What counts as *response* and *intervention* in RTI?
A sociocultural analysis

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Response to Intervention (RTI) is being used in districts and states around the United States (U.S.) as a means to enhance learning opportunities and address the needs of struggling learners. Increasing attention to RTI in the research community and the recent creation of a large national technical assistance center reflect its growing visibility. Because equity issues for ethnic and linguistically diverse students are purportedly addressed in RTI models, we conduct a sociocultural analysis of its building blocks, namely the definitions and assumptions embedded in the notions of «response» and «intervention». We used interdisciplinary theoretical and empirical insights about the cultural nature of learning and development to inform our analysis. We discuss how the assumptions of RTI might unintentionally create blind spots for researchers and practitioners about how to design, conduct, and assess learning environments, particularly for diverse students. We conclude with reflections about future directions in this research area.

¿Qué se considera como Respuesta e Intervención en RTI? Una perspectiva sociocultural. Respuesta a la Intervención (RtI) se está utilizando en los distritos y estados de todo el país como medio para mejorar las oportunidades de aprendizaje y atender las necesidades de estudiantes con dificultades. El interés que ha suscitado el modelo RTI en la comunidad investigadora y la reciente creación de un gran centro nacional de asistencia técnica es un fiel reflejo de la popularidad que está alcanzando. Debido a que cuestiones como la equidad para el caso de estudiantes que pertenecen a grupos étnicos y lingüísticos diversos se contempla en los modelos RTI, llevamos a cabo un análisis sobre las definiciones y los supuestos que subyacen a las nociones de «respuesta» e «intervención» desde una perspectiva sociocultural. Se ha partido de perspectivas teóricas y empíricas sobre la dimensión cultural del aprendizaje y el desarrollo para abordar estos análisis. Finalmente se discuten los supuestos que subyacen al RTI y que en ocasiones podrían condicionar a los investigadores y educadores, de un modo no deseado, cuando tratan de diseñar, evaluar y promover el aprendizaje y la instrucción, especialmente en el caso de los estudiantes de grupos minoritarios y diversos. Se concluye con algunas reflexiones sobre las líneas futuras a desarrollar en este ámbito de investigación.

RTI has received considerable attention in the U.S. in recent years, particularly after the reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004. IDEA endorsed RTI as a viable means to identify students with learning disabilities (LD), due in part to the raising concerns with the traditional discrepancy formula used to identify LD. We should also note, however, that despite the growing visibility of RTI and IDEA's support, most states still use the traditional discrepancy formula or give states the option to use such formula or an RTI model to identify students with LD. Ten states «have either expressly prohibited or lessened [the discrepancy formula] use by establishing or phasing in requirements that disability determinations be based on RtI. Only a few states have adopted RtI or tiered intervention policies as a common practice serving all students» (Southeast Comprehensive Center, 2009, pp. 2-3).

RTI promises important changes in the traditional responses to the needs of students. For instance, RTI stresses a proactive stance in which all students in the educational system are exposed to quality instruction. Such a preventive emphasis is a welcome shift from the wait-to-fail model historically favored in educational responses to struggling learners. Moreover, an RTI model allows practitioners to address promptly student learning needs without having to assign disability labels. It has also been argued that RTI has the potential to reduce racial inequities in disability identification rates.

Despite the promises embodied in RTI, a number of questions have been raised. These questions are related to implementation fidelity across contexts, RTI's new demands on teachers and capacity building needs, scaling up concerns, questions about standard protocols in light of the complexity of teaching, and issues related to RTI's potential to diagnose LD given recent evidence on the neurological basis of the disorder (Gerber, 2005; Kavale et al., 2008; Mastropieri, 2003). These discussions identify

critical caveats about the technical (e.g., assessment, professional development) and organizational (e.g., interface of general and special education) repercussions of RTI. With few exceptions (Artiles, 2005; Klingner & Edwards, 2006; NCCRESt, 2005), questions about diversity and equity are largely invisible in these debates. The neglect of equity and diversity considerations is alarming considering that RTI has enormous implications for the reorganization of educational experiences for students from minority[1] communities who are already facing many barriers and challenges. In the spirit of contributing to a critical dialogue about the evolving understanding of these reforms, we offer a critique of RTI grounded in the premise that greater attention to the needs of minority students is needed. We shift the focus in our analysis from technical and organizational implementation reservations to a critique of the very nature of RTI and its building blocks— i.e., the theoretical underpinnings of the notions of *response* and *intervention*. Before we elaborate on these points, we outline the idea of RTI.

