

JAASEP

JOURNAL OF THE
AMERICAN ACADEMY *of*
SPECIAL EDUCATION
PROFESSIONALS



Spring/Summer 2012



**JOURNAL of the
AMERICAN ACADEMY
of
SPECIAL EDUCATION PROFESSIONALS
(JAASEP)**

Spring, 2012

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Resilience Theory: Risk and Protective Factors for Novice Special Education Teachers

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Abstract

This study describes experiences of novice special education teachers in rural areas in Hawaii through a lens of resiliency theory. Two types of support – administrative and collegial – were examined in terms of being risk or protective processes. A case study design was used to give voice to five participants who expressed their satisfaction and concerns about support from administrators, interactions, expectations, recognition, teaching assignments, meetings and time. The study also examined support from general and special education colleagues, school staff, and outside service providers. Research findings may be of value to local, district, and state administrators and university personnel who wrestle with the issues of recruitment, preparation, and retention of special education teachers.

Resilience Theory: Risk and Protective Factors for Novice Special Education Teachers

Retention of special education teachers in public schools is an issue that requires the attention of all who are concerned with the quality of education for students with special needs. Studies by state, federal, and independent agencies found critical shortages of special education personnel, especially in rural areas and inner cities (Ludlow, 2003; Sack, 1999). The Center on Personnel Studies in Special Education (COPSSE) expressed critical concern for the high attrition rate in special education and “the potential for inadequate services to children and youth with disabilities by beginning teachers who struggle in adverse situations” (Griffin, Winn, Otis-Wilborn, & Kilgore, 2003, p. 3).

Cegelka (2004) stated, “Shortages of special education teachers lead to increased case loads for existing teachers, which in turn lead to reduced quality of services, decreased teacher satisfaction, and increased teacher attrition” (p. 3). Without clear understanding of retention/attrition issues, “states may attract teachers to special education only to lose them after a few years” (Brownell, Smith, McNellis, & Lenk., 1995, p. 84).

Researchers have investigated a wide range of factors that impact special educators’ decisions to stay or leave the field of special education (Boe, Bobbitt, Cook, Whitener, et al., 1997; Singer, 1992). More recently researchers have turned their attention to focusing on the issues of working conditions, job satisfaction, commitment, role dissonance, and job design (Eichinger, 2000; Gersten, Keating, Yovanoff, & Harniss, 2001; Holdman & Harris, 2003; Stempien & Loeb,

2002; Whitaker, 2000a, 2000b). Gersten et al. (2001) suggested that understanding conditions of the work environment that lead to increased job satisfaction and commitment may hold promise for the retention of special educators. To examine conditions of the work environment, we turned to resiliency theory and “the belief in the ability of every person to overcome adversity if important protective factors are present in the person’s life” (Krovetz, 1999, p. ix).

Purpose of the Study

The purpose of this qualitative study was to examine factors from resiliency theory (RT) that influenced the professional lives of several novice special education teachers on Hawaii’s rural neighbor islands. Specifically, we chose to focus on two types of support – administrative and collegial – that served as risk or protective processes for these novice special education teachers.

Resiliency research has clearly shown that fostering resilience, i.e., promoting human development, is a process and not a program. In fact, Rutter (1987) encouraged the use of the term *protective processes* which captures the dynamic nature of resilience instead of focusing on broadly defined *protective factors*. Richardson, Neiger, Jenson, and Kumpfer (1990) defined resiliency as “the process of coping with disruptive, stressful, or challenging life events in a way that provides the individual with additional protective and coping skills” (p. 34). Brodtkin and Coleman (1996) defined resilience as “the ability to develop coping strategies despite adverse conditions, positive responses to negative circumstances, and a protective shield from continuous stressful surroundings” (p. 28).

Researchers have used RT to describe individuals who have overcome great odds in their lives. Werner (1995) categorized resilient individuals into those who demonstrated “good developmental outcomes despite high risk status, sustained competence under stress, and recovery from trauma” (p. 81). We suggest that the first years of a special educator’s career often include high risk settings coupled with extraordinary stress and in some cases trauma. This parallel provides an opportunity to investigate protective processes, which if present, could positively affect novice special educators’ decisions to remain in the field and provide useful guidelines for teacher retention in special education. Educators recognize “the need for schools to be resiliency-fostering institutions for all who work and learn in them” (Henderson & Milstein, 2003, p. 2). Schools need to provide the protective factors necessary for teachers, especially novice teachers, to develop the capacity to successfully deal with stress, adversity, work load, and relationships that are part of the everyday experience of teachers.

Method

Participants

There were 10 participants in this study, 5 primary participants, and 5 nominated individuals. The 5 primary participants were special education teachers employed by the Hawaii Department of Education on neighbor islands (Hawaii, Kauai, Lanai, Maui, Molokai.) These islands are considered “rural” in contrast to Oahu where the majority of Hawaii’s population resides. The remaining 5 participants were individuals nominated by each of the primary participants to help further clarify, corroborate, or present alternative explanations to the information they provided. Table 1 presents demographic characteristics of the primary and nominated participants.

The five primary participants were selected from 10 individuals who were previously enrolled in a Bachelor of Education program at the University of Hawaii in a dual preparation (general and special education) program. Eight of the 10 members were contacted by telephone (2 had moved out of state) and asked a few questions about their current teaching positions to determine if they were appropriate candidates for this study. Only five of the eight were still teaching in special education positions, and all agreed to participate.

Table 1. Primary and Nominated Participants

Participant					Employed by HIDOE		
Primary	Nominated	Race	Relationship	Marital status	Yes/No	SPED teacher	Years as teacher (SPED/Gen. Ed.)
Carla	--	Caucasian	Friend; former teacher's aide	Unmarried with family	Yes	Yes	3 / 0
--	Nan	Caucasian		Married with family	No	No	0 / 0
Jen	--	Caucasian	Fellow teacher; friend	Married with family	Yes	Yes	3 / 0
--	Lori	Caucasian		Married with family	Yes	Yes	5 / 2
Kanani	--	Asian/Hawaiian	Relative; teacher; friend	Married with family	Yes	Yes	3 / 0
--	Justine	Asian/Hawaiian		Married with family	Yes	No	0 / 14
Makala	--	Asian/Hawaiian	Fellow teacher; friend	Married with family	Yes	Yes	3 / 0
--	Paula	Caucasian		Married	Yes	Former	3 / 11

Rose	--	Asian		Married with family	Yes	Yes	3 / 0
			Relative ;				
--	Anne	Asian	teacher; friend	Married with family	Yes	No	0 / 24

Note: All participants were female.

State Licensure: 3 licensed, 2 not licensed (needed to complete required Praxis exams)

Relatives Who Were Teachers: 5 had at least one relative who was a teacher.

All five were nontraditional students; four of five were married with children and jobs, or had already raised their families. Their ages ranged from 28 to 60 years of age. All potential participants were “local” in the sense they had connections in their communities on the neighbor islands and had lived in Hawaii for 15 years or more. Four of the five had previous experience working for HIDOE in a variety of capacities including educational assistants, part-time teachers, specialists, substitute teachers, home hospital, and staff. All five worked in a cross section of schools on the neighbor islands during their preparation program. All schools in which the participants taught had a mix of predominately low- to middle-income students from racially mixed communities. Three participants taught primarily in mild/moderate resource rooms, and two taught in self-contained special education classrooms (one severe and one mild/moderate).

The literature has suggested high attrition rates for special education teachers within the first 3 to 5 years of employment (Brownell & Smith, 1992; NCTAF, 2003a; Singer, 1993; Wisniewski & Gargiulo, 1997). The participants in this study had all completed their third year of employment as special education teachers and therefore could provide valuable insights into the issue of retention.

Data Collection

The primary data sources for this study were initial and follow-up interviews with primary participants and interviews with individuals nominated by them (Bogdan & Biklen, 2003; Merriam, 1998). Fifteen semi-structured interviews were conducted, two with each of the five primary participants and one with each of the nominated participants. All interviews were conducted during a 10-month period. Secondary sources of data included relevant documents and reports.

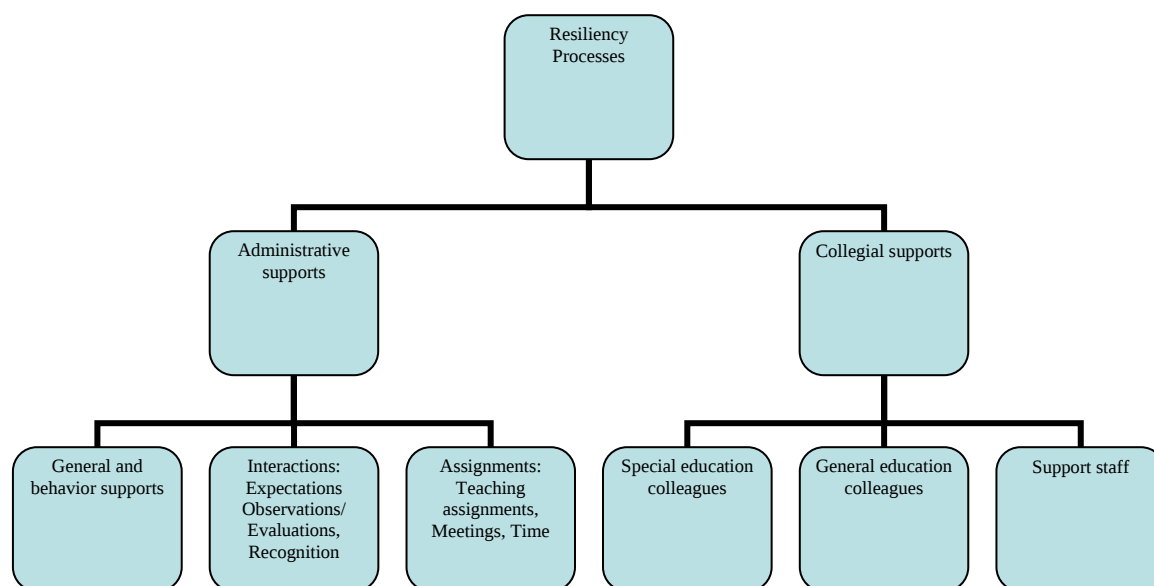
Interviews were conducted by the first author in private locations away from their schools. All participant interviews were digitally recorded and transcribed. Initial interviews were analyzed before follow-up interviews were conducted. Member checks were conducted in the second interview with each participant to confirm accuracy of transcriptions and allow for corrections and clarifications as needed (Bogdan & Biklen, 2003; Guba & Lincoln, 1981). The second interview also allowed us to explore more deeply areas of particular interest revealed in the initial interview. Data from the follow-up interviews were then analyzed to further inform and clarify the results. The first author took notes as he interviewed each participant (Patton, 2002).

After the participant left the interview site, he read through the hand-written notes and formulated thoughts on various aspects of the interview. He then recorded his impressions, insights, observations, and thoughts on further lines of questioning. The same procedures were followed with interviews with the nominated individuals.

Data Analysis

Data analysis began by reviewing written and recorded interview notes. Open coding (Creswell, 2003) was used to “uncover, name, and develop concepts” (Strauss & Corbin, 1998, p. 102) contained in the data. Data were examined for patterns, themes, and concepts that enabled responses to be coded into specific categories (Bogdan & Biklen, 2003; Patton, 2002; Strauss & Corbin, 1998). The two main categories were administrative and collegial supports. (See Figure 1.) These categories enabled us to identify issues of importance to the primary participants and further differentiate them by dividing them into subcategories, “explaining the when, where, why, how, and so on of a category that are likely to exist” (Strauss & Corbin, 1998, p. 114).

Figure 1. Categories, Subcategories and Themes



Under administrative support, the following three subcategories were identified: (a) general support, (b) interactions, and (c) assignments. (See Table 2.) Under collegial support the following three subcategories were identified: (a) special education colleagues, (b) general education colleagues, and (c) support staff. (See Table 3.)

Axial coding was then used to arrange the data by the generated codes/categories, and find relationships between the codes to form general themes. Finally, selective coding was used to identify text that particularly illustrated the themes.

Results

These results describe the ways in which administrative and collegial support served as risk or protective processes for these novice special education teachers as they moved through their first 3 years of teaching.

Administration/Support

The first subcategory, administration/support, included two themes – general support and support from administration when it came to student behavioral issues.

General support. Three of the primary participants were still at the first school in which they were hired (Kanani, Rose, and Carla). Two of the participants changed schools after their first year of employment (Jen and Makala). Therefore, the latter two participants had the perspective to compare and contrast different administration styles and support. Kanani and Jen generally felt supported by their administrators, although Jen did not feel the same about the administrator at her second school. Kanani described her principal as approachable. She stated:

I love my administrator; she's consistent in what she does for the most part. It's been a good experience overall . . . I felt supported by her. I could go in and talk to her really easy. . . . I don't always agree with her, but for the most part, I hear what she's saying and I try to take into account what she says.

The other participants did not view their administrators as providing direction and guidance. Jen's experiences with the administration at her second school were not as accommodating or supportive as in her first school. Jen addressed the frustration she felt when asking for help and guidance but feeling she was not heard:

Nobody was curious, like with all my questions and inquiry about what we were supposed to be doing you know. I surely tried to come about it in a professional way, but it was brand new. . . . I was asking, 'what do you want me to do as a SPED teacher?' . . . I'm just surprised that no one even came and said can I help you. . . I mean . . . no one comes in to look at any of my things.

Lori, a fellow special education teacher at Jen's school, and the person Jen nominated for this study (refer to Table 1), also spoke about Jen's difficulties in getting answers or support from the administration.

Makala had a friendly relationship with her administrator but it was not a supportive one in a professional sense. Paula, a general education teacher nominated by Makala (refer to Table 1), confirmed Makala's remarks. Paula explained when Makala needed information about special education records and other questions, "nobody walked her through it," she was on her own.

Carla had a good relationship with the principal at her school. She thought her principal's experience in the classroom made the principal a better administrator: However, even with this good relationship, Carla found her first year extremely challenging as she explained that she did not have guidance or support:

I didn't feel very strongly supported at the beginning, when I went in . . . I felt like I was just thrown in, in a sink or swim situation, and the only support was negative criticism. That's the way I felt. I mean, no one ever said, "Oh yeah, no actually, you should be doing it this way, it'll work out better this way. Let me show you how to do this," and so I just was kind of flying by the seat of my pants.

Support with behavior issues. Classroom management and behavior issues are foremost in the minds of novice special education teachers (Gehrke & Murri, 2006). Three of the participants felt supported by their administrators with student behavioral issues. The other two participants felt they were "on their own."

Rose was quick to praise her administration for their efforts in supporting her when she had serious behavioral issues with students. Carla was also very appreciative of her administration's support. Carla stated:

I think they do an excellent job. If I have a behavioral problem, it's taken care of immediately, either by the principal or the vice-principal, and if it's an ongoing behavioral problem, the child is immediately processed and put in with the school-based behavioral counselor.

Jen's experience was nearly the opposite of Rose, Kanani, and Carla. Her frustration and confusion were evident in her remarks as she explained:

At the school this past 2 years . . . you're on your own. We don't have a written procedure book. The procedures are always changing. . . If I had a problem in my classroom, you know, did I send them to the VP [vice-principal], did I send them to the principal, could I even send them? I really get the impression, you know, you need to deal with it on your own.

Makala had given up on expecting support from her administration for behavioral issues. She explained that if she called, there was no response. She stated, "I just take care of everything... on my own."

Administration/Interactions

The second subcategory, interactions with administrators, contained three themes -- expectations, observations/evaluations, and recognition. Administrators who can articulate clear expectations for performance and provide needed information to new teachers may be more successful at retaining these teachers. High expectations, a key element in resiliency theory, can help motivate novice special education teachers to perform at a level that is professionally satisfying (Henderson & Milstein, 2003).

Expectations. Rose was not able to recall a time when specific expectations were presented to her as a new special education teacher. Carla related that expectations were never expressed to her verbally or in written form. Jen also had difficulty remembering anything specific regarding expectations. Kanani and Makala both reported that the only expectations were discussed in the interview. Kanani said:

There was no formal introduction up front . . . other than my initial interview with the administrator when I was hired. . . At that interview she said, you know, this is what you might

be teaching, and these are some of the expectations, but then after that it was like okay, here you are, you're hired, and then this is what you're teaching, and then [you were] left on your own.

Observations. Support from an administrator can manifest in many forms. None, however, may be more important than the direct observation and feedback of novice teachers' teaching. Observations present a unique opportunity for new hires and administrators to interact in a nurturing professional environment. This can be an opportunity for both to better understand each other and build a supportive relationship. Participants spoke of two types of observations, the unannounced walk-in and the formal evaluation for probationary teachers. Rose, Jen and Makala reported getting no feedback from formal or informal observations. With respect to the informal observations Rose explained:

It's usually unannounced. They [administrators] just pretty much come in and observe what you're doing at that particular time. . . I think [the administrator] came into our class once this year, and it was just like an in and out thing and then nothing was said after that.

Carla's experience was more positive. Her administrator observed her teaching more often and gave some verbal feedback. The feedback Kanani was given was the most supportive. She explained:

At the end of the year, I did have the [formal] evaluation and that was very good. Because our administrator actually sits down with us for an hour, and because we lead the evaluation, we bring up the things that we want to talk about, the things that we felt we did good, the things that we need to work on. And because it's self-directed it's really good. [The administrator] was very good about pointing out things...and then at the end of that process we set goals for the next year. And I liked that, because I'm kind of a goal-driven person, so it gives me some ideas of areas that I need to work on.

