in the behavioural domain including the use of office disciplinary referrals (e.g. McIntosh, Frank, and Spaulding 2010), brief rating scales (BRS) (e.g. Kamphaus et al. 2010), or multiple-gated screening procedures where students are first ranked and then rating is completed on a small group of highly ranked students (e.g. Severson et al. 2007; Volpe and Fabiano 2013). Given the number of students that require assessment in RTI models, traditional methods of behavioural assessment such as systematic direct observation and lengthy rating scales are ill-suited for progress monitoring in RTI. It is unlikely that sufficiently trained staff would be available to conduct regular observations and teachers would quickly tire of

completing behaviour rating scales consisting of 20–100+ items. Moreover, such rating scales typically have been designed for summative – as opposed to formative-assessment purposes and so were not necessarily designed to measure change in socially valid target behaviours.

A growing body of research has investigated at least three feasible approaches to generate *behavioural progress monitoring data*: direct behaviour ratings (DBR; e.g. Chafouleas, Riley-Tillman, and Christ 2009; Volpe and Briesch 2012); brief rating scales (BRS; e.g. Volpe and Gadow 2010), and individualised target behaviour evaluation (ITBE; e.g. Pelham, Fabiano, and Massetti 2005). The literature on DBR has focused largely on three items (engagement, disruptive and respectful) and has demonstrated much promise as an efficient method for monitoring student response to intervention (e.g. Chafouleas, Riley-Tillman, and Christ 2009). Recently, Volpe and Briesch (2012) compared two five-item BRS with matched content to two DBR (engagement and disruptive) and found that fewer ratings were needed to reach acceptable levels of dependability. Whereas DBR and BRS have been used to assess general domains of student functioning, ITBE are designed to measure change in specific behaviours that have been targeted for treatment. Such measures are tailored for individual students and can be very sensitive to the effects of intervention (Pelham, Fabiano, and Massetti 2005). Volpe, Briesch, and Chafouleas (2010) have described a comprehensive model of behavioural assessment for RTI models wherein DBR or BRS can be used as general outcome-type measures and ITBEs can be used as more sensitive measures of short-term outcomes.

Effects of RTI implementation

The most rigorous experimental research evaluating RTI comes from the field of tiered reading interventions. Intense and specialised Tier 2 reading interventions increase the reading performances of children at risk for reading difficulties and decrease special education referrals, segregated placements, time in special education, overidentification and prevalence of diagnosed reading disabilities from 9 to 1.5%, and gender and ethnic biases in special education diagnoses (Burns, Appleton, and Stehouwer 2005; Fuchs, Compton et al. 2008; Tran et al. 2011; VanDerHeyden, Witt, and Gilbertson 2007; Vaughn, Linan-Thompson, and Hickman 2003; Vellutino et al. 1996, 2006). Furthermore, after fading out reading intervention, remediation remained successful for at least one (Vaughn et al. 2007) or two years (Torgesen et al. 2001). In a study by Wanzek and Vaughn (2008), Tier 2 resisters received Tier 3 tutoring and showed adequate reading skills in most of the administered standardised reading tests. In a study by Volpe et al. (2011), non-responders to Tier 2 intervention received intense Tier 3 computer-based intervention in letter sounds, which increased their early literacy skills substantially. Denton et al. (2006) showed that even students who did not respond to Tier 2 interventions increased their reading skills in intense Tier 3 interventions, even though it was not possible to fully close the gap towards typically achieving peers.

So far, only two studies investigated interventions in math problems in a RTI framework. In the first study (Fuchs et al. 2005), students at risk for math failure received intense tutoring. They made good progress in computation, story problems, concepts and applications, but not in fact fluency. Without the intervention, the gap

in math achievement between at-risk and non-at-risk students increased. After intensive small-group intervention (Bryant et al. 2008), at-risk students made larger progress in math skills than the control group.

Research concerning RTI in the social behaviour domain is also limited. While there are plenty of studies about school-wide positive behaviour support, the historical roots and development of both approaches differ (Sugai and Horner 2009). Thus, the extent to which RTI incorporates concepts of positive behaviour support and whether it should be considered separately is not clear (Kauffman, Bruce, and Lloyd 2012). Consequently, we report only two studies described explicitly as RTI research: Fairbanks et al. (2007) evaluated the effects of Tier 2 intervention of students at risk for behaviour problems. Four out of 10 students made adequate progress. The remaining six students received tailored Tier 3 intervention that was developed via functional behaviour assessment. All six students decreased problem behaviour and increased academic study skills. In a study by Cheney, Flower, and Templeton (2008), two-thirds of 127 students at risk for behaviour problems responded to Tier-2-targeted intervention. The intervention reduced the prevalence of emotional-behaviour disorders by 50%.