RTI: An outline of the model(s)

We sketch an overview of RTI for the purpose of contextualizing our analysis; we do not intend to be exhaustive, but readers can consult other sources that provide detailed descriptions of RTI models (e.g., Jimerson, Burns, & VanDerHeyden, 2007). Although there is a variety of RTI models, there seems to be consensus on its general features. RTI integrates assessment and intervention within a multi-level prevention system to maximize student achievement and to reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with LD or other disabilities (RTI Center, downloaded on 3-01-2010 from http://www.rti4success.org/index.php?option=com_content&task=view&id=4&Itemid=24.

RTI models typically have three or four levels in which interventions vary by level of intensity. At the first level (also called Tier 1), which is implemented in general education, all students are screened to determine levels of instructional need and exposed to evidence based interventions. Most available interventions focus on early reading and math in elementary grades. Student progress in the curriculum is monitored regularly following established procedures and based on predetermined criteria and procedures, students who do not make adequate progress are moved to the second Tier of intervention. In this tier, students receive more intensive interventions in targeted skill domains; the interventions are delivered in small group formats. Progress monitoring continues to be implemented systematically and it is used to determine when non-respondent students must be moved to the next more intensive Tier of intervention, which often translates into special education services.

RTI models are generally framed in at least two ways, namely a standard protocol and a problem solving approach (Fuchs, Fuchs, & Stecker, 2010). When using a standard protocol, students are taught following an established set of research based instructional strategies, and close monitoring of intervention response is used to determine students' movement across Tiers of interventions. The problem solving approach relies on a group of professionals charged with reviewing periodically the performance of students

in the different RTI tiers and makes data based decisions to prescribe interventions typically tailored to individual or subgroup needs. This group also makes determinations based on progress monitoring data to move students across the different tiers of RTI. Although both approaches share some common features, they also differ in their views about the nature and purpose of RTI. As Fuchs and his colleagues (2010) explained:

The [standard protocol approach] advocates for a top-down (i.e., replicable), linear, and time-sensitive process with fewer tiers of instruction, which serves both prevention and a more valid method of disability identification. [Supporters of this approach] support the importance of multidisciplinary evaluation teams. Some recommend that the evaluation teams combine children's performance on academic, cognitive, linguistic, and perceptual tests in developing instructional programs. Others prefer a much more restricted role for the cognitive, linguistic, and perceptual tests … [The problem solving approach] include a greater number of general education tiers at which assessment and instruction focus on skills, not cognitive processes. Instruction is more individualized than standardized; more flexible than formal; and as recursive as necessary to accelerate student learning, all of which makes replication of the RTI process and instruction impossible … Implicit are both top-down and bottom-up orientations: top-down in the sense that education must be standards-driven; bottom-up because the perspective reflects greater trust in practitioners' problem-solving capacity than in publishers' standardized tests and researchers' validated protocols (p. 305).

We analyze in this article the nature and assumptions of intervention and student response as used in the RTI literature. We assume both RTI approaches rely on the use of experimentally derived interventions (although in different ways), and identify the limits of such strategies given the premises and procedures of experimental work. Our critique neither aims to undermine the value of knowledge produced under experimental conditions nor object to the use of this research method. Rather, our goal is to make visible the limits of such knowledge so that the design of support systems for struggling learners rests on multiple understandings of interventions and broader sets of options that count as student learning. These are critical goals for an educational system that serves increasingly diverse student populations.

Responding: Of learning evidence and blind spots

Fuchs et al., (2010) describe Tier 1 within an RTI model as comprised of universal screening practices to determine students at risk for school failure and application of evidence based instructional interventions with all learners. It also entails careful progress monitoring of students through five to eight weeks of implementation of a reading intervention to determine which students, based on their performance during that time frame, are «non-responders» to the instructional program, and may need to move into a Tier 2 model comprised of small group tutoring or other more intensive support. It is precisely this description of response and non-response that we explore in this section.