Recognition. Brown, D'Emidio-Caston, and Benard (2001) discussed the importance of "recognizing competencies" of individuals to bolster self-esteem and resiliency. Henderson and Milstein (2003) wrote about the importance of recognizing outstanding contributions of individuals as well as sending "frequent reality-based messages of appreciation" in order to encourage and reinforce job satisfaction and resiliency. Novice special education teachers in this study discussed the recognition they received from their administration as it pertained to their work in their respective schools.

Rose was candid about not receiving recognition from her administration. Anne, her nominated individual, did not know of any time when the administration at Rose's school had recognized Rose's work in any way. Anne heard positive comments about Rose's teaching from others at the school but nothing from administration. Makala believed her administrator recognized her abilities and praised her in order to get her to do things the principal would rather not do herself. Makala explained:

About 2 weeks ago, [the principal] and I sat at a table and my complaint was about the service people coming in and not fulfilling their service times. . . I want you to talk to them and tell them that they need to fulfill their time. And [the principal's] thing to me was . . . "No, you're doing

such a good [job], you can talk to them. They all think you're doing such a great job." . . . I was mad.

Carla believed she was recognized by her administrator but it was never spoken directly to her. Carla explained:

I've had a few IEPs, and it was surprising to me to hear [my administrator] say "Preferential seating is not necessary in [Carla's] classroom, it's small and she's standing on top of each child at all times." I was kind of surprised because I never knew that [my administrator] would catch any style of my teaching, because observations are very brief. But that's how I hear it. . . . [The administrator] never would come up to me and say, I like what you're doing here.

Kanani's experience once again differed greatly from that of Rose, Jen, Makala, and Carla. Kanani shared the following:

We have school academic plans now. . . . So, we do this lesson plan and turn it in and [the principal] gave me some positive feedback. "Wow, this is really great, look what your kids did!" It made me feel really good because these were my special education students, but you know [the principal] thought their work was comparable to what was going on in regular education. So, that made me feel really good, and I went back and told my kids that. . . . So, I shared what I had done [with gen ed. colleagues] and they were like wow, your kids did this? And they were really impressed because they were saying this is special ed. work? I'm going, yeah this is special ed. . . . it made me feel really good.

Justine confirmed how Kanani's administrator recognized her by encouraging her to take leadership roles at the school, by giving her a room that was considered a "*pretty prime classroom*," and by letting her know how committed they were to keeping Kanani on the faculty. All these factors contributed to Kanani's satisfaction with her job.

Administration: Assignments. The third subcategory, assignments, contained three themes -- teaching assignments, meetings, and time. The participants in this study experienced a variety of teaching assignments. In some cases, they were moved from placements where they felt effective and supported to other schools where they did not. They had no say in their reassignment because they were novice teachers without tenure.

Teaching assignments. Rose was assigned to a co-teaching position when initially hired because of room availability. She stated that she "*really clicked*" with this teacher. Anne, Rose's nominated individual explained that the co-teaching situation was ideal for Rose as a novice teacher. Anne said, "*The teacher that she was teamed with in the same room was an experienced teacher . . . and that was her support.*"

Jen lost her first-year position, which had been a positive experience for her, because the "child count" did not justify her position at the school. Jen did not find the same supportive atmosphere at her second school which was particularly frustrating because she had been happy and successful at her first school. Like Jen, Makala was not able to retain her initial teaching position and moved to another school her second year. She also did not experience the same kind of

support she had enjoyed at her first school. Both Jen and Makala had tried to transfer back to their first schools and found out they were “stuck.” Makala believed her teaching assignment actually was hiding a much broader role than she had expected. She stated:

It's been very challenging, many times frustrating. . . . I thought we were supposed to be teachers but we're not . . . Sometimes I feel like I'm maybe the administrator. . . I'm their parent, I'm their counselor, I'm everything. So, I think when I look at the overall picture, you know, it's been a real tough journey... it has never gotten easy. . . . I think when I first went out into the [special education] field, what I liked about it was I was in a resource room, so there was another teacher working with me, and because she had many years in teaching, she could help me to be guided in the right directions. She foresaw problems . . . she would give me a warning, you know, but then allow me to still have that opportunity to try it out. I think if she wasn't there, a lot of times I would run into, you know, a lot of problems. . . . The second year, when I had to go solo, there were a lot of things I had to figure out on my own.

Meetings. School meetings were found to be a topic of some frustration, as indicated by a participant in Gehrke and Murri's (2006) study: “A lot of the information didn't pertain to us [special education teachers]” (p. 185). Similar frustrations were mentioned by the primary participants in this investigation.

Jen, Makala, and Carla had questions about the value of meetings and the way the meetings were conducted at their schools. Carla described the meetings as follows:

Usually there's a speaker, and the speaker will come and talk about various school-related programs, and usually all the special ed. teachers roll their eyes because it never has anything to do with special ed.

Rose was forthright in her opinion of some of the meetings she was required to attend. She remarked:

Sometimes I think it's kind of a waste of time for us to be there, [we] special ed. teachers, because I mean . . . it pretty much doesn't have anything to do with us most of the time . . . but I think overall, it's a good thing for us to go to just so we know what's going on in the school level.

Kanani expressed frustration with her special education department meetings that didn't address issues that were of substance and importance to the students they served. She stated:

In our department meetings... we never discuss what we're teaching. We never have those really good, deep conversations about what our kids are learning and how they're learning and how we assess them, because we're talking about. . . (what) they want us to do this month, and this is our report of how many IEPs haven't been marked complete!

Another issue was Kanani's frustration of not being included in content-area meetings that would have value to her. Kanani explained:

Okay, the problem with special education is, because we have our own department . . . sometimes we weren't included on those content area meetings. . . sometimes there's not a lot of good coordination between . . . general ed. [and the] special ed. department.

Time. All participants spoke of not having enough time to do all the tasks that were expected of them as special education professionals. Rose explained that during her first 2 years as a novice special education teacher she took a great deal of work home each day because she did not have the time to get it done at school. Kanani explained the result of all the demands on her time as a novice special educator in this statement:

The consequence of [lack of time] is I don't feel like I'm as good a teacher as I could be because sometimes I'm just doing my lessons on the fly! Because I didn't have as much time to put into lesson planning as I would want.

Jen also expressed her frustration with lack of preparation time to adequately plan for her lessons. She stated:

No, I mean [prep time is] not designated [at] an exact time. Like sometimes on Wednesdays, we get done at 1:15, and our meetings are at 2:00. So, officially, they say, that's your prep time. Well, you have meetings in there. That's when we have a grade-level meeting, [or] a committee meeting, [or] we're holding IEPs.

Makala gave a specific example of how her time is being taken up with nonteaching-related requests from her own school office. She explained:

Throughout the day, I say there's 10 times that I would have to cut [my teaching] short or not pay attention to it. . . . A good example was today, the office called me up. They wanted me to call the parents up because one of my students didn't have lunch money. I said why don't you guys call them? No, we're not gonna call them because the parent doesn't like us. . . I wish I could say, 'Hey, listen, can you just take care of all these little things, the side things that interrupt us, just so I can teach?' I've yet to see a whole day where I just teach without any interruptions [laughs].

The participants in this study all stressed the importance of administrative support and leadership during their first 3 years as novice special education teachers. Table 2 provides a summary of their responses.

Table 2. Administrative Support, Interactions and Assignments

Participant	Support: in general and support for behavior issues	Interactions: Expectations, evaluations, recognition	Assignments: Teaching assignments, meetings, time
Carla	Supportive with behavior issues	No expectations verbally or in writing; No observations and	Questioned value of meetings, lack of relevance to SPED; not enough time to

		feedback positive; implied not explicit recognition	do all that is expected of her
Jen	Didn't feel supported	No expectations given; no feedback provided following observations; no recognition	Had to move from initial successful & supported placement to non-supported placement in different school; meetings lacked value and relevance for SPED; lack of preparation time was frustrating
Kanani	Felt supported	Expectations stated in interview only; observations and feedback positive; much recognition	Meetings lacked deep discussion about what was taught and student learning; SPED not included in content area meetings; teaching "on the fly" because of lack of planning time, consequently not as good a teacher as she could be
Makala	Friendly but not supported. On her own with behavior issues.	Expectations stated in interview only; no feedback provided following observations; recognition but with an agenda	Moved from initial successful & supported placement to non-supported placement in different school; meetings lacked value and relevance for SPED; not enough time and too many interruptions while teaching
Rose	Supportive with behavior issues	No expectations provided; no feedback provided following observations; no recognition	Co-teaching 1 st year successful; meetings lacked value and relevance for SPED but good in a general sense; not enough time, took

			work home at night
--	--	--	--------------------

Colleagues/Staff

Novice special education teachers reported the importance of relationships with their professional colleagues, both in special education and general education, as being risk or protective influences and contributing to their satisfaction or dissatisfaction with their careers (Kilgore & Griffin, 1998; Miller, Brownell, & Smith, 1999). Kanani remarked that her relationships with her colleagues were of *“major importance because that’s the only thing that got me through my first year. It still gets me through!”*

Special education colleagues. Rose related the importance of her relationships with fellow special education teachers with respect to asking them about where to get certain things and asking questions about IEP meetings. Kanani also experienced positive support from her fellow special education teachers. She explained:

They were very supportive you know, [they] gave me lots of materials because I was new. I didn’t have anything. . . I had no resource materials. . . One of the special education teachers is the one that [supervised]...my student teaching... she’s always very willing to give me anything that she has so it’s been supportive.

Jen also expressed a similar experience with special education colleagues at the second school in which she taught. She explained:

I think right now I have a wonderful team that I work with. I feel that the support is there, I mean, within your department there’s always more support, if you find a good colleague that you’re working with because they’re all on the same page.

General education colleagues. Interactions with general education colleagues were seen by all participants as somewhat more challenging than their professional relationships with fellow special education teachers. Rose said: *“I don’t really interact with any general ed. teachers too much. . . . But overall my experience with the general ed. teachers was all positive.”* Anne explained that Rose was a *“team player”* and *“she’s always . . . in contact with other teachers. . .”*

Kanani, who had work experience at her school prior to being hired as a full-time special education teacher, stated:

I already knew the school culture, so I had the advantage. But what has been helpful is where my particular classroom is. I have regular ed. teachers around me, and I love those teachers because they are a very positive support for me. If I have questions, I can go to them, they come to me, and we take care of each other.

Justine also mentioned the advantage Kanani had because she previously worked in the schools: *“I think what helped for her was . . . her first full-time job was in a school where everybody knew her and she knew everyone . . . so they were very familiar with her.”*

Jen reported a different experience with general education teachers. She stated:

There is a line when you're trying to talk to a general ed. teacher about modifications and all that, and all they say is, "Well, I have a huge group . . . I'm not doing that!" But in general, I have a very good relationship with the grade level that I support. They're supportive and encouraging to me as well as I am, you know, helping them as much as possible.

Makala described a different type of interaction with general education teachers in her school:

The general ed. teachers, a lot of them always ask me a lot of questions about special ed. . . . They'll ask me a lot of legal questions. . . . Nothing really to do with general ed. you know, more of special ed., how to do the paperwork.

Carla succinctly summed up the relationship she had with general education teachers at her school by stating, *"No support, we only meet at IEP meetings. They call when children have pull outs. They do provide end-of-the-year assessments."*

Participants were asked if there was any formal system in place at their school to bring special education and general education teachers together. One common theme was lunch. Both Kanani and Carla's administrators told them to eat lunch with the general education teachers. Kanani's administrator suggested it and Carla's required it. Makala mentioned the only time she could think of when she interacted with general education teachers was at lunch but there was nothing productive about it from her point of view. However, both Kanani and Carla expressed the belief that the informal contact at lunch between themselves and the general education teachers at their school was a good thing.

Rose, Kanani, and Jen mentioned teaming with general education teachers at faculty meetings. Rose did not find this grouping procedure particularly helpful to her, but she did not dismiss it either. Kanani indicated that the teaming they did do was useful for certain school wide committees but, *"as far as working with other teachers . . . we don't do a lot of teaming. We don't have time to sit and talk about what we're doing in each other's classrooms and really work together."* Jen contributed that at her school various attempts were made to have teachers *"team up"* to focus on various issues facing the school. She indicated the teams did not *"live up to what it was supposed to be, whatsoever. Most of my colleagues can't stand [the teaming]."*

Support staff. Support staff provides important risk or protective factors for novice special educators new to the routines, requirements, and daily operations of a school. Generally, the participants in this study found support staff to be very helpful and accommodating. Rose commented on her district support person; Rose stated, *"I knew I could always call on her, and she was always a great help."*

Kanani contributed a specific example of a support person who made a big difference in her first year as a special educator. She explained:

One of the EAs [educational assistants] . . . works to input IEP information for any of the special ed. teachers That first year, she helped with a lot of the academic progress reports. . . It made it easier instead of us having to personally track down all their teachers. . . .

In addition to the above example, Kanani emphasized the importance of taking advantage of various specialists who could assist with materials and information. She explained:

I would advise you to seek out resource people in the district or the state to come in. . . . This year I've had another person come in from the state, in the area of reading, which has been a really good help. So, he's come in and observed. He's actually given me resource materials for free! [laughs]

Makala shared an example of a speech teacher who helped her out soon after she arrived at her new position at her second school. She had an IEP meeting that afternoon and the speech teacher told her she would help her get it together and assisted her to meet the deadline.

Not all the experiences with support personnel were as helpful as those mentioned above. Jen had challenges with some of the educational assistants she worked with at her new school during her second year as a special education teacher. The conflicts Jen had to face were not part of what she imagined to be her job description. She stated:

I always try to get along and be very respectful to everybody, every job position is important at our school. . . . This school year I was very much challenged working with . . . EAs [educational assistants]. It was really unfortunate, and it was very discouraging personally for me. I was put in the position of being, you know, the supervisor. . . . I have to do a whole evaluation that they're told [determines if they] get their job back. Maybe they've been there for years and years and years, and you're this new teacher, and they don't care if you're a teacher or what you are. . . . They're gonna do what they want to do, and you're supposed to tell them their job and be sure that they're on time, and report if they're not, and fill out these forms. . . . I was actually called into the principal's office during my instructional time for my students to discuss an issue with an EA . . . I could have walked out that day easily! That was so unprofessional, so inappropriate.

Makala discussed a situation in which specialists were not fulfilling their service time for students with special needs but they were filling out paper work as if they had. Makala stated:

This is [their] service time, according to the IEP. They're supposed to service a child. . . . They are the expert. They went to school for this. They need to work with this child for this amount of time. . . . It's almost where service providers want to come in as consultants, and that's putting more strain on the special ed. teacher. . . . [laughs] I should've gone and become a therapist you know, had I known I was gonna be doing this all day.

Table 3 summarizes participants' collegial support. All participants agreed that the support they received from colleagues was integral to their success during their first 3 years as novice special education teachers.

Table 3. Collegial Relationships

	Special Education Colleagues	General Education Colleagues	Support Staff
Carla	Felt supported	No support; only meet at IEP meetings; they do provide end-of-year assessments	Felt supported
Jen	Wonderful team; felt supported	In general good relationship; many times not willing to implement modifications she suggested saying they had too many students to do it	Had a difficult time with EA's. Felt she was put in the role of "supervisor" over people who had been there for years and she was a new teacher.
Kanani	Great support; got her through her 1 st year; gave her materials	Had worked previously at this school and felt that gave her an advantage; gen ed teachers were located next to her room and helped with questions and support	Very helpful; gave examples of EA's who input IEP information and academic progress reports, also state resource person who helped with reading; had problems getting support to cover her room when she had to conduct assessments
Makala	Felt supported	Gen ed teachers asked her lots of questions about legal issues and paperwork	Gave example of a speech teacher who helped her initially with IEPs; problems with specialists not providing the service time to students as required in their IEPs
Rose	Helped with where to get things and questions about IEP meetings	Didn't interact with gen ed teachers too much; generally positive when she did	Felt she could call on them and they were a great help

Discussion

Summary

Gehrke and Murri (2006) reported that special education teachers “who leave or express an intention to leave their classrooms cite consistent factors within their workplace that create frustration and dissatisfaction and influence their career decisions” (p. 180). Teachers in various studies listed areas such as resources and materials, behavior management, teaching environment, emotional support, support from building and district administrators, collaboration and consultation with general education teachers and service providers, paperwork, knowledge of general education curriculum, and time management (Brownell, Smith, McNellis, & Miller, 1997; Gehrke & Murri, 2006; Gersten et al., 2001). Special education teachers in the present study expressed similar concerns as they attempted to balance the many facets of their workplace job requirements to meet the needs of students, parents, colleagues, and administrators.

Administrative Support. The participants in this study all indicated the importance of administrative support and leadership. Although individual experiences with administrators varied, certain themes remained consistent across interviews. The participants wanted clear expectations from administrators as to their role and responsibilities within the school community. All five of the primary participants expressed that they were not given expectations as to the purpose and quality of their work. For some there were no expectations at all, and for others expectations were minimal. According to Brock and Grady (1997), “Beginning teachers view the administrator as the most significant person in the school....Beginning teachers desperately want to know the principal’s expectations for the school and for their teaching” (p. 13).