In sum, there is large body of evidence showing that implementation of RTI increases reading skills, prevents reading disabilities and decreases special education referrals and segregated placements. With regard to writing, math and positive behaviour, research is emerging that RTI is effective in these domains as well.

Open questions in RTI research

It is important to mention three general limitations of RTI. First, almost all research about RTI comes from the USA. There is clearly a need for research about RTI in other cultures and educational systems. Second, the use of RTI as a diagnostic method is highly controversial (Batsche, Kavale, and Kovalesski 2006; Reynolds and Shaywitz 2009). Consequently, this paper does not deal with disability identification by RTI processes. Third, most research on RTI has focused on the domain of reading. Hence, conclusions about the implementation and effectiveness of RTI in mathematics, writing and social behaviour are preliminary yet encouraging.

RTI: inclusion of students with learning and behaviour problems

Even though some challenges with RTI remain, the model still affords opportunities to increase the inclusion of students with learning and behaviour problems. As indicated in the introduction of this paper, inclusion is hindered when (1) there is a lack of clear implementation strategies; (2) the responsibilities between special and general education teachers remain unclear; (3) teachers do not have the time or resources for teaching disabled students; and (4) students are unnecessarily labelled and stigmatised (World Health Organization 2011). RTI has the potential to overcome these barriers to inclusion by (1) providing a strong implementation plan for inclusion practices; (2) clearly defining the roles, responsibilities and collaboration of general and special education teachers; (3) enabling the allocation of resources for instruction of students with learning and behaviour problems; and (4) avoiding early and unnecessarily labelling of students with learning and behaviour problems.

RTI is a strong action plan for implementation of inclusion

While the EU clearly defines the goal of inclusion, and state parties pledged to ensure an inclusive educational system at all levels (European Union 2011), it remains unclear with what strategies, models and methods this goal can be and shall be reached (Zigmond, Kloo, and Volonino 2009). One way of implementing inclusion is the model of full inclusion. In full inclusion, all students are placed full time in the regular classroom (Kavale 2002; Zigmond, Kloo, and Volonino 2009). However, there are at least two barriers to the implementation of such a model. First, with regard to current empirical knowledge, children with learning and behaviour problems require much more support than is typically available in the general education classroom. Consequently, part-time pull-out services are considered to be more feasible and effective than full inclusion (e.g. Fuchs, Fuchs et al. 2008; Fuchs, Fuchs, and Stecker 2010; Landrum, Tankersley, and Kauffman 2003; McLeskey and Waldron 2011; Zigmond, Kloo, and Volonino 2009). Second, research shows that teachers often reject the idea of full inclusion, though they do have positive attitudes toward a more moderate model of inclusion (Avramidis and Norwich 2002; Norwich 2008; Scruggs and Mastropieri 1996). A balanced approach between inclusive and separate provision of flexible pull-out services seems to better fit the needs of teachers. RTI offers a model to implement this more moderate solution. Thus, its implementation may be easier and faster in facilitating inclusion than the idea of full inclusion.

Full implementation can take several years to realise. Because no single and universally agreed-upon definition exists, RTI will look very different from school to school. Each school system may adapt its own suitable RTI model (Berkeley et al. 2009). At the system level, successful RTI implementation needs leadership by the state departments of education, universities and school administrators (Jimerson, Burns, and VanDerHyden 2007). They can facilitate ongoing staff training in evidence-based practice, measurement and problem-solving. Furthermore, it is important that the implementation process is accompanied by an experienced coach with expertise in RTI. Because only a small number of such educational leaders are currently available, Jimerson, Burns, and VanDerHyden (2007) have recommend beginning the implementation on a small scale (i.e. one class in one school in a school district) but with high quality in order to build the capacities for implementation on a wider scale (i.e. the whole school district).