The learning sciences have come a long way in understanding how people learn, and in particular, in understanding the complexities and sophistication of the learning strategies that infants, young children, and school age children employ (Bell,

Lewenstein, Shouse, & Feder, 2009; Bransford, Brown, & Cocking, 2000; Meltzoff, Kuhl, Movellan, & Sejnowski, 2009). Indeed, learning scientists concurred that «students cannot learn deeper conceptual understanding simply from teachers instructing them better. Students can only learn this by actively participating in their own learning» (Sawyer, 2005, p. 2). Sawyer (2005) remarks that many people, including educational researchers, policy makers, teachers, and parents continue to believe that school should be based on instructionism rather than on learning. Instructionism assumes that learning occurs because of what teachers do with the curriculum, not because of interactions between teaching processes and how students actively make meaning, engage, resist, contest, and build their own mental schemas about the world around them and their role in it. The use of response, in terms of what students do to demonstrate understanding within a lesson, or in terms of performance on an assessment designed to measure what a student has incorporated into their repertoire based on a particular curriculum, assumes that instruction, not the interactions between instructional tasks, social contexts, and learners, is the key to learning. The assumptions underlying this view of response and failure to respond miss the sociocultural nature of learning itself.

As a panel of scientists convened by the Life Center in 2007 indicated, learning is a complex feat that is located across broad socio-cultural and historical contexts that are mediated by local cultural practices and perspectives (Banks et al., 2007). For instance, in observations of classrooms in 2010, one of this article's authors observed several first grade classrooms all using the prescribed basal reading series, following the same lesson plan on the same day. Yet, even in this situation, the classroom contexts for delivering the lesson were different. In one classroom, a warm and empathic teacher smiled as she waited for a student to sound out a word. She engaged the rest of the readers in this lesson with eye gaze, a smile, and then asked them to join her in praising the reader who was able to sound out a word. The same context in another room was led by a more authoritative teacher who kept her struggling reader on task by tapping the page, providing lip movements as prompts for the sounds, and moving on quickly once the student finished sounding out the word.

The disparate ways in which these teachers approached teaching reading using the same curriculum materials is explained in large part by the *contextualization cues* used in each classroom (Gumperz, 1982). These cues play a crucial role in regulating social ecologies of interaction in classrooms and everyday life.

> «[B]ecause of an inherent ambiguity in systems of communicative signs, those engaged in interaction need to regulate it by signals that point to the relevant context of interpretation in which other signs are intended to be 'read.' Thus sets of communicative displays contain, within the surface structure of their performance, certain behavioral features that function as cues that point to their proper interpretation. In other words, the enactment of communication creates reflexively its contextual framing at the same time as it is being framed by its context (Erickson, 2004, p. 7).

Depending on the learner, the two teaching approaches could enhance learning, transfer, and generalization or not depending in part on how teacher verbal and nonverbal cues are interpreted and responded to. And, the teachers' specific responses had historical significance to the students involved as well depending on the learners' history of using certain contextualization cues. They understood what the teacher expected from them based in part on the temporal placement of emphasis in speech prosody (e.g., shifts in volume and pitch) as well as in body movements (e.g., gaze, changes in the direction of gestures and in body posture) (Erickson, 2004). They understood what their fellow students thought about the task, their ability to do it, and whether it was worth doing. The students had a relationship with their teachers, had points of view about the worth of working in that context, ideas about what they were being asked to work on, the timing of responses, values about its applicability, and interest in engaging or not. All of these processes were at play. Hence, given that «cognition and action are 'situated' and 'tactical' «(Erickson, 2004, p. 9, emphasis in original), what does response or failure to respond mean? Would non-responders interpret their own actions as «non responding» to the curriculum of the classroom?