High expectations are an important element in the resiliency literature (Benard, 1993, 1996, 1997; Brown et al., 2001; Krovetz, 1999). Administrators can support resilience in their teachers by articulating and maintaining high professional expectations for them. Participants wanted and appreciated administrators who were approachable and found time, however briefly, to connect with them and listen to their concerns. Three of the five participants gave high marks to their administrators for the support they provided when there were cases of extreme behavior with students. All three believed they were heard when these situations developed and that they were supported by prompt and appropriate action. Two others reported the exact opposite. One participant explained that she had tried on several occasions to get clarity with her administrators as to policy for dealing with behavior issues, and was frustrated by the lack of policy and the confusion that it caused. Another participant simply stated she had given up trying to communicate with her administrator on the issue of student behavior.

With one exception, participants reported that observations of their teaching conducted by administrators were not meaningful experiences for them. Observations were rare and brief with little or no follow up. All agreed that more observations of their teaching, done by their administrators in a thoughtful way, would be a good experience. One of the participants felt she did receive quality observations with constructive feedback and her relationship with her administrator was rated highly. Four of the five participants revealed that their administrators did not recognize their work directly, either verbally or in writing. Only one participant reported a clear connection with her administrator who recognized her efforts and encouraged her to do more as a member of the school community.

Johnson (2004) reported schools that support teachers are effective in making success not only possible but also likely. Such schools have present, active, and responsive administrations who develop personal relations with their new staff, assign them an appropriate set of courses, and arrange for them to receive constructive feedback about their teaching. Experienced colleagues in the school are available so that new teachers can observe and consult with them in an ongoing way. (p. 91)

Principals, both public and nonpublic, have reported a variety of methods they found effective when assisting beginning teachers, including: (a) visiting classrooms, (b) providing feedback, (c) providing mentors, (d) formative and summative evaluation, (e) an open door policy, (f) instructing novice teachers in reflective teaching methods, (g) providing instruction in the school's classroom management program before school started, and (h) providing opportunities for novice teachers to observe veteran teachers (Brock & Grady, 1997). Also, Darling-Hammond, in her address to the first Teacher Quality symposium in Honolulu, told the educators in attendance, "If we put our best teachers in schools where teaching and learning are not nurtured, even our best teachers cannot succeed" (NCTAF: Hawaii Policy Group, 2001, p. 26). Clearly, four of the five participants in this study indicated they had not received the type of support Darling-Hammond and the Principals cited above viewed as essential.

All participants wanted meetings that were more purposeful and focused in a way that would enhance their ability to be better teachers. One participant saw improvement in the quality and effectiveness of staff meetings at her school but the rest believed that most meetings were unproductive for them and did not support them to become better teachers. When planning meetings, "principals should coordinate the efforts of all personnel and provide a strong united program" (Brock & Grady, 1997, p. 40). One participant saw value in any meeting that helped to better inform her about what was going on at her school. However, she and others stated that most of the meetings they were required to attend were a "waste of time" and a source of frustration. One participant explained, not too long ago, a typical meeting at her school would have been a "gripe session" by disgruntled teachers. She reported this was no longer the case and that meetings now were more substantive; however, she was still frustrated the inability of teachers, in her opinion, to discuss matters of importance to the education of their students. Two participants reported their administrators were trying to incorporate new ways of conducting meetings. One saw the administrative changes as effective, whereas the other stated teachers came away confused as to what the point of the meeting had been and with a feeling that very little had been accomplished.

Finally, the participants reported lack of time was a major factor in their inability to meet the demands of their job. Many discussed taking their work home with them and working on nights and weekends to stay current with the requirements of their teaching positions. They all believed the system was not designed to provide teachers with the time they needed to complete the many tasks required of them each day. They did not feel supported with even basic preparation time that was scheduled on a consistent basis. NCTAF on a national level recommended 10 hours per week as a minimum amount of time for collegial work and learning (NCTAF: Hawaii Policy Group, 2001). The participants in this study experienced nothing like that and even fell short of their allocated 40-minute daily preparation time. Some reported not even having their own lunch period away from their students. Teachers need time to network and plan. The importance of

collaboration to accomplish mutual goals requires time and commitment (Friend & Cook, 2003). “True collaboration exists only on teams when all members feel their contributions are valued and the goal is clear, where they share decision making, and where they sense they are respected” (Friend & Bursuck, 2006, p. 75).

Collegial Support. Collegial support was very important to the participants in this study; all five mentioned support from their special education colleagues as an important factor in their ability to do their jobs and learn the ropes. Special education colleagues were characterized as being very helpful with information and materials. One participant mentioned that the difference she observed between veteran and novice special education teachers at her school was that the newer teachers were more open and willing to deal with changes, and constantly evolving requirements and expectations placed on teachers in today’s schools. This participant stated, in some cases, veteran teachers just refused to do things that were asked of them by their administrator, choosing instead to “wait out” the new policies based on their past experiences of seeing policies come and go. Generally, however, all five participants relied to some degree on the support they received from fellow special educators.

Participants reported a more mixed view of support when working with general education teachers. Two participants mentioned previous work experience in schools that helped them develop positive working relationships with general education teachers. Two participants expressed they occasionally had general education teachers complain to them about having special education students in their classrooms and their frustration at having to make accommodations and/or modifications in order to meet the IEP goals of a particular student. One participant mentioned she felt “displaced” from general education teachers, and explained she believed there would always be a riff between special education teachers and general education teachers based on the same concerns mentioned above. Two other participants simply stated they had very little contact with general education teachers other than the most basic of interactions.

Two participants mentioned attempts were being made at their schools to have teachers interact more and team together. One participant saw it as a positive indicator of change at her school to a more collaborative environment. The other believed it to be very ineffective and not worth the time and effort as currently practiced. The other three participants reported there was not any specific attempt to coordinate opportunities for general education and special education teachers at their schools to work together or build relationships.

Special education support services were sources of both support and frustration as perceived by participants in this study. Two participants described good relationships with various support staff personnel, providing examples of working effectively with educational assistants, and giving high marks for this support. Two other participants praised their colleagues who served as student services coordinators and grade-level chairs. Three participants had specific, ongoing conflicts with service coordinators, service providers, and educational assistants; all believed the quality of their teaching was affected to some degree because of these ongoing problems. It was particularly frustrating to one participant who had known highly cooperative and supportive relationships with educational assistants at her first school only to find this experience reversed at her second school.

Limitations

The findings should not be generalized beyond the particular individuals in this study. The participants all worked for HIDOE on neighbor islands and did not represent special education teachers on Oahu, Hawaii's metropolitan center, or on the U. S. mainland. Each participant came from her own unique cultural and community background and may not share common values and traditions. The self-report nature of the individual interviews may also be considered a limitation. On-site observations of participants on the islands where they resided, in their schools, classrooms, or homes were not conducted in order to ensure confidentiality.

Future Research

The results of this study suggest areas for future research that would benefit all stakeholders concerned with the retention of highly qualified special education teachers. Future research on the relationship between novice special education teachers and their administrators could help us better understand the interactions that promote constructive professional relationships. Researchers should investigate professional development opportunities for special education teachers that are of consistent high quality, meet the expressed needs of special education teachers, and are delivered in a way that allows for teachers to participate without undue disruption to their teaching responsibilities. Studies that examine the efficacy of high-quality mentoring programs at the local and district level would be useful for administrators seeking to create a supportive school environment for novice special educators. Answers to these and other related research questions should further knowledge and enable educators to make informed program and policy decisions designed to retain novice special education teachers.

Implications and Recommendations

This study has important implications for the retention of novice special education teachers. The results of this study suggest that administrators who recognize their teachers even in small ways, who make themselves available, and encourage leadership in their teachers, have more satisfied teachers on their faculty. The data suggest the least satisfied teachers had administrators who were not perceived by these teachers as forthcoming, knowledgeable, available, and supportive; they did not provide the kinds of supports found to be so important in the resiliency literature. These administrators were not perceived to be leaders who had clear agendas, expectations, and boundaries; all key elements of Henderson and Milstein's (2003) resiliency model. Several factors surface consistently as key protective factors that support success throughout the resilience literature. Caring and support, high expectations, and meaningful participation are mentioned in multiple studies as the basis for supporting resilience (Benard, 1997; Benard, 1996; Benard, 1993; Brown, et al., 2001; Krovetz, 1999).

This study enabled the voices of five novice special education teachers on Hawaii's neighbor islands to be heard candidly and openly. Their experiences, insights, and frustrations over the course of their first 3 years as novice special educators provided an invaluable look into a world that has to be experienced to be truly appreciated. Resiliency theory depicts nearly all people with a self-righting mechanism that will come into play when basic supports are present (Brown et al., 2001). Education professionals would be negligent if we do not provide the supports that, in many instances, do not require large amounts of money or complex programs. Rather,

necessary supports may simply require a bit of recognition for a job well done, an honest expression of appreciation from time to time, and an open door where questions can be asked and answered without fear of intimidation. This can be an immediate starting place, upon which can be built the positive relationships that caring and civility naturally create. From there, all can work together to brainstorm ideas and plan ways to solve the issues brought to light in this study. The women and men who have chosen to teach children are owed this. Their work is challenging enough when supports/protections are in place. All teachers—including novice special educators—deserve the profession's respect, appreciation, and every possible support and protection. This is essential if schools hope to retain these teachers in their chosen fields and thus ensure for all children the opportunity to receive the excellent education they deserve.

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The Ability-Achievement Model Versus the Response to Intervention Model: Which Model is More Accurate in the Assessment of Diagnosing Students with Learning Disabilities?

Debra Camp-McCoy

Abstract

The Ability-Achievement Model is reviewed for efficacy in comparison to the Response to Intervention Model when diagnosing students with possible learning disabilities. The research will address the success of Ability-Achievement Model versus the Response to Intervention Model when successfully diagnosing students with learning disabilities was used to draw such conclusions as are listed throughout this paper. Studies on both models have shown inconsistencies in reference to correctly diagnosing students as having a learning disability. In the field of education, the inconsistencies in the data is troubling due to the sensitive nature that surrounds the incorrect diagnosis of a student as having an actual learning disability or not having said disability. Due to these findings, both models of identification are suitable only if used together over a specific period of time in the accurate diagnosis of establishing if a learning disability is present.

The inception of Response to Intervention models (RTI) came about through the reauthorization of the Individuals with Disabilities Education Act in 2004 (IDEA) and the overall idea that school reform was needed to address students who were not performing at grade level. The trend of RTI is to not only use the data to make informed decisions concerning special education services, but also as an early identifier of students who are considered at-risk. At the heart of RTI is the concept of using scientifically-based programs and approaches when intervening at the intervention stage to prevent student academic failure. However, the swell of RTI in public school has also highlighted the importance of scientifically proven instructional practices as the first line of defense in the structure of RTI practices.

The No Child Left Behind Act of 2001 (NCLB) forced school districts to look at student achievement deficits due to the sharp increase in accountability at the school district level, and also at the state level. With the creation of NCLB, administrators and state officials began to learn the importance of data, which gave the districts an arsenal from which to pinpoint student academic failures, and also instructional failures when grade level scores were compared. The sharp rise in accountability slowly created the need and desire for RTI models throughout the United States. This was a direct result of decision makers who were interested in a program that would not only pinpoint academic problems, but also identify students who were academically at-risk and therefore would most likely fail yearly state curriculum based assessments.

According to Pascopella (2010) "RTI became so mainstream because it came about when people were truly interested in comprehensive school reform and interested in tracking and improving school progress."

School districts have a two-fold need for Response to Intervention models. The first need is having the capability of pinpointing academic deficiencies on a micro and macro level

throughout each school district, which RTI programs successfully achieve through extensive data. The second need, which RTI is also able to accomplish, is to help identify students who may or may not have a specific learning disability and who then may be referred for special education services.

Johnston (2010) states the following:

The law describes RTI in two ways: as a strategy for identifying students with learning disabilities (LD), replacing the IQ discrepancy identification approach, and as a strategy for reducing the number of students who end up with disabilities, part of guaranteeing “appropriate instruction.”

The RTI process begins with whole school testing of benchmark skills that all students in that particular grade should be able to perform at an average or above average level. The whole school testing is conducted using curriculum based assessments, which every student completes in subject tested areas, such as mathematics, language arts, and science. It is through this type of testing that students are identified as needing more assistance because the curriculum-based testing is on each student’s grade level. This process of testing is known as the “universal screener” because every student in the school is tested to see if he or she is capable of grade level work in each subject being tested. After all of the data from the universal screener is examined, students who will need academic interventions are identified, and are then scheduled to receive varying levels of interventions in the deficient academic skills. Another concern regarding RTI practices is the curriculum-based measures that are chosen for progress monitoring purposes. Wodrich, Spencer, and Daley (2006) report that “Professionals must assume that the proper academic domains are selected so that academic monitoring is conducted with instruments possessing adequate content validity.” The universal screener that is chosen for RTI purposes should be examined thoroughly to determine the test’s legitimacy when screening for academic deficits.

Traditionally, there are three separate levels within the RTI process. The first level is Tier I, which is all of the work and interventions that occur within the regular education classroom. Tier I is considered the first line of defense against any academic deficiencies because the most effective instruction and intervention is supposed to happen inside the regular education classroom. If the student is not having success at Tier I, and the universal screener shows inconsistencies in performance, the student will then be considered for Tier II. At the Tier II level, students receive interventions not only in the regular education classroom, but also additional interventions outside of the classroom. Each district varies the intensity and duration of Tier II interventions, but on the average students are pulled out of the regular education classroom three times a week to receive such interventions. Unfortunately, some students still do not show progress at the Tier II level, so these particular students are then moved into Tier III. At the Tier III level, students generally receive interventions five times a week, in addition to testing that occurs at both the Tier II and Tier III levels.

After eighteen to twenty weeks at the Tier II and Tier III levels, some students still do not make enough academic progress for the interventions to be considered successful. When this occurs, the data collected during this time is examined and these students are referred to a school

psychologist and/or psychometrist to identify if the student has a possible specific learning disability (SLD). School districts vary greatly in how the data is considered in the referral process for identifying a student as having a possible SLD. Fuchs and Deshler (2007) report that “Practitioners need to agree on the purpose of RTI—at least practitioners in the same school district or state need to agree. Some who have written about RTI say it should be only about early intervention, while others say “disability identification.” Still others say, “both.” This conundrum creates tension in many RTI proceedings because the individuals involved cannot agree on the purposes and ultimate outcomes for RTI.

There is a growing trend among school districts to use data collected during the RTI process, and also have results from IQ testing, and school performance records to establish whether an SLD exists. Although Response to Intervention models have existed for the last ten years in most school districts; recently, there is a growing argument over whether the data collected from RTI data and Ability-Achievement (I.Q. testing versus school performance) are mutually exclusive when diagnosing a student with a specific learning disability.

Studies on both models of identification, the Ability-Achievement model and RTI, have shown inconsistencies in reference to correctly diagnosing students as having a specific learning disability. In the field of education, the inconsistencies in the data is troubling due to the sensitive nature that surrounds the incorrect diagnosis of a student as having an actual learning disability or not having said disability. Due to these findings, both models of identification are suitable only if used together over a specific period of time in the accurate diagnosis of establishing if a learning disability is present. During the process of evaluating if a student has a possible specific learning disability, the sole use of the Ability-Achievement model when making this determination has come under close scrutiny. According to research conducted by Werts, Lambert, and Carpenter (2009) they found “A lack of consensus and continuing dissatisfaction with the adequacy of this operational definition contributed to the inclusion of RTI in IDEA (2004) as an alternative system of identification.”

After years of using the Ability-Achievement model, many experts found that variability among school districts when using cut-off scores when administering the I.Q. testing lead to a growing number of students who were overidentified or underidentified as having an SLD. According to Feifer (2008):

“Throughout the years, there have been numerous shortcomings inherent within the Achievement-Ability model including the statistical imprecision of using cutoff scores from two different normative samples (i.e., Wechsler Intelligence tests versus Woodcock-Johnson Tests of Academic Achievement), the over-reliance on a Full Scale IQ score in an attempt to capture the dynamic properties of one’s reasoning skills (Hale & Fiorello, 2004), and the lack of agreement on the magnitude of the discrepancy at various ages and grades (Feifer & DeFina, 2000). Perhaps the most notable shortcoming of the discrepancy model was that it resulted in a “wait-to-fail” scenario in which a student must display a level of failure to acquire skills that must reach a threshold of severity, or significance, to qualify for special educational services.”

Although the aforementioned process of the Ability-Achievement model’s “wait-to-fail” mentality seems outdated in recent attempts to “catch” at-risk students from failing, there are

also those who believe that NCLB and RTI are being used together to form a nation of students who will be able to meet all standards at every grade level. This reasoning is in sharp contrast to IDEA's concept of the individual's importance over that of the group. Kavale and Spaulding (2008) reports that "When aligned with No Child Left Behind (NCLB), RTI attempts to achieve the unrealistic requirement that all students achieve a minimum standard regardless of inherent limitations." This statement makes the argument that RTI data used in seclusion of other models may not provide adequate information on the determination of a possible learning disability.

According to Holdnack and Weiss (2006):

While the definition of an SLD specifies that a disorder in one or more basic psychological processes is the cause of the academic impairment, the eligibility determination requires the presence of a severe discrepancy between performance on a measure of intellectual ability and a standardized measure of academic functioning.

This further proves the importance of using both the Ability-Achievement model and RTI data as empirical evidence in the determination of an SLD.