At the level of the individual school, a basic requirement for successful RTI implementation is strong educational leadership and support by the Principal (Le Fevre and Richardson 2002). In a staff meeting, RTI experts, principals, general education teachers, special education teachers, school psychologists and social workers should reach consensus as to the need for change, and goals and visions of inclusion in their particular school. The RTI coach plays a very important role in this part of the implementation process. He or she has to acknowledge the existing beliefs and practices in the school; show a coherent picture of a valuable RTI model; clarify possible role changes (see below); and discuss stakeholders' perception of costs and benefits of inclusion (Denton, Vaughn, and Fletcher 2003; Le Fevre and Richardson 2002). The following important information may reduce resistance to change: School staff already working in inclusion and RTI see significantly fewer problems in implementation than staff who have not yet started (Avramidis and Norwich 2002; Machek and Nelson 2010). School staff should

form several specific service teams (e.g. a screening team, a progress-monitoring team, an intervention team, a data-analysing team and a problem-solving team). These teams require strong support from the school executive. Principals should guarantee time for meetings and reduce other work load. Each team is multi-disciplinary, and consists of general and special education teachers, school psychologists and social workers. Training is necessary in each specific topic area (e.g. progress monitoring). Trainees then can perform the task in their home school, and teach and counsel other colleagues. For example, a data-analysing team learns about computation of means and growth curves, comparing and interpreting normative data, making data-based decisions and explaining their decisions to colleagues. A progress-monitoring team needs to learn about progress-monitoring tools in reading, writing, math and social behaviour, and how to collect these data in an efficient way.

It may be a good idea to start RTI in only few classes with highly motivated teachers, and monitor the implementation in detail. If RTI appeared to be successful, more sceptical educators could eventually be convinced to use this system also in their classroom.

RTI enables collaboration of general and special education teachers

Often, practitioners have positive attitudes toward inclusion of students with disabilities (Avramidis and Norwich 2002), but are concerned about the potential for increased work load and shortfalls in resources, time, training, personnel and materials, which in turn correlate with symptoms of burnout (Talmor, Reiter, and Feigin 2005). Many believe that full-time placement in regular education classrooms (full inclusion) may have negative effects on students with and without special educational needs (Avramidis and Norwich 2002; Scruggs and Mastropieri 1996). One of the most pressing issues in the inclusion process is concern about changes in job specification and roles, and a lack of clarity with regard to cooperation and collaboration between general and special education teachers (Talmor, Reiter, and Feigin 2005). Collaboration seems only to be effective when both groups have reached consensus on their responsibilities and roles. Unfortunately, the role of special education in inclusion often remains unclear (Nilholm 2006).

The most often realised model of collaboration is the 'one teach, one assist' co-teaching approach (Scruggs, Mastropieri, and McDuffie 2007). In such an approach, the general education teacher is the lead teacher responsible for instruction at all times, while the special education teacher is the assistant teacher playing a subordinate role. This model reflects the fact that many general education teachers consider their classroom as their 'territory'. Under these circumstances, differentiated instruction for students with learning or behaviour problems cannot be effective (Scruggs, Mastropieri, and McDuffie 2007).

RTI uses another co-teaching approach called 'alternative teaching', i.e. 'one teacher may take a smaller group of students to a different location for a limited period of time for specialized instruction' (Scruggs, Mastropieri, and McDuffie 2007, 393). This alternative teaching approach by means of RTI clearly defines roles of both general and special education teachers, enabling collaboration and, in the long-run, effective inclusion (for full discussion see Cummings et al. 2008; Denton, Vaughn, and Fletcher 2003; Fuchs, Fuchs, and Stecker 2010; Hoover and Patton 2008). While RTI details and model specifications will obviously differ from

school to school, in the following section we provide one set of role specifications for principals, general and special education teachers. However, it is more important to agree upon specific role definitions rather than to follow exactly these definitions. Each individual school would want to adopt job specifications according to their needs.

Principals and administrators are in charge of ensuring the resources for RTI implementation. Strong educational leadership is necessary in scheduling team meetings, trainings and evaluations. Principals must make time available for trainings and meetings; reduce the teaching load of the aforementioned specific teams; and hire teachers who are willing to work within an RTI framework. Ideally, they should have a role in moderating discussions and meetings.

General education teachers will still be responsible for core instruction in their own classroom. They are in charge of using research-based curriculum and strategies in reading, writing, mathematics and social behaviour, implementing them with fidelity, and collecting screening data three times a year. General education teachers are in charge of administering screening assessments and progress data for all students and students identified at-risk respectively. Service team members, e.g. special education teachers or school psychologists, counsel general education teachers in evidence-based practices, standardised assessment procedures, and using these data to make decisions.