Contemporary learning sciences research offers an increasingly complex and multifaceted view of learning. While «response» (i.e., «learning» in RTI models) or its reverse, failure to respond, can be interpreted as connected to specific instructional prompts, it is likely that a wide range of factors lead to a student's performance at any given point in time. For this reason, the analysis of learning needs to be conducted from a situated perspective (Greeno, 2005). This means that learning how to read or how to compute numbers entails a process that combines the individual, the tools used to make meaning, the other people in the environment, and the tasks to which the cognitive and linguistic skills are being applied. Response and failure to respond may be attributed to any, all, or some combination of these factors. Thus, interventions could be implemented with fidelity, but still mislead practitioners or researchers to conclude students are not learning appropriately. Without taking into account the contexts of learning, both sociocultural and psychological, teachers risk arriving at conclusions about students that depend on narrow interpretations about why students respond or fail to respond as defined by the instructional tasks. Many measures to assess student progress and determine need for additional assistance do not provide enough of this kind of information to help teachers and other practitioners diagnose the meaning of student responses and thus, misinform practitioners about what the best next steps should be.

The considerations we identify for the definition and study of student responses are intimately connected to the nature of interventions and the assumptions used to define and design them. We discuss, therefore, issues related to interventions in the next section.

Interventions: Contexts for thinking and implications for studying learning

Evidence-based interventions are tested in experimental studies. Hsieh et al. (2005) explained that intervention research is guided by conceptual development efforts in which hypothesis are tested as «the investigator deliberately intervenes and compares some new, improved, or alternative method (treatment/procedure/product) with a common or 'standard' method, and the consequences of implementing that method are evaluated with respect to various outcome measures of interest (p. 523, emphasis in original). The units of analysis in experimental intervention research can be schools, teachers, or students (Seethaler & Fuchs, 2005).

Similar to other areas of educational research, experimentally tested interventions are the gold standard in RTI, even though there

are differences in the kinds of interventions used across various models (e.g., standard protocol, problem solving). We should also note that there are a number of considerations germane to our analysis about the impact of different kinds of interventions (e.g., direct instruction v. strategy based) as well as methodological caveats (e.g., treatment integrity measurement) when gauging the differential impact of interventions using methods such as meta-analysis (Gresham, MacMillan, & Beebe-Frankenberger, 2000; Swanson & Hoskyn, 1998). Due to space limitations, we cannot examine these issues and focus instead on the assumptions inherent in the nature of interventions used in RTI.

The minimum requirement in RTI is that interventions used in all three tiers are tested in experimental conditions. The advantages of using interventions tested in experimental research include that impact has been demonstrated under conditions that rule out alternative explanations, and a functional association between the intervention and the target outcomes is demonstrated. Moreover, if the examination of the intervention impact has been replicated with careful attention to sampling, procedure standardization, and setting considerations, researchers can have greater confidence about the generalizability of the evidence. There are, however, important questions about the very assumptions of experimental conditions that are used to test interventions. Many of these questions have been raised in ecological and cultural psychology circles and by educational anthropology researchers from at least the 1950s to this day (Bronfenbrenner, 1977; Brunswik, 1958; Cole, 1996; Neisser, 1976). Baker's conclusion sums up the spirit of these criticisms: «Experimental procedures have revealed something about the laws of behavior, but they have not disclosed, nor can they disclose, how the variables of these laws are distributed across the types and conditions of [humankind] (as cited in Cole, Hood, & McDermott, 1997, p. 53).

Thus, although we acknowledge the contributions of experimental research, we outline next a few caveats as a means to support our argument, namely that the data about the impact of interventions are produced under conditions that differ substantially from the conditions in which students engage in problem solving and other learning tasks in naturalistic contexts. Yet, RTI interventions are to be used in the complex ecologies of classrooms as if the experimental conditions were still present to produce the same outcomes. The following outline of issues unpacks the essence of these points.

The most common issue raised about the assumptions of experimental work is the artificiality of tasks. That is, that the evidence produced in experimental conditions is not aligned with the phenomenon from the everyday world that is being studied, even though experiments aim to «produce a literal reproduction of the target behavior under study» (Lave, 97, p. 68). Because of the requirement to attain internal validity, experimenters are forced to streamline study conditions and control for extraneous influences that could contaminate the measurement of functional relationships between the independent (i.e., intervention) and dependent (outcome) variables (target skills). The problem created by these practices is that «we risk arriving at conclusions that depend on specific features of activities that occur in the special circumstances that we arrange, and that these specific features will prevent generalization to the domains of activity that we hope to understand» (Greeno, 1998, p. 7).