However, there are some schools of thought that believe IQ tests should be irrelevant when considering for a possible learning disability. According to Francis et al. (2005) "Some researchers have further argued that IQ tests are irrelevant to the identification of children as having LD and that simply specifying low-achievement cut-points is adequate." In this argument, RTI data would be sufficient in determining an SLD because the only proof needed would be inadequate performance on progress monitoring throughout the length of the specified intervention time period. Another growing trend in many school districts in the United States are basing SLD eligibility strictly upon RTI data. McKenzie (2009) noted that "RTI currently is the only option for SLD identification in two states. Of greater import, as many as one third of states intend to implement RTI as the sole means of SLD identification in the near future."

This is especially troubling due to the inconsistencies within the implementation of RTI practices across the United States, and due to the lack of guidelines when implementing an RTI program. In the previous scenario, students could easily be overidentified as having an SLD even though the real problem could be low student motivation and/or fall into the category of "slow learner."

Ofiesh (2006) explains the following:

Use of RTI without measures of ability or cognitive processing ultimately disregards the definition of SLD and distorts the construct in the same way aptitude-achievement discrepancy models did. RTI only documents one part of the definition of SLD: low achievement...Nothing in the regulations ever suggested that the discrepancy between ability and achievement was to be the sole determinant in the identification of an SLD...It was never intended to define the entire construct of SLD or to be used as the sole criterion for placement decisions.

For these reasons, it is crucial that school districts take notice of the importance of using RTI data, and administering I.Q. tests for the Ability-Achievement model. Both types of data must be considered with diagnosing a possible SLD because when using either model in seclusion—

the uncertainty outweighs the benefits. Also, using RTI data alone for diagnosing a possible SLD diagnosis should not be used alone because it only offers insight into one dimension of SLD.

Another cause for concern when using either model exclusively from one another involves the act of overidentification and underidentification of SLD in students. This unfortunate event occurs when only one type of data is considered, which then skews the results.

According to Flanagan, Fiorello, and Ortiz (2010):

Neither ability-achievement discrepancy nor RTI, when used as the sole indicator of SLD, can identify this condition reliably and validly because SLD may be present in students with and without a significant ability-achievement discrepancy and in students who fail to respond to and who respond favorably to scientifically based interventions.

The end result is a student who receives special education services, who does not need such services, or a student who desperately needs special education services, but who does not qualify for such services. This unfortunate scenario can be avoided if practitioners use both data from Ability-Achievement models and RTI. By making the conscious decision to include both models when diagnosing an individual as having an SLD; the entire student will be evaluated through I.Q. testing, school performance, and Response to Intervention data.

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A Program Evaluation of an Inclusive Model for Training Pre-Service General Education Teachers to Work with Students with Special Needs

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Abstract

The purpose of this study was to evaluate a program using an inclusive model (e.g., course work in special education and special education liaison support) on the beliefs, practices, and skills of pre-service middle and secondary general education teachers ($n=26$) regarding their preparedness to work with students with special needs. A pre- and post-survey, adapted from the General Education Teachers' Beliefs and Attitudes toward Planning for Mainstreamed Students (G-TBAP; Schumm, Vaughn, Gordon, & Rothlein, 1994) survey, was administered to participants in an urban research university in the Southeast. The graduate students were resurveyed while they were completing their practicum experiences. Statistically significant results were found in the post-survey indicating the inclusive model was effective for this program. Multiple dependent t-test analyses indicated that the overall beliefs, practices, and skills were improved for participants, $t(25) = -4.156$, $p = .000$. Limitations and future directions are discussed.

A Program Evaluation of an Inclusive Model for Training Pre-Service General Education Teachers to Work with Students with Special Needs

With the push for inclusion of students with disabilities initiated by current federal legislation (NCLB, 2002; IDEA, 2004), students with special needs are included in the general education classroom at higher rates than ever before. According to the U.S. Department of Education (2008) over 75% of students with disabilities receive at least one segment of instruction daily from a general education teacher. Several studies have reported that general education teachers may not be comfortable serving populations of students with special needs (Bradley & Monda-Amaya, 2005; Fisher, Frey, & Thousand, 2003; Otis-Wilborn, Winn, Griffon, & Kilgore, 2005; Pavri, 2004); however, the federal mandate requiring students be served in the least restrictive environment (LRE; IDEA, 2004) implies teachers must be prepared to work with diverse populations of students with disabilities (Arthaud, Aram, Breck, Doelling, & Bushrow, 2007; Lombardi & Hunka, 2001). In response to current federal legislation and inclusion rates of students with disabilities, pathways to state certification and the training to address working with students with disabilities are changing the way that teachers become prepared to enter the

classroom. This may contribute to general education teachers' perceptions of preparedness to work with students with special education eligibilities (Kezar, 2005; Richards, Hunley, Weaver, & Landers, 2003; Welch & Brownell, 2002).

Training pre-service general education teachers to work with students with special needs requires a focus on the elements necessary for serving students across the continuum of academic achievement in the classroom. Teachers need more than content knowledge, they need exposure to pedagogy for developing instructional and curricular practices that accommodate student diversity (Laprairie, Johnson, Rice, Adams, & Higgins, 2010; Thompson & Smith, 2005). General education teachers must feel confident in making accommodations and modifications, understand all disability categories, and fluently implement strategies for inclusion (Coombs-Richardson & Mead, 2001; Laprairie et al., 2010). The projection of teacher shortages and the growth in teacher attrition in the southeastern U.S. has added to an expanding knowledge that teachers must have more support and assistance in order to retain teachers and to keep them effective (Feiman-Nemser, Schwille, Carver, & Yusko, 1999).

Numerous models exist at colleges and universities to address the effective incorporation of these strategies into the teacher preparation curriculum. Some models simply require educators to take one course in special education content. Other models include coursework as well as infusion of special education topics into the general pre-service education course content by a special education department liaison. Unfortunately, some models do not require student teachers to work with individuals with special needs in practicum and student teaching experiences (Coombs-Richardson & Mead, 2001), even though the reality is that students with disabilities are in general education classrooms.

To evaluate general education teachers' preparedness to work with mainstreamed students with learning disabilities, Schumm, Vaughn, Gordon, and Rothlein (1994) analyzed the self-perceptions of 60 teachers through 10 categories of statements on three parameters: beliefs, practices, and skills. "Beliefs" were defined as the teachers' agreement with belief statements about the inclusion of students with learning disabilities. "Practices" included the teachers' ratings of the importance of specific practices associated with the beliefs. "Skills" included the teachers' ratings of their own skill level in implementing a practice. These authors used the Teachers' Beliefs and Attitudes towards Planning for Mainstreamed Students (TBAP) instrument to survey teachers.

The survey was developed through a series of studies (Schumm & Vaughn, 1991; Schumm & Vaughn, 1992; McIntosh, Vaughn, Schumm, Haager, & Lee, 1993; Schumm, Vaughn, Haager, McDowell, Rothlein, & Saumell, 1995). Two studies focused on developing the survey instrument (Schumm & Vaughn, 1991; 1992) and two on intensive classroom observations to assess for reliability and validity of the instrument (McIntosh et al., 1993; Schumm et al., 1995). The survey was deemed both reliable and valid (Schumm et al., 2004).

The 10 categories of statements examined by Schumm et al. (1994) were: 1) information sources; 2) long-range planning; 3) short-range planning; 4) group composition; 5) course content; 6) time and pace; 7) tests; 8) checks with students; 9) individualized instruction; and 10) individualized grading. These categories were developed from a survey of teacher's planning

practices (Schumm & Vaughn, 1992) and focus groups with teachers on key components of teacher planning and adaptations. These categories were cross-referenced with beliefs, skills, and practices to produce the 30 question survey.

Cameron and Cook (2007) examined the beliefs, practices, and skills of pre-service teachers regarding work with mainstreamed students with mental retardation using a modified version of the TBAP known as the Pre-service Teachers' Beliefs and Attitudes towards Planning for Mainstreamed Students (P-TBAP) that specifically addressed working with students with mental retardation in mainstream settings. Cameron and Cook used two comparison groups consisting of general ($n=34$) and special education ($n=23$) pre-service participants enrolled in an undergraduate infusion teacher-training program. This teacher preparation model infused inclusion content into coursework rather than having students complete separate coursework on the topic. Results indicated that although the pre-service general and special education teachers believed in and would practice adaptations for students with mental retardation in their classroom, they did not believe they possessed the skills to do so.

The current study further replicated the survey portion of the Schumm, et al. (1994), and Cameron and Cook (2007) studies, expanding the questions to all categories of special education eligibility and restricting the participants to middle and high school general education pre-service teachers. This replication survey examined teacher preparedness to work with mainstreamed students with any type of disability. This two-year study was designed to evaluate the effectiveness of a program using an inclusive model in preparing pre-service educators to work with students with exceptionalities that was employed at an urban public university in the southeast.

The following research questions were addressed: What are pre-service general education teachers' beliefs, practices, and skills in planning and making adaptations for students who have special needs in the general education classroom? Do these beliefs, practices, and skills differ after exposure to an inclusive model for training pre-service teachers to work with students with special needs?

Method

Participants

Twenty six participants (9 males, 17 females) participated in the pre and post surveys regarding beliefs, practices, and skills for working with mainstreamed students with disabilities. The first year of the study consisted of administering a pre-survey to pre-service general education teachers. At the beginning of the semester the researcher (the first author) provided information to students attending a required introduction to special education course in the college of education at an urban university in the southeast. The researcher explained the purpose of the study (i.e., to examine how well the college of education was preparing educators to work with students with exceptionalities in the general education classroom), requested their consented participation; and explained that they would complete a brief short answer section identifying their name and major area of study so that the pre and post surveys could be matched at the completion of the survey. The students were assured that participation in the study would not influence their grade and that their professor would not be made aware of whether or not they

had completed the survey. Consent forms to participate in the study were then distributed to the students, along with the survey. This procedure was followed across three consecutive semesters (fall, spring, and summer).

During the second year of the study, the following fall semester, the post-survey was conducted with the same procedures as the pre-survey during middle and secondary general education practicum courses. The researcher then sorted the surveys and eliminated those that were not from middle and secondary pre-service general education teachers. Twenty-six post surveys were matched with pre surveys and all 26 were used for analysis. Characteristics of participant demographics are presented in Table 1.

Table 1

<i>Characteristics of Participant Demographics</i>	
	N=26
Gender	
<i>Male</i>	9
<i>Female</i>	17
Age	
20-25	13
26-34	9
35-44	4
45-54	1
Major	
<i>Reading</i>	2
<i>English</i>	5
<i>Social Studies</i>	13
<i>Science</i>	6
Self-Rating	
<i>Pre-Survey</i>	
1 - No Experience	17
2	6
3	2
4	1
5 - Highly Experienced	0
<i>Post-Survey</i>	
1 – No Experience	10
2	11
3	3
4	1
5 – Highly Experienced	1

Materials

A survey consisting of 30, 5-point Likert scale questions was used for both pre and post assessment. The survey was a modified version of the Teachers' Beliefs and Attitudes toward

Panning for Mainstreamed Students (TBAP; Schumm et al., 1994) titled General Education Teachers' Beliefs and Attitudes toward Panning for Mainstreamed Students (G-TBAP). This survey consisted of three pages that assessed participant demographic information and 30 statements that measured pre-service teacher attitudes in three attitudinal categories (beliefs, intended practices, and skills) replicating the ten statements of teacher planning practices established by Schumm, et al. (1994). Examples of each statement are presented in the G-TBAP survey in Figure 1. This G-TBAP version was modified in two ways. First, it examined pre-service teacher's intended rather than current practices, a modification also exercised by Cameron and Cook (2007). Second, each item was changed to read, "included students with special needs" rather than learning disabilities or mental retardation. This change was necessary since students in the teacher preparation program at this university were trained on the characteristics of and interventions for students with all special education eligibilities. Participants rated their level of agreement with each statement based on a 5-point, Likert-type scale. The survey took approximately 15 minutes to complete. Participants were read scripted directions and a general description of the study prior to administration.

Model

The components of the inclusive model included: 1) the completion of an introduction to special education course, and 2) multiple components of guest lectures during the middle and secondary general education pre-service teacher practicum courses from a special education liaison. The role of this individual included infusing special education topics into the graduate curriculum for these general education pre-service teachers. The liaison, also the first author, determined the content to teach based on feedback from students, professors, and administrators during the previous two academic years. The feedback received mainly focused on the disconnect between the mandatory use of co-teaching required by the county school systems, and the lack of training and education regarding co-teaching taking place in local school systems and in teacher preparation programs.

The liaison portion of the model addressed the following components 1) co-teaching defined; 2) research based practices; 3) prerequisite skills for co-teaching; 4) proactive planning for co-teaching; 5) Power of 2 DVD (Friend, 2005); 6) co-planning; and 7) an inclusion strategies packet (Gore, 2004). A detailed description of both portions of the model and the components of each follows.

Special Education Course. The participants in the study were first required to complete a semester long course in special education titled, *Characteristics and Instructional Strategies for Students with Disabilities*. Students were encouraged to take this course prior to their practicum experience, and the pre-survey was conducted at the beginning of this course. The description in the course catalog states, "This course is designed to provide the student with an overview of the identification, classification, eligibility, and the unique characteristics of individuals with disabilities who require accommodations and adaptations throughout their life cycle. The course will focus on basic instructional strategies used to teach these individuals. The course includes an analysis of individuals across classification categories as well as an in-depth review of all areas of exceptionalities. (Institution, 2010)"

Guest Lecture Components. The researcher taught co-teaching and collaboration methodologies to the participants in the study by conducting guest lectures during the practicum coursework.

The co-teaching information reviewed was based on a variety of sources (Arthaud et al., 2007; Cook & Friend, 1995; Dieker, 2007; Friend & Cook, 2006) about co-teaching and collaboration and a portion of the Power of 2 DVD (Friend, 2005). These sources were chosen because of their evidence-base; the DVD was chosen as a supplement because the portion shown to the participants consisted of real-world examples of each of the six co-teaching models implemented in a classroom setting, thus giving the students an example of theory in practice.

Co-teaching Defined. The guest lecture portion of the model began with a discussion of how teachers are involved in the co-teaching process. Many of the participants experienced co-teaching models in their practicum teaching or during classroom observations but did not have a basic understanding of how and why the decisions were made as to whether or not co-teaching existed in certain classrooms. The federal guidelines and procedures for how Individualized Education Plan (IEP) teams and/or administrators determined whether a co-teaching environment would be a teaching model were reviewed. The participants were reminded that all educators including general educators, special educators, paraprofessionals, speech/language pathologists, and school counselors can be involved in the co-teaching process, in all subject areas, and at all grade levels (Friend & Cook, 2006). One rationale for why some school systems are implementing more co-teaching than ever before was discussed. This included the fact that the federal No Child Left Behind Act (NCLB; 2002) requires students to pass standardized state mandated testing in order for schools to make Annual Yearly Progress (AYP). Research has shown that both general and special education students increase academic achievement in an inclusive environment (Rea, McLaughlin, & Walther-Thomas, 2002; Waldron & McLeskey, 1998); therefore some school districts have increased implementation of the co-teaching model. A more in-depth look at these research findings were emphasized so participants could understand the background behind the practice of inclusion.

Research Basis. The following research findings were presented to the participants to show how research influences practice. Rea et al. (2002) compared the differences between students with learning disabilities (LD) served in a pull-out model versus an inclusion model. Results indicated students exposed to the inclusion model earned higher grades, had comparable scores on standardized tests, and attended more days of school. Similarly, Waldron and McLeskey (1998) found significantly more progress in reading in the inclusion environment and comparable progress in math achievement scores for students with LD. Positive social benefits were also found for the students in the inclusion setting.

A study by Tapasak & Walther-Thomas (1999) on student self-perception of cognitive competence and teacher perception of improved social skills was also presented so that participants could see some research from the student and teacher perspective. According to these researchers, students in inclusive settings communicated more cognitive competence, and teachers of inclusive settings communicated improved social skills of their students. Finally, the Cole, Waldron, and Majd (2004) study was reviewed because it is one of the strongest supports for why general education administrators may want to consider inclusion as a viable school improvement tool. The findings indicate significant improvement in reading and math scores for students without disabilities exposed to inclusion settings. This indicates that inclusion is beneficial not only to students with special needs, but also to general education students. Many general education teachers, administrators, and parents of students without disabilities

communicate concerns that inclusive settings will inhibit the progress of students without special needs, and this can be a deterrent to inclusion. This research was presented to proactively influence the mindset of the pre-service general education teachers and to encourage buy-in for inclusion from the general education teachers prior to training the teachers in inclusive practices.

Prerequisite Skills. Friend and Cook (2006) state that personal skills, pedagogical skills, and discipline specific skills are necessary before an effective co-teaching relationship can be established. Individual personal skills such as communication and flexibility and how teachers might go about discussing these skills with a fellow co-teacher in their current classroom setting were discussed. Then, a variety of pedagogical skills such as instructional techniques and strategies for making accommodations and modifications for students with IEPs were reviewed, so that the participants could begin to think about their strengths and weaknesses in this category. Finally, discipline specific skills, such as knowledge of the curriculum and accommodations and modifications, were discussed so that the participants could begin to comprehend what each teacher in the co-teaching environment brings to the relationship to make it beneficial for the students in the classroom.