Resource room teachers, reading specialist, and general or special education teachers are in charge of the implementation of Tier 2 interventions for at-risk students. They build small groups with similar learning needs and implement interventions several days a week in a resource room. Here, the standard-treatment protocol approach might be the best option, because it does not need as many of the scarce resources (time and teachers) as the problem-solving approach (Fuchs, Fuchs, and Stecker 2010). For ease of implementation, Tier 2 intervention should be well-defined by the intervention team.

Special education teachers will experience a rigorous role change. In the traditional special education approach, most of the time of special education teachers is devoted to teach their 'own' classroom in special classes or special schools. In inclusion by means of RTI, most special education teachers will not have their 'own' classroom. Their main responsibility is counselling, consultation, assessment and intervention in all three tiers: They work in different service teams to counsel and support teachers in implementation of data-based monitoring, data-driven decision-making, evidence-based interventions, differentiated instruction, social and behavioural support, and collaboration (Hoover and Patton 2008). To effectively change their roles, special education teachers require ongoing training in evidence-based practices, problem-solving, data analysis and single-case research methodology (Fuchs, Fuchs, and Stecker 2010).

RTI defines allocation of resources

In segregated settings, special education teachers conduct large-group instruction for the whole school day. Their role in general education settings implementing RTI would involve small-group instruction focused on a narrower curriculum (e.g. reading, writing, math and pro-social behaviour). Resources could easily be transferred from full-time segregated placements to part-time inclusive instruction. Furthermore, due to the preventative nature of RTI, segregated schooling and rates of severe

learning and behaviour problems would decrease, leading to fewer services necessary in Tier 3 (Ardoin et al. 2005). More and more resources could be moved from higher tiers to lower tiers. Hence, while RTI might involve more resources during the early stages of implementation, cost savings will eventually be realised, as fewer students will require the intensity of resources required in exclusionary settings.

RTI avoids unnecessarily labelling

Labelling students with disabilities increases stereotypes and discrimination (Blum and Bakken 2010). A final argument for inclusion by means of RTI is that a formal diagnosis is not required for students to receive intervention services, and given that RTI can reduce the number of students requiring diagnostic assessment, potentially stigmatising labelling is minimised. In the traditional special education model, children with learning or behaviour problems only become eligible for special education services if they are diagnosed with a learning disability or emotional-behavioural disorder (wait-to-fail model). This label legitimates expensive special educational services, but also promotes the idea that the problem is centered within the child and de-emphasises the quality of instruction and the broader school environment.

Because RTI focuses on risk rather than deficit and on prevention rather than reactive interventions, resources and special education services are no longer tied to classification and labelling. Furthermore, movement between tiers of services is fluid as opposed to traditional special education, which in the vast majority of cases is permanent. Thus, adopting RTI ‘can free special education instruction of the shackles imposed by an antiquated disability labelling system’ (Blum and Bakken 2010, 124).

Limitations of RTI as a rationale for inclusion

Despite the empirical evidence of RTI and its rationale as a model to facilitate inclusion, at least three aspects still should be kept in mind. First, RTI may have some side effects. If at-risk students receive additional services outside the regular classroom, ‘the classroom teacher is released from the responsibility of learning how to teach not only those students, but all future students with similar needs over the rest of that teacher’s career’ (Frattura and Capper 2006, 358). This risk can be reduced if Tier 2 remains a general education domain while being implemented by special education teachers, so general education teachers cannot neglect their responsibilities for struggling students.

Another side effect is that teachers and parents may question the strong focus on the effectiveness of education and data-based decision-making, because this might put too much pressure on their children. However, low achievement and minimal positive feedback from teachers can also be sources of stress for students (Chang 2003; Lackaye and Margalit 2006). One benefit of RTI is that all students receive the level of instructional support they need. Indeed, students who struggle in the curriculum are provided with additional supports at the first sign of trouble. This stands in stark contrast to the traditional wait-to-fail model.

Second, we still do not know whether RTI will lead to a more positive classroom climate and higher social inclusion of students with learning and behaviour

problems. To our knowledge, no study has investigated the effects of RTI and tiered interventions on social inclusion, social status, and self-concept of students so far. Third, the feasibility, applicability and effectiveness of RTI as a model to facilitate inclusion must be tested in European cultures. Clearly, much more empirical research is needed.

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