A related point is that experiments require setting up conditions for problem solving or performance that are enveloped in uncharacteristic social occasions (Lave, 1997). Labov's (1970) classic critique of the experimental evidence on the linguistic deprivation of African American children illustrates this point. He took issue with the assumption of control used in these experiments:

> The only thing that is controlled is the superficial form of the stimulus. All children are asked, «What do you think of capital punishment?» or «tell me everything you can about this.» But the speaker's interpretation of these requests and the action he believes is appropriate in response is completely uncontrolled. One can view these test stimuli as requests for information, commands for action, or meaningless sequences of words… With human subjects it is absurd to believe that identical stimuli are obtained by asking everyone the same question. Since the crucial intervening variables of interpretation and motivation are uncontrolled, most of the literature on verbal deprivation tells us nothing of the capacities of children (as cited in Cole & Bruner, 1971, p. 869).

Moreover, other unique social situations are created because experimental tasks and measures are designed with attention to the *instrumental* level of problem solving activities in mind (e.g., focus on early reading skills) at the expense of the *higher order goals* of those activities (e.g., using literacy tools to make meaning and communicate) (Lave, 1997). Because experimental tasks and measures are set up in this fashion to meet validity and measurement requirements, it is not uncommon that students enter experimental conditions of studies to «solve new problems in new situations» (Lave, 1997, p. 64). This creates yet another complication since researchers or participants do not typically have information on whether the experimental tasks or measures relate to the history of participation or performance of the participants. An important risk created by these considerations is that researchers might inadvertently under-estimate children's competence. Cole and Bruner (1971) rejected such deficit views since «conclusions about cognitive capacity from psychological experiments are unfounded because the performance produced represents a complex interaction of the formal characteristics of the experiment and the social/environmental context that determines the subject's interpretation of the situation in which it occurs (p. 868).

For instance, a common RTI measure in experimental studies that focus on early literacy is reading fluency. Participating students are typically asked to read passages during a designated time period (e.g., 1-2 minutes). Reading fluency is indexed by the median number of words read correctly per minute across passages. Student responses are coded as errors if they omit, substitute, hesitate (longer than a few seconds), and mispronounce words during passage reading. When working with English language learners (ELLs), for example, it would be important to know the students' familiarity with reading text in English under timed conditions. How would their performance be affected if they had a history of using only literacy materials in Spanish at home or if oral narratives had been their main form of literacy? How would these learners interpret the directions for such tasks in intervention studies? How would their motivation be affected under such circumstances if they had a heightened test anxiety, particularly in a new language (i.e., English)? If this task represents a new kind of problem-solving activity for ELLs, how would they perform if they were asked to use a more familiar means to engage with semiotic tools? (e.g., story telling)

In these sections, both response and intervention have been problematized. We have raised questions about the nature of learning and the meaning of response and failure to respond. Further, we have noted that interventions tested with experimental research have blind spots that might miss valuable information about student competence.

A new generation of student response and intervention research

RTI has many strengths and promising features. The jury is still out, however, since it is too early to get a sense of its impact. We argue in this article that the nature, assumptions, and procedures used in interventions, and the ways of theorizing and measuring student responses can lead researchers and practitioners to base educational decisions on partial understandings of student competence. The current perspectives on intervention and response are blind to alternative ways in which students learn in formal and informal learning contexts. This is a highly consequential issue because programming decisions could be made that have long lasting repercussions for student educational trajectories. Although significant methodological advances have been made in psychology, education, and related disciplines to understand human development and learning, the theoretical assumptions about those constructs always shape data analysis processes. Sameroff (2010) illustrates this point when reviewing the history of developmental psychology research:

> … sophisticated statistical models have been sought to separate the behavioral signal of interest from the noise of real life. This effort has led to some frustration in the decreasing amounts of variance that can be attributed to any single factor when everything imaginable is controlled and obscured the possibility that the unexplained variance, the noise, might contain the signals of many other dimensions of the individual or context that are necessary for meaningful long-term predictive models (p. 7).