Proactive Topics for Discussion. Several proactive topics for discussion that are necessary for a collaborative relationship to be successful were reviewed (Friend & Cook, 2006; Villa, Thousand, & Nevin, 2008). Co-teaching is often referred to as a “marriage” and this was the analogy used during the lecture so that participants could relate co-teaching to their own lives and relationships. Instructional routines, behavior management, and equality issues were among the topics posed for participant consideration. Participants were encouraged to compile a list of topics to address with their co-teacher and to schedule a time to discuss this list as partners prior to beginning co-teaching (e.g., lunch during preplanning). This activity was presented to facilitate a proactive approach to the “partnership” co-teachers enter.

Power of 2 DVD. The discussion included showing the participants a portion of the Power of 2 DVD (Friend, 2005). The ‘classroom practices’ section of the DVD was shown, consisting of 23 minutes of video that showed examples of the six models of co-teaching. Marilyn Friend narrates these videos by listing the definition of each model, the context in which each model could most effectively be used, and the pros and cons of each model. In addition, descriptions of each model of co-teaching were provided in a handout to the participants for future reference.

Co-Planning. A discussion and review of an agenda for co-planning was a vital piece of the discussion. First, the researcher showed a video representing an analogy of how futile it would be to walk into a classroom and try to co-teach with someone when you have completed no prior planning of the lesson. Second, an agenda for co-planning and a simulation of how participants could use this during planning time with other teachers to collaborate on how to teach a lesson and delegate responsibilities were provided. The steps in the co-planning agenda are utilized to maximize the short amount of planning time general and special education teachers have during the school day.

Inclusion Strategies Packet. Students received a packet of instructional strategies adapted from those developed by Gore (2004). This packet contained descriptions of research-based inclusion strategies for increasing the academic skills of general education students and students with

disabilities. Visuals and a description of each strategy were provided and categorized (e.g., vocabulary, taking notes from lectures) for easy accessibility. Many of the inclusion strategies discussed in the instructional strategies packet were visual and graphic organizers for middle and secondary students across curriculum areas and were therefore appropriate for the participants' widely diverse experiences.

Results

Data Analysis

A dependent *t*-test was conducted to compare the overall pre-survey responses of the G-TBAP and the overall post-survey responses of the G-TBAP with alpha set at .05. There was a statistically significant difference between the responses on the pre-survey and the post-survey, $p = .000$. The results are presented in Table 2.

Table 2

<i>Dependent t-test Results for Pre and Post G-TBAP Overall</i>			
Overall Responses	<i>M</i>	<i>N</i>	<i>SD</i>
Pre-Survey	98.615	26	3.431
Post-Survey	112.115	26	2.717
	<i>t</i>	Df	Sig (2-tailed)
Pre-Survey-Post-Survey	-4.156	25	.000

A dependent *t*-test was conducted to compare the 10 questions regarding beliefs on the pre-survey responses and the post-survey responses of the G-TBAP with alpha set at .05. There was a statistically significant difference between the pre-survey and the post-survey, $p = .021$. A dependent *t*-test was conducted to compare the 10 questions regarding practices on the pre-survey responses and the post-survey responses of the G-TBAP with alpha set at .05. There was a statistically significant difference between the pre-survey and the post-survey, $p = .006$. Another dependent *t*-test was conducted to compare the 10 questions regarding skills on the pre-survey responses and the post-survey responses of the G-TBAP with alpha set at .05. There was a statistically significant difference between the pre-survey and the post-survey, $p = .003$. The results of these analyses are presented in Table 3.

Table 3

<i>Dependent t-test Results for Pre and Post G-TBAP Beliefs, Skills, and Practices</i>	
<i>M (SD)</i> (<i>n</i> = 26)	<i>M (SD)</i> (<i>n</i> = 26)

	Pre-Survey		Post-Survey
<i>Beliefs</i>	39.423 (5.804)		44.846 (12.379)
<i>Practices</i>	38.923 (7.104)		42.923 (4.542)
<i>Skills</i>	21.461 (8.533)		26.307 (8.961)
	<i>t</i>	df	Sig (2-tailed)
Pre-Survey-Post-Survey			
<i>Beliefs</i>	-2.466	25	.021
<i>Practices</i>	-2.999	25	.006
<i>Skills</i>	-3.310	25	.003

Analyses were conducted on the 10 statements of teacher planning practices, within the three categories of beliefs, practices, and skills on the G-TBAP. Each of the 10 effective teaching practices were matched to three questions; one on beliefs, one on practices, and one on skills. A dependent *t*-test was conducted on each set of three questions and there were statistically significant differences for information sources between the pre-survey and the post-survey, $p = .004$; for short range planning between the pre-survey and the post-survey, $p = .003$; for group comparison between the pre-survey and the post-survey, $p = .004$; for course content between the pre-survey and the post-survey, $p = .001$; for time and space between the pre-survey and the post-survey, $p = .001$; and for tests between the pre-survey and the post-survey, $p = .006$. The results are presented in Table 4.

Results did not indicate statistically significant differences for long range planning between the pre-survey and the post-survey, $p = .091$; for checks with students between the pre-survey and the post-survey, $p = .099$; for individualized instruction between the pre-survey and the post-survey, $p = .079$; and for individualized grading between the pre-survey and the post-survey, $p = .066$. The results are presented in Table 4.

Table 4

Dependent t-test Results for Pre and Post G-TBAP on the Ten Effective Teaching Practices

	<i>M (SD)</i> (<i>n</i> = 26)	<i>M (SD)</i> (<i>n</i> = 26)	<i>t</i> <i>df</i> (25)	Sig (2-tailed)
	Pre-Survey	Post-Survey		
<i>Information Sources</i>	10.769 (2.065)	12.000 (1.854)	-3.192	.004
<i>Long Range Planning</i>	10.538 (1.448)	11.192 (1.697)	-1.758	.091
<i>Short Range Planning</i>	10.653 (1.671)	11.846 (1.286)	-3.240	.003
<i>Group Comparison</i>	10.230 (2.214)	11.615 (1.235)	-3.143	.004
<i>Course Content</i>	8.769 (2.502)	10.538 (2.453)	-3.859	.001
<i>Time and Pace</i>	9.115 (1.986)	10.807 (1.855)	-3.882	.001
<i>Tests</i>	9.423 (1.901)	10.653 (1.787)	-3.011	.006
<i>Checks with Students</i>	10.769 (1.839)	11.653 (1.521)	-2.849	.099
<i>Individualized Instruction</i>	10.846 (1.781)	11.423 (1.527)	-1.834	.079
<i>Individualized Grading</i>	8.692 (2.694)	12.346 (10.766)	-1.924	.066

Discussion

This survey study assisted a special education department at an urban research university in examining, evaluating, and improving the teacher preparation program model that was in place for the middle and secondary general education pre-service teachers regarding working with students with disabilities. The statistically significant responses of the overall survey analysis indicate that according to their own reflections pre-service teachers improved their beliefs, practices, and skills through this program model. This was indicated by the overall analysis and supported by further analyzing the sections of beliefs, practices, and skills. Schumm, et al. (1994) reported that pre-service teachers' perceptions of their skills did not match their practice, although that was not the case in the current program evaluation. The statistically significant improvement in all three areas indicates the breadth and depth of the teacher preparation program model used in this evaluation may be appropriate and effective.

The ten statements regarding teachers' planning practices on the G-TBAP did not indicate statistical significance in each area. Long-range planning, checks with students, individualized instruction, and individualized grading did not make statistically significant changes from pre to post-survey. These areas are of particular importance when teachers are working with students with special needs in the general education classroom because long-range planning is associated with effective collaboration between special and general education teachers (Friend & Cook 2006). Individualized instruction is also critical when differentiating instruction for all students in the general education classroom, especially those students with IEPs who have accommodations and modifications that must be implemented.

Limitations and Future Directions

One limitation of the current program evaluation included sample size. The ability to track the participants to ensure pre to post participation resulted in a sample size of only 26 participants. Future evaluation should include more effective ways for ensuring participants complete both pre and post surveys. In addition, this evaluation addressed participants in middle and secondary preparation programs pursuing initial certification in general education. Future research should include participants in various programs including early childhood and elementary preparation programs as well as multiple certification tracks.

The lack of qualitative data was another limitation. Interviews with the participants to gain additional information about how well they felt the program model prepared them would have assisted researchers by providing evidence to make decisions about future directions of the model. Future research would benefit from interviews with participants in addition to the survey responses. Additionally, observation of the pre-service teachers during their practicum experiences could be compared to their perceptions of their skills and practices.

Another limitation is that there were multiple components to the model. Considering the special education coursework as well as the liaison support were implemented concurrently and prior to post-survey, it is not possible to determine if one component of the model was more effective than the other or if the components together led to the positive program evaluation. Future

research should assess for changes in the beliefs, practices, and skills of the teachers between the components. Further investigation into how the program model can be improved for training pre-service teachers in long range planning, checking with students, individualized instruction and grading may be beneficial since these were the only areas that did not see marked improvement after the participants were exposed to the inclusive model. Through this evaluation the instructional package of coursework and special education liaison appear to be effective and should continue to be evaluated on a yearly basis and adjusted according to policy and research trends in effective classroom-based interventions.

This study investigated the effectiveness of a model that included specialized coursework and in-class supports for future general education teachers. Results indicated that this level of support was instrumental in helping pre-service teachers develop positive beliefs, skills and interventions for working with students with disabilities. Further research and program evaluation is needed to ensure that pre-service programs for general education teachers are effectively preparing them to work with students with diverse special needs.

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Evaluation of Push-In/Integrated Therapy in a Collaborative Preschool for Children with Special Needs

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Abstract

With support found in the literature for the utilization of push-in, or integrated therapy when providing speech language pathology, the use of a set of criteria for determining how therapy would be provided was evaluated in a preschool for children with special needs. Using a 5 item Likert scale, teachers and speech pathologists were surveyed regarding the criteria's aide in determining how a student should be provided speech therapy. The collaboration that resulted from use of the criteria along with an assessment of the progress made by students receiving push-in services was also surveyed. Survey data indicated an affinity for the criteria, its facilitation of the collaborative process as well as the beneficial impact of push-in therapy on students' development.

Executive Summary

Over the course of six months an evaluation regarding the use of a set of criteria used to determine whether a student should be provided speech therapy on a push-in or pull-out basis was conducted at an inclusive preschool serving children with special needs. Secondary components of the evaluation included determining the ability of the criteria assessment process to facilitate collaboration between staff as well as the beneficial effects of push-in therapy on students' development. The evaluation was the result of an effort by program administration to promote collaboration amongst staff, use of the push-in, or integrated therapy model and finally to assist staff in determining how a student should be served.

The evaluation specifically assessed the opinions of the school's 23 special education teachers and 12 speech language pathologists regarding use of recently designed criteria as an aide in determining the contextual provision of speech therapy. The evaluation also assessed the level of collaboration that resulted from use of the criteria. The resulting report also included a review of the literature pertinent to collaboration and push-in therapy in a special education environment.

The survey's results generated data relevant to the survey's five questions and the two participating professional disciplines. Using the SPSS software program, the evaluation found that the responding participants overwhelmingly agreed to the following:

- Use of the push-in/pull-out criteria was helpful when it came to determining whether a student should be provided speech therapy services in isolation or in the presence of other students in the contextual setting of the classroom.

- The process of having the special educator and the speech therapist use the push-in/pull-out criteria aided in the collaborative effort between the two professionals.
- The provision of push-in speech therapy was beneficial to the receiving student.

A majority of the participants provided commentary and expressed support for their interdisciplinary colleagues as well as the belief that most students showed progress from push-in therapy, especially when it came to pragmatic skill development.

While the evaluation's results were encouraging, a more thorough examination of student progress be considered in order to provide enhanced justification for the push-in model.

Introduction

What is Push-in Therapy and Does it Help Collaboration?: Collaboration and the push-in model. This report is an evaluation of integrated, or push – in therapy at an inclusionary early childhood program serving children ages 3-5 with special needs. The process evaluated involved assessing several factors relating to integrated therapy including the usefulness and effectiveness of a criterion based instrument used to determine whether a student should be provided therapy in an integrated manner. In addition, the evaluation will determined whether collaboration between speech-language pathologists and special education teachers was enhanced as a result of this process. Finally, the evaluation attempted to determine if students benefited from integrated therapy.

Collaboration amongst professionals in the special education environment is considered best practice and viewed as an opportunity to enhance the development of skills and abilities of students with special needs (McWilliam & Young, 1996; Barnes & Turner, 2001). Collaboration itself is defined in a myriad of ways. Friend & Cook (1992) state collaboration is “a style for direct interaction between at least two co-equal partners voluntarily engaged in shared decision making as they work toward a common goal” (p.5). Others, including Rainforth and England (1997), Wade, Welch, and Jensen, (1994), and Welch (1998b) make reference to the cultural and contextual setting, the need for respect for each participant and a sense of problem ownership by each team member.

Collaboration's ability to enhance the educational and therapeutic intervention provided to students with special needs is further enhanced when alternate modes of therapeutic interventions, such as push-in therapy, are provided to students in the classroom setting (Barnes & Turner, 2001; Ritzman, Sanger, & Coufal, 2006). Dule, Korner, Williams and Carter (1999) add that “integrated therapy” (p. 244) has been found to aid in collaborative approaches that bring professionals together to help create quality educational programs with high levels of student involvement. McWilliam (1996) adds that “until conclusive evidence is found to support pull-out therapy that involves minimal contact with classroom teachers, integrated therapy is more compatible with current philosophical trends in early intervention” (p. 101).

Push-in, or integrated therapy, is the provision of therapeutic intervention in the context of the classroom setting (Cross, Traub, Hutter-Pishgahi, & Shelton, 2004). This is in contrast to the

more traditional model of intervention, commonly called pull-out therapy, where the therapist removes the child from the classroom and provides intervention in an isolated setting absent of other children (Harn, Bradshaw, & Ogletree, 1999).

At the preschool where the program evaluation is occurred, a high degree of collaboration had already been incorporated into its service provision. Collaboration at the school had developed to the extent that it has become an integral aspect of the organization's culture and embodies what Tulbert (2000) calls a collaborative ethic. The collaborative ethic embodies the social, cultural and structural constructs of collaboration as exemplified by shared values and actions that support and encourage the collaborative process while also respecting one another's discipline specific skills and role in the process. Even with this high degree of collaboration and a sense of a collaborative ethic, school administration, including the author, believed the school was ready to emphasize the use of integrated or push-in therapy as a component of the collaborative approach to educational intervention. For this reason, program administration had undertaken an effort to promote the use of integrated/push-in therapy as one alternative in a continuum of options (Ritzman, et. al., 2006) available to therapists and other service providers.

The setting for this evaluation is a state approved and publicly supported early childhood special education preschool with an enrollment of slightly over three hundred children. The participants in the evaluation will include up to twenty three special educators and up to twelve speech language pathologists.

Students who attend the preschool are referred to the school by the county in which they reside or their school district. Those students below age three are referred through the Early Intervention (E.I.) Program while those who are between 3-5 years of age are served through the Preschool Special Education Program. Services for all students are determined by either an Individualized Family Service Plan (IFSP) or an Individualized Education Plan (IEP). The former is for students in E.I. while the latter is for students of preschool age. Both IFSPs and IEPs specify what special education and related services students are to receive and at what frequency. Variations in service and frequencies are in response to the student's level of developmental delay or disability and are determined by committees of individuals appointed by the municipality or local school district (Friend, 2007). Service providers, such as this preschool, are not involved in determining service levels.

Program Description: A philosophical and theoretical history of therapy provision in a collaborative special education environment. The struggle, past and present.

Historically, interaction amongst special education service providers has been a contentious issue filled with debate and discourse (Palfrey, Singer, Raphael, & Walker, 1990; Tourse, Mooney, Kline & Davoren, 2005). On the one hand, many of the current related services, such as speech language pathology, traditionally dictated a medically oriented approach to correcting dysfunction that frequently required taking students out of their classroom to "receive services in a separate therapy resource room" (ASHA 2000, p. 5). This kind of separate and sometimes fragmented service was commonplace and difficult to alter (Harn, et. al, 1999).

As noted by Rainforth and England (1997), not every special education provider, or for that matter related service provider, was enamored with the idea of collaboration. Some in the special education community perceive collaboration as counter to professionalism and are content with old traditions, the maintenance of teachers autonomy and the “cellular structure” (Lortie, 1975, p. 149) of the classroom. Some, including York, Rainforth, and Giangreco (1990), as cited by Welch (1998a) expressed concern with the hype associated with collaboration, believing it has been viewed as “one of the many bandwagons in the parade of education reform rhetoric” (p. 26).

Even after decades of “policy and practice guidelines encouraging an integrated and comprehensive approach to service delivery” (Whitmire & Eger, 2004, p. 27), current special education practice is rife with conflicting intent and expectations. Weintraub and Kovshi (2004) document the continued reliance by occupational therapists on the traditional pull-out form of service provision, with that model preferred by over two thirds of those surveyed. Others, such as Dule, et. al. (1999), McWilliam and Young (1996), Kaminker, Chiarello, O’Neil, and Dichter (2004), and Ritzman, et. al., (2006) all document the past and continued preference for isolated service provision, even in the face of evidence noting the benefits of more integrated, push-in models (ASHA, 1991). Even within the world of education, there have been difficulties faced by special educators who want to collaborate with general educators in an effort to assist in the successful inclusion of children with special needs into the general education classroom (Laycock & Gable, 1991). And although current practices such as inclusion has lead to dissolution of the cultural divide between general and special education, there remains a host of issues that constrain the ability of professionals to collaborate effectively (Bruder & Dunst, 2005; Harn, et. al., 1999; Friend, 2000; Rainforth & England, 1997; Welch, 1998b).

The difficulty experienced by many when it comes to the integration of services within the team structure (Downing & Bailey, 1990) relates in many ways to the fact that, as noted by Friend (2000), collaboration is hard work, takes time and requires skillful execution. But even before collaboration can be successfully implemented, the process requires prospective team members to exchange knowledge and insight into each other’s professional storehouse of expertise (Rainforth & England, 1997). Within the integrated team environment, participants are likely to engage in a collaborative setting that emphasizes communication and cross discipline intervention strategies (Carpenter, King-Sears, & Keys, 1998; Downing & Bailey, 1990; Stepan, Thompson, & Buchanan, 2002). Even those who are supportive of the collaborative and integrated service processes can find themselves overwhelmed. Just the need for regular communication can be a challenge and burden. As cited by ASHA (2006), lack of time for planning, collaboration, and meeting with teachers has been cited as the second greatest challenge to effective practice after caseload size. In particular, 66 – 81% of speech therapists saw the lack of time for collaboration as a serious issue. These hindrances point to the need for education and training (Welch, 1998b) as well as administrative support (Moore-Brown, 1991) and flexible scheduling (ASHA, 1999) in the continued development of collaborative and integrated service delivery systems.

These practices, obstacles and concerns notwithstanding, whether we are talking about services for infants and toddlers in early intervention (Bruder & Dunst, 2005), school-age children placed in inclusionary settings (Carpenter, et, al., 1998) or students with multiple disabilities (Campbell,

1987, Downing & Bailey, 1990), the idea of having professionals collaboratively providing services and creating common goals (Dule, et. al., 1999) has become accepted by many in the field. Other studies have shown that collaboration can benefit students, teachers and others in a variety of ways, such as the simple sharing of resources and expertise across discipline boundaries (Wade, et. al., 1994). In general, collaboration is now viewed as a powerful tool for helping teachers serve students with disabilities (Brownell, Adams, Sindelar, Waldron & Vanhover, 2006) while push-in therapy, or integrated services, has grown in importance in the field (Wilcox & Shannon, 1996).

While collaboration, and the integration of therapeutic services into the classroom setting, is relevant for most, if not all related services, it is much more applicable to the provision of speech therapy. One of the primary reasons for this is the prolific application of speech therapy in a special education environment. This is certainly true of the student population at the preschool in question. Of the total enrollment of 200 who were students at the time in the center-based component of preschool, 168 receive speech therapy. This is consistent with state-wide data that show an average of 88% of all preschoolers with special needs that attend center-based classes receive speech therapy. This is in contrast with other therapies, all of which are provided much less often, such as Occupational Therapy (51%) and Physical Therapy (25.5 %) (MGT of America, 2007).

Program history – philosophical and theoretical foundations of push-in services Even as early as the 1970s, some in the field, including speech-language pathologists, recognized the benefits of learning therapeutic skills in the natural environment (Wilcox & Shannon, 1996; Elksnin & Capilouto, 1994). Later, Barnes and Turner (2001) documented the benefits of joint intervention as carried out by special educators and occupational therapists, while Rapport and Williamson (2004) illustrated the need for collaboration by physical therapists. Many point to the enhanced generalization that occurs in learning when the intervention is provided in an integrated fashion (Warren & Horn, 1996). These same authors emphasize this point with the following six principles of integrated therapy (p. 121):

1. Therapy and instruction should occur in the child's classroom.
2. Other children should be present.
3. Therapy and instruction should be embedded in ongoing classroom routines and activities.
4. Therapy and instruction should follow the child's attentional lead.
5. Goals should be functional and immediately useful.
6. The primary role of the therapist is as a collaborator with other members of the child's team.

In McWilliam (1995), the extent to which therapy is provided in an integrated setting can vary according to several dimensions related to the above principles including; the physical location and setup of the treatment area, what other adults and children are in attendance at the time, how the therapist goes about providing service, the goals to be addressed, and the specific activities incorporated into the session. When it comes to speech-language therapy, speech therapists have identified "the need to integrate communication and language goals with other educational goals to achieve academic and social success" (Wilcox & Shannon, 1996, p. 218).

Along with the philosophical underpinnings of the collaborative and integrated therapy approach, there are also legal mandates to work collaboratively and integrate services. This has been the case at the federal level since the passage of the first federal laws requiring the provision of a free and appropriate public education beginning in 1975 with the passage of P.L. 94-142, the Education for All Handicapped Children Act (Weintraub & Kovishi, 2004). The reauthorization of Individuals with Disabilities Education Act (IDEA) in 1997 extended special education services and the need for collaboration to infants and toddlers ages birth to three after earlier reauthorizations applied the mandate to preschoolers (Bruder & Dunst, 2005). These landmark pieces of legislation also included a continuum for the delivery of service, recognizing that a range of opportunities is necessary to meet the needs of all students with special needs (Friend, 2007).

Besides the legislative mandates noted above, several professional organizations have incorporated into their member standards various measures for collaboration and integrated services (Welch, 1998a). The Council for Exceptional Children (CEC) Special Education Content Standard #10 notes that “special educators routinely and effectively collaborate with families, other educators, related service providers, and personnel from community agencies in culturally responsive ways” (Friend, 2007, p.515). The Interstate New Teacher Assessment and Support Consortium (INTASC) also speak of the relationships that teachers foster in support of their students’ learning (Friend, 2007). In addition to the influence of both legislative and professional standards and expectations, much of the change in attitudes towards collaboration and integrated services is as a result of societal and cultural influences (ASHA, 2000).

Along with the growing ethnic and cultural diversity taking place in American society, the growth of the inclusion movement and its emphasis on placing students with special needs in typical classrooms has placed greater pressure on teachers and therapists to work together and share service strategies. This has resulted in therapists of all disciplines providing service in more eclectic settings, not just the speech therapy treatment room (ASHA 2000). Finally, current practice has come to resolve the disputes of the past by emphasizing the need to maintain a “student-centered focus” (ASHA, 2000, p.2) when supporting learning while recognizing the classroom as the “most fertile ground” (Wilcox & Shannon, 1996, p. 221) for skill generalization and the “anchor” (Wilcox & Shannon, 1996., p. 222) in the provision of integrated speech-language therapy.

Evaluation Setting, Background and Current Practice

The history of collaboration and integrated services was in many ways replicated in the setting for this evaluation. Collaboration at the preschool’s various service providers and the integration of related services into the classroom setting had been filled with some barriers, a few bumps and most recently a fair amount of success. Upon my arrival as the school administrator in June 2002, the concept of collaboration was rather fractured if non-existent within the organization. The culture of the school was in many ways contrary to the concept of teamwork, with the presence of a fair amount of individualism along with a few, small cliques at work within the teacher ranks. Meanwhile, the related service departments were entities unto themselves, seeing themselves as separate, distinct departments with limited connection to the overall organization.

Team meetings amongst the individual service providers were essentially non-existent and almost all therapy was provided in a pull-out manner. Many of the therapists, including one senior therapist with over fifteen years of experience, had never provided therapy in a setting other than an isolated treatment room.

The lack of a collaborative culture at the preschool was in stark contrast to the author's experience and training. Besides the accolades afforded to collaboration and integrated therapy as exemplified in the literature discussed here, the author had experience with the benefits of these best practices while serving in administrative positions at another organization.

The adoption of a collaborative approach with integrated therapy at the author's former school was a process similar to the one experienced at the preschool in question.

After a short period of time assessing the culture of the organization and identifying some of the key stakeholders, the author began to discuss the concept of collaboration, teamwork and integrated service delivery. Some of the author's colleagues were encouraged and excited by the concepts, while others expressed trepidation or outright opposition to the thought of having "their" way of working altered or in some way impacted by the new administrator.

Recognizing that there was a mix of support and opposition, the author felt it best to introduce collaboration in a measured, calculated fashion. In conjunction with a few key members of the staff, including other administrators and select teachers and therapists, a "Collaboration Synergy Committee" was established. The committee was charged with the goal of creating a collaborative culture within the school through staff training and the institutionalization of practices and procedures that would result in the coming together of staff to synergize the collaborative movement amongst service providers.

While synergy was the ultimate goal, the committee first felt the need to provide education and guidance to the staff and therefore distributed literature highlighting best practice and trained the staff in some of the essential facets of collaboration, effective team work as well as integrated therapy. We also felt it necessary to apply some of the principles being learned and so mandated the establishment of regularly scheduled team meetings. A team meeting calendar was first distributed in September 2002. At the same time the author recognized the need to take measured steps and not give staff the impression that collaboration was being forced upon them. For that reason the author was content with simply seeing the successful implementation of team meetings as the goal for the year.

As the school year progressed, small accomplishments were being made in the evolution towards collaboration. Team meetings were occurring on a regular basis and producing positive feedback from the staff. There were some though who were not so enamored with these new practices. Many staff, teachers and therapists, felt the meetings took away from their time to do paperwork and didn't produce worthwhile results. Other staff gave the sense that they now needed to justify their methods and practices to their colleagues. The committee attempted to address these concerns by helping with time and agenda management. Nevertheless, the general assumption was that most committee members believed the exercise in team meetings was an overall success. Today team meetings have become an institution of the school as exemplified by the

team meeting data from October 2007. An analysis of this data showed 21 out of 23 classroom teams had at minimum the mandated two team meetings during the month. In addition, at least 4 out of 4 team members attended 38 out of the 50 meetings (76%) that were held during the month while another 10 meetings had 3 members present, resulting in 96% of all meetings having at least three members in attendance.

The move to a more highly evolved form of collaborative therapy had been a slow process. Managing a school is challenging, especially one that has a workforce with diverse skill sets and professional allegiances. Whether directly or indirectly, many of these issues impacted on the momentum and motivation needed to affect change at the preschool. Besides some continuing staff resistance to the collaborative effort as well as the simple lack of staff to fill necessary positions, other issues such as budget constraints or governmental audits came to occupy my time and the time of others. For this reason, the evolutionary process seemed to slow to an almost imperceptible crawl during most of the 2005-06 school year. This was especially true with regard to integrated, push-in therapy.

The opposition at the preschool by some to the push-in model in particular and to collaboration in general is, as noted earlier, consistent with the issues seen in the literature. In addition, there were several other misunderstandings prevalent in the school and evident in the educational community relevant to collaboration, integrated therapy and the intent of both. First, to coordinate or cooperative does not equate to collaboration. Coordinating is a managerial process designed to accomplish certain tasks while cooperation is a process where people may agree to certain activities, which may or may not be truly beneficial to all involved parties (Welch, 1998b).

Friend (2000) highlights a few added realities; including the misunderstanding that collaboration and its application of integrated therapy comes naturally. It is not uncommon to speak to professionals and hear many of them comment on how difficult collaborating is. One must also not assume that everyone is collaborating or that more collaboration is necessarily better. Besides the skill collaboration requires, it takes time and effort to implement and maintain. With the workload already beyond what many would consider appropriate for teachers and others, adding a slew of meetings or other tasks to their schedule is sure to elicit exasperated pleas for relief. Even if one is committed to collaboration, adding more time to the process does not necessarily translate into better outcomes. Dule, et. al. (1999) identified the “ambivalence” (p. 259) and “significant difficulties” (p. 260) therapists experience when involved in a collaborative team approach. In fact, additional time in the collaborative process could result in less time for engagement in the actual work needed to accomplish the mutually agreed upon goals.

Finally, collaboration is not always a feel-good exercise. In many instances, collaboration produces conflict and requires resolution in order for the group to move forward (Friend, 2000). Conflict can be very difficult to overcome, and this has been the case for us at the Marcus Avenue School. Collaboration is not about liking someone or being liked, it is about trust, respect and outcomes. Collaboration is not a standalone process being employed for its own sake. It is a technique designed to accomplish a goal in a manner not attainable working apart as individuals (ASHA, 1991).

Ingredients necessary for successful collaboration and integrated therapy.

Along with the need for trust, respect and commitment to a process, collaboration and its product of integrated therapy requires a sense of professional efficacy and competency in overcoming any hesitancy associated with collaboration and the “joint-ownership and responsibility” (ASHA, 1991, p. 2) that comes with the process. Spann-Hite, Picklesimer, & Hamilton (1999) note the willingness of teachers to allow speech language pathologists to participate in classroom activities was highly dependent on their own sense of efficacy as teachers and their ability to manage students with behavioral disabilities. Trimble and Peterson (1999) note the enhanced sense of efficacy teachers felt when administrators lessened the need for the submission of lesson plans. The study also showed heightened collaborative effectiveness by team members along with improved student outcomes as a result of the administrative support associated with the collaborative undertaking. Weintraub and Kovshi (2004) reiterate these findings with their own study of occupational therapists. In this study the authors found a correlation between the occupational therapists’ level of interest in collaboration and integrated therapy and their own level of professional confidence. The more confident the therapists were with their own competency, the more likely they were to collaborate, provide service in the classroom setting and in the presence of the classroom teacher and others.

Along with the attitudes, beliefs and values that individuals may have towards collaboration, organizations as a whole and groups within larger organizations may substantially influence collaborative development through several variables, including the openness versus restrictiveness of the relationships within the group (Wade, et al., 1994). Groups with restrictive or closed relationships, such as the culture found at the preschool when I first arrived in 2002, are environments with barriers that prevent optimal functioning of the group. An unproductive relationship can therefore produce far reaching and long term consequences, for a therapist employing a pull-out model of therapy will have less and less contact with the other team members and therefore less of an opportunity to develop a collaborative relationship (Weintraub & Kovshi, 2004)

As noted above, there were many at the preschool that were completely unfamiliar with the concept or practice of push-in therapy, and so the prospects of altering this behavior looked poor. Discussions continued though and eventually we were able to institute a group therapy program that seemed to garner praise and acceptance from the participating teacher and therapists. This activity entailed the collaborative engagement of all members of a classroom team in the provision of therapy to a group of students within one class. While the intent was well-meaning, there was much concern with the process and its appropriateness in addressing individual student needs. In particular, some staff were concerned the group sessions didn’t allow them to work effectively with their students since they had to divide their time amongst the other students in the class. This required review and was on top of the committee’s agenda.

With a stable cadre of staff and the relative absence of other major issues, the committee was finally able to attend to the resumption of the collaborative therapy process with a renewed vigor in the summer of 2007. With the involvement of few new senior therapists and others who were conducive to push-in therapy, the collaborative committee moved forward to address the issues

left on the table over a year earlier, including an effort at justifying and documenting why some students received therapy on an integrated, push-in basis whereas others did not.

Program Characteristics. The question as to why some students were provided therapy on a push-in basis and others were not spurred the discussion that, for many staff, had always been at the heart of the matter. In essence, many staff simply did not know how to provide push-in therapy and were asking for guidance. Collectively, the committee decided to create a set of criteria and written directives for push-in therapy.

In an effort to gain broad-based support, the committee believed it was necessary to expressly involve as many of the staff as possible in the criteria creation process. An invitation to participate was extended to senior clinicians of each department or all members of a department that lacked a senior clinician. Over the summer the process resulted in the creation of criteria for the provision of push-in and pull-out speech therapy. Creation of the criteria also resulted in the formulation of checklists (Attachments A & B) for use when assessing the feasibility of providing therapy on a push-in or pull-out basis. It is this criteria, its associated checklists and what happened when they were implemented that is the subject of the program evaluation.

By late fall of the school year the Push-in/Pull-out Criteria Program was implemented across the school with the classroom's speech-language pathologist serving as the team's facilitator and task master. The criteria and checklists were implemented and utilized in the assessment of children potentially benefiting from push-in therapy. Giving the speech-language department the lead in this endeavor is in many ways a logical choice since speech-language pathology had applied an "increasing emphasis on the importance of and need for provisions of speech and language services from a perspective that incorporates integrated practices" (Wilcox & Shannon, p. 217) while also recognizing the classroom as a "natural and appropriate context for the facilitation of communication and language skills" (Wilcox & Shannon, p. 237).

Program Clientele. The program where the evaluation took place exists in a multi-service organization with a total enrollment of over 350 children. The component of the school that is the focus of this evaluation was the center-based division of the school that has an enrollment over 200 children age 2 – 5 with a wide variety of developmental delays or disabilities. These students are authorized to attend one of the school's 23 classrooms on a full-time basis. Note that there are approximately 150 other students who receive services provided by the school but for various reasons were not included in the push-in assessment process. Twenty-five of these students were not authorized to receive classroom instruction and only received limited therapeutic service at home. One-hundred and twenty-five other children were not in need of special education intervention at all and were not eligible to receive therapy of any kind.

All of the students with special needs were deemed eligible for special education preschool services under federal law and state regulation. The delays or disabilities presented in the students ranged from those with severe, multiple disabilities with medical fragility in need of intensive therapeutic intervention to those with relatively mild involvement who functioned at levels close to that of a typically developing child. Of the 200 children eligible to receive special education services, 168 were authorized to receive speech-language pathology as a component of their individualized education plan. Services were authorized due to delays or disabilities related

to communication, articulation, pragmatics, or oral motor or swallowing issues. As a result of these issues, the identified students were mandated on their I.E.P. to receive a total of 450 thirty-minute therapy sessions per week.

The 168 students cited above who received speech-language therapy, their teachers and therapists, were the participants in the evaluation. A total of 12 speech-language pathologists provided the 450 sessions to the 168 students cited above. This translates to an average of 2.678 sessions received per student per week and 37.5 sessions provided per therapist per week or 7.5 sessions per day. A full day's caseload is set at 10 sessions per day for a therapist working a full seven hour day.