RTI's definitions and measures of interventions and responses face similar challenges. How can RTI intervention tasks address the criticisms about artificiality and simplification of learning tasks? Can RTI interventions be tested in social situations that are better aligned with learners' everyday life, so that history of participation is accounted for, and certain constraints (e.g., time, use of social strategies or adaptations) are handled in ecologically valid ways? Should intervention researchers be concerned with improving the sampling of experimental tasks or sampling the environments where participants engage in the use of the target behavior/skill/ strategy? Scribner (1997) proposed a hybrid model in which researchers sample tasks in naturalistic environments where people use the target cognitive skills. She then designed experimental tasks that were adapted from the earlier naturalistic observations as a means to attain ecological validity. This might be a potentially useful model for RTI intervention researchers particularly at a time when the learning sciences are increasingly documenting children's learning in informal contexts (Meltzoff et al., 2009).

The next generation of RTI research also needs to broaden the bandwidth of learning indicators. There are exciting developments in the learning sciences that document children's cognitive development and learning across multiple contexts that could inform RTI research. These approaches rely on situated models of learning that account for cognitive aspects of performance as well as the role of institutional and social contexts (Greeno, 1998). This way, situated learning models bridge the traditional chasm between cognitive and interactional paradigms:

> Cognitive science analyzes structures of the informational contents of activity, but has little to say about the mutual interactions that people have with each other and with the material and technological resources of their environments. Interactional studies analyze patterns of coordination of activity but have little to say about the informational contents of interaction that are involved in achieving task goals and functions (Greeno, 1998, p, 6).

Again, the emerging body of work on informal learning could enrich the design of interventions in RTI work (Bell et al., 2009). Finally, the scope of RTI's research program must be broadened to examine several neglected aspects. Specifically, in addition to generating evidence-based interventions in various subject matters beyond initial reading and math in the early grades, it is critical that future RTI research tackles its ultimate challenge, namely how experimentally derived knowledge travels from the controlled environments of classroom laboratories to the spheres of practice. Further, the education community must explore how problems of practice can travel back into more controlled settings so that researchers work on the design issues that teachers face in their everyday practice. Lastly, future RTI research should expand its interdisciplinary basis to define and measure learning. Sameroff (2010) argued that «[t]wo of the major ingredients needing integration into a unified developmental science are the *opportunity structure* construct from sociology and economics and the *meaning making* construct from anthropology» (p. 20, emphases in original). RTI researchers also need to integrate in their tool kit for designing and testing interventions interdisciplinary insights on opportunity structure and meaning making, particularly as diverse samples are increasingly included in this work. For instance, in order to attain ecological validity, attention must be given to an interpretive dimension when implementing interventions. Indeed, participants' understanding of the situations in which interventions are used is a central ecological validity requirement—i.e., are students' perceptions of the intervention procedures and outcomes aligned with the researchers' original conceptualization (Cole et al., 1997)?

RTI offers great promise in helping educators connect their practice to ongoing progress monitoring of student learning. By connecting these dots with robust measures of what learning is and by attending to the nuanced contexts in which learning occurs, educators could implement the tenets of new learning sciences into their daily practice. Yet, researchers and proponents of RTI have critical dilemmas to solve in the ways in which research designs and measures are used to better understand the impact of RTI. Particularly because of the equity issues that exist for ethnically and linguistically diverse students that are intended to be addressed in RTI models, it will be important for researchers and practitioners to examine the blind spots that emerge as RTI is implemented widely in schools.

Acknowledgments

Endnotes

[1] We use the term «minority» to describe members of racial groups that occupy a «subordinate position in a [multiracial] society, suffering from the disabilities of prejudice and discrimination, and maintaining a separate group identity. Even though individual members of the group may improve their social status, the group itself remains in a subordinate position in terms of its power to shape the dominant value system of the society or to share fully in its rewards» (Gibson, 1991, p. 358).

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