Of the twelve speech-language pathologists, three were required to manage a part-time case-load while the remaining nine individuals had a full-time caseload. These nine full-time pathologists saw 148 students for 399 sessions or an average of 44.33 sessions per week. The part-time caseload therapists who served the remaining 20 students had 51 mandated sessions. Of them, one therapist saw only 1 student for 3 sessions per week while the other two therapists served 6 and 13 students and provided 14 and 34 sessions, respectively.

Funding Sources. The push-in process is itself unfunded but is financially supported as a service provided by the school. The school was funded through the state government and local government via the payment of student tuition as established by the New York State Department of Education under the provision of a free and appropriate public education as mandated by IDEA 2004 (Friend, 2007). Annual tuition charges paid by a combination of county and state agencies average forty thousand dollars per student with variations depending on whether the child is approved to attend a six week summer session. All students attend as day students. The program does not operate a residential component. Total operating budget approximated ten million dollars.

Program Costs. Actual costs to the push-in assessment process were negligible (miscellaneous copying, etc.) but the school itself incurred significant costs relating to personnel and other operating expenses. As a non-profit organization, the program was compelled to stay within budget while ensuring the school provides services as per the needs of the students.

Administrative Structure. The school's structure is consistent with other non-profit social service and educational organizations and mirrors to a certain extent schools and school districts. The author of this evaluation was the program administrator. The author reported to an associate executive director and has several supervisors and senior clinical and educational staff reporting to him. The school employs over one hundred and sixty full time staff including program administration, educational faculty, clinical therapists, paraprofessionals, administrative support staff and fiscal personnel.

Contextual Setting

Program Location. The preschool in question is located in a suburban county outside of New York City. Besides its service to infants, toddlers and typical preschool age children, the program

served a wide variety of preschoolers with special needs from the suburban county it is located in as well as one of the boroughs of New York City.

Political Climate. The political climate of the school was typical of many organizations with multiple stakeholders, ranging from parents, regulators, senior management and those with power and influence. The program had its own political overtones with much of it stemming from the interpersonal barriers to collaboration cited in the above *Program Description*.

Socio-demographic profiles. The preschool served approximately two-hundred preschool age children with special needs, inclusive of 168 children that received speech-language pathology as a component of their IEP. Children were enrolled as full time students, attending on a typical school calendar from 8:30 am -2:30 pm, Monday - Friday. Besides the usual ten month school program, most students also attend a six week summer session. As noted above, the student catchment areas included the suburban county outside of New York City in which the preschool is located in as well as one of the outer boroughs of New York City. The preschool was culturally and economically diverse and represented the socio-economic and demographic diversity of these regions. The most noticeable demographic difference with the student body was that almost 70 % of the students with special needs (141) were boys. This is consistent with national data showing 67 -73% of students with special needs are boys (MGT of America, 2007).

Evaluation Purpose and Questions

Under the premise that the team approach offers the opportunity to deliver quality services to students with intense need for assistance (Dule, et. al., 1999), the effort evaluated the assessment process used to determine if students would be provided speech therapy through a push-in or pull-out model. It also evaluated the impact the assessment process had on the overall level of collaboration amongst team members.

This formative program assessment gathered data through a survey from twelve speech language pathologists and twenty three special educators who implemented a set of criteria on how students will be provided speech therapy, either in the classroom as a push-in session or out of the classroom as a pull-out session.

The purpose of this evaluation (and the relevant questions) was to:

1. Evaluate both individually and collectively, the staff's perceptions of the usefulness and effectiveness of the push-in/pull-out assessment instrument in choosing students for push-in speech therapy.

Q: Was the push-in/pull-out assessment instrument useful and effective in determining which students should be seen via a push-in or pull-out model?

2. Evaluate whether the teachers and speech therapists viewed use of the push-in/pull-out assessment instrument as an enhancement to collaboration.

Q: Did the process of using the push-in/pull-out assessment instrument result in enhanced collaboration between teachers and speech therapists?

3. Evaluate whether the staff, again individually and collectively, perceived the actual provision of push-in therapy resulted in an enhanced state of collaboration between them.

Q: Did the provision of push-in therapy enhance collaboration between teachers and therapists over the course of the evaluation period?

4. Evaluate whether the staff perceived that the implementation of push-in therapy was successfully incorporated into the classroom.

Q: Was push-in therapy successfully incorporated into the classroom setting?

5. Evaluate whether the staff found push-in therapy beneficial to those students in receipt of the service.

Q: Did teachers and speech therapists determine push-in therapy to be beneficial to students over the course of the evaluation period?

Methodology

A. This evaluation utilized nonexperimental, causal-comparative research where no manipulation of the categorical independent variable occurs and participants are not randomly assigned. It can also be viewed separately as a management oriented, consumer oriented and product oriented evaluation. The evaluation itself was formative in scope but had summative aspects to it, especially as it pertains to the continued use of the push-in/pull-out criteria assessment tool. The evaluation relied primarily on quantitative research methods to produce useful data.

The formative context of the evaluation was applicable to the intent to collect data regarding the effectiveness and usefulness of the assessment tool in determining whether students should be provided therapy on a push-in or pull-out basis. The formative nature of the evaluation also pertained to the staff's ability to make collaborative decisions while engaged in the push-in/pull-out assessment process. The data will provide administration with information that will be used to guide future modification of the assessment tool as well as continued evolution of the push-in therapy approach. The summative nature of the evaluation may result if the data indicate that the push-in/pull-out assessment tool is ineffective in relation to its intended use.

The management oriented evaluation approach was also used to assist school administration to decide on the modification and/or continuance of the push-in/pull-out assessment process as well as what actions the school would take regarding future collaborative efforts.

Stufflebeam's **CIPP** Evaluation Model (Smith & Farr, 1971) was used to collect data regarding four aspects of the assessment tool and process:

1. **Context** – was the resulting push-in process successful in the classroom context?
(Evaluation Purpose/Question # 4)

2. **Input** – did the assessment tool (an input) lead to efficient and effective selection of students for push-in therapy. (Evaluation Purpose/Question #1)
3. **Process** – did the assessment process as well as implementation of push-in therapy lead to enhanced collaboration between teachers and therapists? (Evaluation Purposes/Questions #2 & 3)
4. **Product** – did push-in therapy benefit those students who received speech-language therapy in this manner? (Evaluation Purpose/Question # 5)

The consumer evaluation approach was used to determine if the push-in/pull-out assessment tool and process was viewed by the staff as effective and efficient in determining whether students should be seen on a push-in or pull-out basis as well as whether the tool and/or process enhanced collaboration between teachers and therapists.

B. The push-in/pull-out assessment instrument was introduced by the identified speech therapists to their associated special educators beginning in September 2007. Assessments commenced immediately thereafter. The teachers and therapists were instructed to assess each student mandated for speech therapy using the assessment instruments.

C. The survey instrument was a five item questionnaire (Attachment C) incorporating a five point Likert scale. The instrument will ask respondents to answer the questions from the following possible responses: (1) Strongly Disagree, Disagree, Not Sure, Agree and Strongly Agree (5). A comment area allowed for respondents to provide additional information.

The survey was distributed via staff mailboxes and asked to be returned within four weeks. Adhering to this timeline allowed therapists and teachers up to six months after distribution of the push-in/pull-out assessment instrument to work with students and make determinations as to the benefit of the push-in/pull-out assessment instrument and the intended collaborative process.

Reliability of the survey instrument was limited due to several factors including limited robustness of measure (only one measure), limitations of reliability as a result of only one measurement and tool being used. Questions regarding the survey's validity and sensitivity pertain to the survey's ability to sufficiently measure the intent of the questions and this evaluation and its sensitivity when it comes to its ability to accurately measure collaboration and students improvement as a result of push-in therapy.

D. Interviews were not conducted for this evaluation. In this setting, anonymous, quantitative data gathering is deemed more reliable than qualitative interviews. The evaluator believed staff would not express themselves in an honest and forthright manner considering the perceived interest and investment the evaluator has in the development of a collaborative approach and integrated therapy model within the school.

E. The identified sample of participants (35) consisted of the entire population (N) of teachers and speech therapists employed by the school with a center-based assignment. In addition, all were involved in the push-in/pull-out determination process. Statistical control was achieved by using a case control design since the "targets (special educators and speech therapists) are drawn from a specialized population with distinctive clinical characteristics" (Rossi, Lipsey, &

Freeman, 2004, p. 279). A binary coding process was used to identify which type of professional (speech therapist vs. special educator) had returned the survey.

Selection of staff participants was non-random using a nonequivalent comparison design (Rossi et.al., 2004) while inclusion of students into the push-in/pull-out criteria assessment process used a “regression-discontinuity design” (Rossi, et. al., 2004, p. 288), where participants are selected thru collaborative decision making and the application of qualifying condition(s) such as whether the students could benefit from push-in therapy.

The study was cross-sectional and explanatory in nature and the survey based research is purposive in nature using a disproportional stratified simple random sample – equal probability selection methodology (Johnson & Christensen, 2008). All teachers and SLPs were the intended sample ($N = 12 + 23 = 35$). The actual sample totaled 27 participants ($n = 17 + 10 = 27$). The difference in intended population and eventual sample was attributed to several factors. This includes a case of differential participant attrition when one special educator departed for maternity leave prior to distribution of the survey as well as the cut-off of survey submission due to time constraints.

F. The data described the perceptions the identified staff has regarding the push-in/pull-out assessment instrument, its usefulness and effectiveness, as well as the level of collaboration that resulted from use of the instrument. Finally, the data gave insight into the staffs’ perception regarding the benefits of the push-in process.

Results

Surveys were submitted by 17 special educators and 10 speech therapists, representing 74% and 85% of each discipline, respectively. The surveys were returned to this researcher through the interoffice mail process. The total returned surveys ($N = 27$) represented a response rate of 77%. As noted above, one special educator was unable to participate due to the commencement of maternity leave prior to survey distribution. The reason for the other unreturned surveys (7 or 20%) can be attributed to a number of factors including possible lack of interest (4) and missed submission deadline (3).

As noted in Table 1, the results showed a mean score of 4.0 (“Agree” as per the Likert scale used in the survey) for the five survey questions with a standard deviation of only 0.19. The similarity in scores amongst the respondents can be taken as an indicator of consistency in thinking between the two disciplines and barometric of their collaborative relationship.

Table 1. Mean Aggregate Scores for Questions # 1-5

Q. #	Mean Scores
Q1	4.0370
Q2	3.8889
Q3	4.0370

Q4	4.0741
Q5	3.8889

In addition to the consistency in mean scores, there was a strong correlation in the answers to questions 1 and 2 (questions regarding the Push-in/Pull-out Criteria and Criteria Tool) and questions 3 and 4 (questions regarding collaboration and push-in therapy) as illustrated in Tables 2 and 3. The paired questions correlations noted in **bold** in Table 2 and the correlations matrix of Table 3 showed positive correlations amongst questions 1 and 2 as well as between questions 3 and 4. Questions 1 and 2 have an r of **.658** ($p = .000$) while questions 3 and 4 have an r of **.575** ($p = .002$).

Table 2. Paired Questions Correlations

		N	Correlation	Sig.
Pair 1	Q1 & Q2	27	.658	.000
Pair 2	Q3 & Q4	27	.575	.002

The strong correlations are indicative that respondents were consistent in their answers to the two sets of questions, providing further evidence that the answers have validity and add to the perspective of a collaborative thinking process between the staff.

Table 3. Correlations Matrix for Questions 1 – 4.

		Q1	Q2	Q3	Q4
Q1	Pearson Correlation	1	.658(**)	-.004	-.006
	Sig. (2-tailed)		.000	.985	.974
	N	27	27	27	27
Q2	Pearson Correlation	.658(**)	1	.011	.109
	Sig. (2-tailed)	.000		.955	.589
	N	27	27	27	27
Q3	Pearson Correlation	-.004	.011	1	.575(**)
	Sig. (2-tailed)	.985	.955		.002
	N	27	27	27	27
Q4	Pearson Correlation	-.006	.109	.575(**)	1
	Sig. (2-tailed)	.974	.589	.002	
	N	27	27	27	27

****** Correlation is significant at the 0.01 level (2-tailed).

When the mean response for each question is calculated by professional type, as noted in Table 4, (1 for special educators/2 for speech therapists), the results for

Questions # 1-4 again show consistency.

Table 4. Mean Scores by Professional Type

Ques. #	Prof. Type	N	Mean
Q1	1.00	17	4.1176
	2.00	10	3.9000
Q2	1.00	17	3.9412
	2.00	10	3.8000
Q3	1.00	17	3.8824
	2.00	10	4.3000
Q4	1.00	17	4.0000
	2.00	10	4.2000
Q5	1.00	17	3.5882
	2.00	10	4.4000

The results for Question # 5 on the other hand indicated a notable difference between the opinions of the special educators and speech therapists. Question # 5 asked if the respondent believed push-in therapy was beneficial to the student. Interestingly, speech therapists responded with a more affirmative answer in comparison to the teachers, 4.40 vs. 3.58, respectively. As noted in Table 5 and indicated in **bold**, the difference represented a probability ratio of **.050** and had statistical significance, indicating a 94% likelihood that this is a real and actual statistical difference in the scores between the two disciplines. The cause of this variation is speculative. Reasons could include the enhanced ability of the speech therapists to detect student progress in their relevant discipline to a biased desire by the speech therapists to see their students succeed.

Table 5. Independent Sample T – Test for Question # 5 Showing Statistical Significance in Difference in Answers Between Speech Therapists and Special Educators.

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower
Q.5	Equal variances assumed	-2.057	25	.050	-.81176	.39466	-1.62459	.00106

Table 6 provided the statistical evidence for the above difference and further analysis of the results for Question # 5 when delineated according to professional discipline. This table gives the range of answers to Question # 5 and shows in **bold** that 50% of the speech therapists “strongly

agreed” (Response Code # 5.00) that their students benefited from push-in therapy in comparison to only 5.9% of the teachers.

Table 6. Discipline Specific Perspectives on Push-in Speech Therapy

			Question # 5					Total
		Range of Scores	.No Selection	2.00	3.00	4.00	5.00	
Proftype	1	Frequency	1	1	2	12	1	17
		% within proftype	5.9%	5.9%	11.8%	70.6%	5.9%	100.0%
		% of Total	3.7%	3.7%	7.4%	44.4%	3.7%	63.0%
	2	Frequency	0	0	1	4	5	10
		% within proftype	.0%	.0%	10.0%	40.0%	50.0%	100.0%
		% of Total	.0%	.0%	3.7%	14.8%	18.5%	37.0%
Total		Frequency	1	1	3	16	6	27
		% within proftype	3.7%	3.7%	11.1%	59.3%	22.2%	100.0%
		% within Q5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	3.7%	3.7%	11.1%	59.3%	22.2%	100.0%

In summary, the data indicated that the questions being addressed in this evaluation were answered in the affirmative. Specifically, quantitative analysis indicated the following: 1) the push-in/pull-out criteria were useful; 2) the process generated by use of the criteria facilitated collaboration; 3) collaboration was enhanced by the implementation of push-in therapy; 4) push-in was successfully incorporated into the classroom, and finally; 5) push-in therapy was beneficial to students.

Comments

Besides the statistical analysis conducted as part of this evaluation, 22 of the 27 respondents provided written comments. 14 special educators gave commentary while 8 speech therapists gave input. This translated into 60.9% and 66.7% of the respondents, respectively, with an aggregate percentage of 62.9%. An interpretation of the comments along with a generous sample of these comments is provided below.

When it came to comments in response to Question # 5, (*Was push-in therapy beneficial to your students*), all 17 respondents provided specific feedback noting specific improvements in growth and development. Their comments ranged from statements that referred to the ability of the

student to better generalize (11 or 65 %), develop enhanced pragmatic, or social communication skills (8 or 47%), or receive added motivation and/or added attention (3, or 18%). In addition, 18% of the special educators referred to the added learning that took place amongst the classroom staff when push-in therapy occurred, citing their ability to observe, and learn, speech therapists in action. Finally, the range of comments in relation to Question # 5 was greater for special educators, with 9 variations in comparison to only 2 for speech therapists. The possible reasons for this are varied, including the fact that there were more educators who provided comments in comparison to speech therapists.

Below is a representative selection of comments made by respondents. The respondent's discipline is indicated by the following initials. *SpEd* = special educator, *SLP* = speech language pathology.

SpEd - "Those students that received push-in exhibited improvement in their expressive and pragmatic language."

SpEd - "The students showed an increase in their language skill level."

SpEd - "Push-in speech therapy is beneficial for students who require support in developing social language skills, play skills, etc. It gives students the opportunity to grow in their natural environment."

SpEd - "The student receives more attention and assistance therefore skills are able to come out that otherwise may not."

SLP - "Improvement generally noted informally – by increased ability to meet their IEP goals in the presence of classroom distractedness, showing a generalization of their skills."

SpEd - "The children who have had push-in lessons have showed increased social language, increased attention during speech activities, and it is fun and motivating."

SpEd - "There has been an increase in vocalization and sentence length in the language of many of the children! They are commenting on things that they observe as well as make requests."

SLP - "Push-in therapy provides carry-over/generalizations of specific goals targeted in individual speech therapy sessions. A child may do well 1:1, but it is important that they can utilize skills required in pull-out sessions in academic and social settings."

As with the quantitative data analysis, review of the qualitative data provides strong indication that both disciplines found the push-in process to be beneficial to students.

In addition to the comments regarding push-in therapy, additional comments were provided by 12 of the 17 commentary respondents, including 10 special educators and 2 speech therapists.

The contents of additional comments ranged from general observations regarding their teams, (25%), endorsements of the criteria, its use, and/or the overall push-in/pull-out evaluative process,

(50%), criticisms of the tool, the process, its applicability or attempting to manipulate professional decision making (17%), to stating the need for additional training in how to provide push-in therapy (8%). As with comments in response to Question # 5, there was much more variation in additional responses amongst the special educators in comparison to the speech therapists.

Below are some sample additional comments made by special educators and speech therapists.

SpEd – “I think the therapists need more training on push-in activities and preparation”

SLP – “I do not think this tool was useful. For experienced teachers and therapists, we don’t need a tool to determine if a child needs push-in/pull-out therapy. Possibly useful for new, inexperienced staff”

SpEd – “The assessment process helped the team understand and come to a unified conclusion on how a child should receive his/her therapy.”

SLP – “I feel many people have different views on the push-in/pull-out model as well as the ways it can be implemented. Training should be on-going. Expectations should be clear. There should be accountability and follow through.

SpEd – “If it helps the therapists then it is a good tool. We kind of already had all of these concepts in place. It is a bit superfluous.”

SpEd – Push-in therapy seems to be an effective tool towards helping the child learn in a more natural teaching environment. Where 1:1 pull-out therapy is necessary for most children it is helpful to have a tool such as this to determine when a child would be ready to benefit from push-in therapy.

Conclusions and Implications

Through the use of a five item, Likert scale survey, this evaluation provided feedback on the use of criteria utilized to determine if a student should be provided speech therapy on a push-in basis in the contextual setting of the student’s classroom. Additional information was retrieved and offered insight into the collaborative engagements that resulted from use of the criteria and the resulting push-in therapy. Finally, the survey attempted to discern through the participants of the study whether their students benefited from push-in speech language therapy.

Based on the literature, the author developed a hypothesis that use of a push-in/ pull-out criteria would assist in determining which students would benefit from push-in, or integrated therapy as well as the other assumptions noted above. The objective of this evaluation was to test these hypotheses, and as noted above, the results provided confirmation, thus demonstrating the criteria’s facilitation of push-in therapy, interdisciplinary collaboration and enhanced student development. Furthermore, the results showed significant consistency and when correlated with the comments from both provider groups, the outcomes strongly favored the perspective that use

of the push-in/pull-out criteria was successful in assisting the integration of speech therapy into the classroom setting; expanding the collaborative engagements amongst teachers and speech therapists; and fostering greater communicative skill in students.

Limitations of Survey and Evaluation

Critics could argue that attributing the enhanced collaborative engagements and the success of push-in therapy to use of the criteria is inconclusive. The reasons for this are varied and include the following potential oversights and errors that can occur in determining the program effect, its impact assessment and long term outcome monitoring;

- Gathering and analysis of additional data relevant to the development of students' communicative and language skills. The use of experimental research methodology, including the incorporation of a control group, and/or the analysis of other variables in the existing nonexperimental study, would provide more robust and powerful data in support of push-in therapy. In the current study, any inferences of student progress had to be determined without the benefit of pre-testing or other comparative statistical benchmarks that occur in an experimental study when a control group exists. This lends itself to questions such as how much did the integrated push-in therapy program produce positive outcomes above what would be expected from the provision of isolated, pull-out therapy? The determination that program effects were arrived at via use of the criteria and provision of push-in therapy could have been inferred, at least by a few of the participants. The identified improvements could have been arrived via other interventions and/or unintended variables. And while a positive effect was reported without any obvious bias or preponderance for one type of student in comparison to another, many would state that the results would be more valuable if there was an accounting of moderator variables such as class size, staffing ratio, inclusionary vs. self-contained classes.
- In addition to moderator variables, what effect, if any, did mediator variables have on the findings? Is it possible that initial student success after the initiation of push-in therapy led to further adoption of the push-in model? If yes, this lack of clarity could lead to undue emphasis on variables of lesser importance in the proximal and distal outcome and impact planning.
- The "corruptibility of indicators" (Rossi, et. al., 2004 p. 227) could lead to the enhancement of the results by the participating teachers and therapists in order to give favorable responses on the survey tool in order to please the researcher.
- The existence of spurious relationships and intervening direct and indirect variable(s) could have impacted the results (Johnson & Christensen, 2008). Could answers to questions one and two have an effect on how you answer question three, four and five? Could the completion of the survey questions influence the person's perspectives on collaboration and produce a causal outcome whereby the subject has a more favorable view of push-in therapy?
- Questioning whether collaboration and/or push-in therapy could have occurred without use of the push-in/pull-out criteria would have been a useful question to ask. In addition, the determination of successful push-in therapy is based on somewhat subjective interpretation by the respondents and therefore less reliable than objectively answered questions.

- Considering the limited sample size and pre-existence of a collaborative environment at the preschool, is difficult to generalize the study's findings to other locations.
- What effect, if any, did the interpersonal relationship of the teachers and speech therapists have on the success of the criteria's use, the implementation of push-in as well as the collaborative engagements amongst the individuals involved?
- Besides the above noted limitations, one other shortcoming is the lack of literature regarding how one should go about creating an integrated therapy program or simply the use of criteria in determining the provision of push-in versus pull-out therapy. While an abundance of literature was reviewed and cited, most of it espoused the benefits of collaboration and/or integrated therapy. This shortcoming did not seem to negatively impact on the outcomes but additional sources could have nevertheless added to the literature used to support the program.

Further Research

With these criticisms in mind, further research and inquiry into integrated therapy and its associated processes is warranted. Besides additional inquiry into the processes associated with speech language pathology, other therapeutic interventions are worthy of investigation, including occupational therapy, physical therapy, counseling and play therapy. An evaluation applicable to all disciplines would include mixed research into the criteria and processes used to determine how therapy is to be provided as well as the relationships between the type of therapy being provided and the ease at which integrated therapy is implemented. One would also need to consider the role collaborative culture and discipline affiliation has within an organization and the impact it has in the implementation of additional collaborative measures. Even further insight would be achieved by determining the roles experience and interpersonal maturity has in facilitating the push-in process.

Finally, future investigation should also determine if the collaborative processes, including push-in/integrated therapy, has any real benefits for children. This avenue of research should collect information on both push-in and pull-out therapy and its impact on children, in both a cross-sectional as well as longitudinal manner, providing the field with insight into the immediate as well as long term implications of these therapeutic modalities.

Dissemination of Results

Both primary and secondary dissemination of results occurred. Primary dissemination was to program administration with secondary dissemination to the teachers, therapists, parents and other interested parties.

Utilization of Evaluation Results

The evaluation results were used in the following manner:

- Reinforced to administration and staff the benefits (including enhanced student development) of the push-in/pull-out criteria, collaboration and push-in/integrated therapy.
- As per commentary recommendation, the push-in/pull-out criteria and tool should be modified in order to provide more explicit direction to staff, help enhance future usage and facilitate greater effectiveness of process.
- Aid in the facilitation of enhanced collaboration and push-in therapy through the incorporation and utilization of the push-in/pull-out criteria into other disciplinary services such as Occupational Therapy.

Finally, the results can be used to assist in the development of further evaluative studies designed to assess other aspects of a collaborative culture within a special education environment.

Conclusion

Based on findings from this study, the utilization of criteria designed to assist service providers determine the appropriateness of push-in/integrated and/or pull-out therapy was found to be successful in its implementation at the preschool in question.

The success of this study, whether it was the ability to generate the data necessary to conduct this evaluation, the confirmation of the value of criteria, collaboration and integrated therapy, has affirmed several assumptions the management team had regarding collaboration and all of its characteristics, qualities and variations. First, as Cain (2012) explains, collaboration presents a conundrum of by pointing out what she calls the contradictory impulses of human nature: the need for companionship while also needing privacy and autonomy. Second, without administration spearheading the process, the engagement of professionals in collaborative endeavors will not occur to any substantial extent. Third, the institutionalization of collaboration, through such means as established organizational philosophy, regularly scheduled team meetings, team focused membership and the like, is necessary for collaboration to occur but not a guarantee that it will succeed. Finally, people are not born collaborators and therefore need training, guidance and support in order to be successful. The comments gathered as part of the study support these beliefs and add impetus to efforts to refine the existing processes and improve on the ability of staff to work together and to maximize the growth and development of all students.

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About the Author

Stephen J. Hernandez is a member of the faculty in the Special Education Program at Hofstra University on Long Island, NY. Mr. Hernandez teaches courses in the Exceptional Child, Emotional and Behavioral Disorders of Children and Adolescents, Early Childhood Special Education Assessment and Inclusion.

Mr. Hernandez earned his B.A. from Fordham University, his M.S. in Education from Long Island University-Brooklyn College, a Professional Diploma in Educational Administration from Fordham University and is completing his doctorate in Educational Administration and Policy Studies at Hofstra University.

In addition to Mr. Hernandez's work in academia, he has served children and adults with special needs for over thirty-five years as a classroom instructor as well as in various administrative capacities.

Mr. Hernandez's areas of research include cross cultural competencies of teachers and related service professionals and the characteristics of successful collaborative teaming.

Mr. Hernandez is a member of the Council for Exceptional Children, the National Association for the Education of the Young Child and the American Academy of Special Education Professionals.

Attachment A

Assessment Instrument for Determining Push-In Speech-Language Therapy

Applicability of any of the following criteria to the student in question identifies that child as a candidate for push-in speech therapy.

STUDENT NAME: _____

- ___ The child is receptive to therapy within the classroom.
- ___ The child needs repetition of a learned skill within a familiar environment.
- ___ The child has mastered a particular skill within the treatment session and is in need of mastering generalization of that skill in another environment.
- ___ The child has difficulty transitioning.
- ___ The child has an adequate attention span in order to focus on his/her individual goals in a distractible environment.
- ___ The classroom teacher has concerns about a developmental skill that has not been brought to the attention of the therapist via the I.E.P.
- ___ Session goals identified by the team. These may include but are not limited to:
 - ☐ promoting social language
 - ☐ modeling the use of visuals
 - ☐ modeling communicative temptations
 - ☐ identifying strategies to improve attention
 - ☐ modeling sequencing skills
 - ☐ developing symbolic play
 - ☐ developing spontaneous language
 - ☐ promoting generalization of language skills
- ___ Optimal classroom times for push in therapy identified by the team. These may include but are not limited to:
 - ☐ meal/snack time
 - ☐ circle time
 - ☐ cooking lessons
 - ☐ arts and crafts
 - ☐ story time
 - ☐ free play
 - ☐ computer

Comments or Additional Observations: _____

Attachment B

Assessment Instrument for Determining Pull-Out Speech-Language Therapy

Applicability of any of the following criteria to the student in question identifies that child as a candidate for pull-out speech therapy.

STUDENT NAME: _____

- ☐ The child needs a small, quiet environment in which to learn or improve a skill.
- ☐ The child needs complete 1:1 attention to learn a skill.
- ☐ The child needs repeated practice of a particular skill in order to improve performance.
- ☐ The child needs to use special equipment/materials or more space than is available in the classroom.
- ☐ The child is more motivated to comply and attend to challenging activities by a pull-out session due to the individualized nature of this type of session.
- ☐ Pull-out sessions will benefit the child's self esteem.
- ☐ Pull-out sessions are necessary when the current classroom activity does not address the child's particular I.E.P. goal(s).

Comments or Additional Observations:

Attachment C
Push-in/Pull-out Criteria Assessment Survey

Instructions: Indicate on the scales below your perceptions of the Push-in/Pull-out Criteria Assessment Instruments (attached) and the collaborative processes that ensued.
Circle the answer you are most in agreement with.

1. The Push-in/Pull-out Criteria Assessment Instrument was useful in determining which students should be seen for Speech Therapy on a push-in or pull-out basis.

Strongly Disagree Disagree Not Sure Agree Strongly Agree

2. The Push-in/Pull-out Assessment Instrument enhanced collaboration at the time the team was determining if students should be seen on a push-in or pull-out basis.

Strongly Disagree Disagree Not Sure Agree Strongly Agree

3. Collaboration between you and the teacher or speech therapist was enhanced as a result of the provision of push-in speech therapy in the classroom(s) you work in?

Strongly Disagree Disagree Not Sure Agree Strongly Agree

4. Push-in therapy was successfully incorporated into the classroom setting?

Strongly Disagree Disagree Not Sure Agree Strongly Agree

5. Push-in speech therapy was beneficial to those students who received it.

Strongly Disagree Disagree Not Sure Agree Strongly Agree

If your response to Question # 5 is Agree or Strongly Agree, please indicate how you came to this conclusion and note any quantifiable measures that note improvement in the student's (or students') developmental levels.

Finally, please add any comments you would like to make about the Push-in/Pull-out Assessment Tool, its implementation and/or push-in versus pull-out therapy.

Attachment D

To: All Classroom Teams
From: Senior Speech Pathologist
RE: Speech Therapy Criteria for Push-in/Push-out Therapy

Please find attached the criteria for Speech Push-in/Pull-out therapy. After collaborating as a team, please complete the checklist for each student. There is no minimum requirement of criteria that render a child “eligible” for either form of therapy. The checklist is designed to be a guide for determining which students will benefit from push-in/pull-out therapy as well as identifying the therapeutic goals being targeted for each session. Please contact me if you have any questions regarding this checklist.

Thanks!

What is LD in Special Needs Education?

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Abstract

This article discusses the abbreviated term LD commonly used, misused and abused by those working in the field of special education in Singapore. The term has become so loosely used that it can mean almost anything, e.g., Learning Deficits, Learning Deficiencies, Learning Difficulties and the list can go on. Chia and Wong (2010) have argued an urgent need to make a clear distinction among the many different terms of LD used in the psycho-educational diagnostic evaluation and profiling before the whole issue becomes more confusing to parents with special needs children and professionals working in special education. The main purpose of this article is to clarify the term by categorizing LD into six different levels and what each level of LD represents in an attempt to avoid further confusion, misdiagnosis and provision of inappropriate treatment.

What is LD in Special Needs Education?

Introduction

The term LD as an abbreviation has been so widely used throughout the world that today it could refer to almost anything and mean nothing. From the phrase *Learning with a Difference*, *Laser Disco* ... to *Learning Disabilities and Learning Disorders*, LD has become a popular buzzword in Singapore, especially among those working with individuals with special needs in private practice, special schools and mainstream schools. For parents, the term LD can create a big anxiety in them if their children with learning challenges are unfairly or inaccurately labeled as having LD.

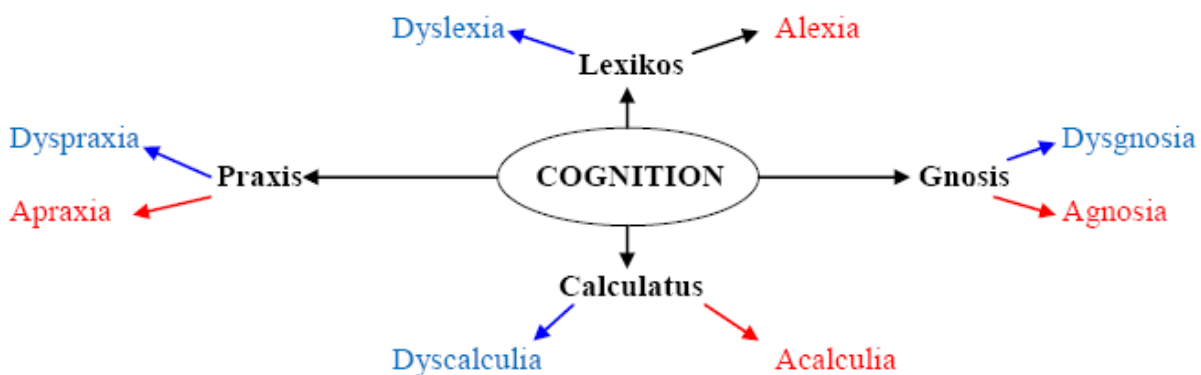
My first question is what is LD? What does *L* represent? What does *D* represent? Let us first look at the letter *L* first before we look at *D*.

The letter *L* refers to *Learning*. The word *Learning* with the suffix *-ing* referring to *process* should be seen as a form of cognitive behavior to gain knowledge or skill through “caught” (i.e., experience) or “taught” (i.e., studying) process (i.e., a gradual change through a series of actions that are done in order to attain a specific result). In Chia’s model (2010) of cognition, he has defined cognition as “the act of apprehending or ability to grasp or lay hold of mentally” (p.42). He has divided cognition into four mental components: (1) *lexikos* (linguistic ability), *calculatus* (mathematical ability), *praxis* (ideation through perceptuo-motor planning to execution of the

intended act, and *gnosis* (knowledge of self in response to somatic needs as well as interaction with the environment at large to establish the knowledge of the world).

According to Chia (2010), “[A]ny developmental interference to any of these four components can result in dyslexia, dyscalculia, dyspraxia and/or dysgnosia, respectively. On the other hand, if there is any acquired injury to the brain affecting any of these four components, alexia, acalculia, apraxia and/or agnosia can happen, respectively” (p.43). Figure 1 shows Chia’s model of cognition. This brings us to the second letter *D*. It can be any of these: *Disability(ies)*, *Disorder(s)*, *Difficulty(ies)*, *Difference(s)*, *Disadvantage(s)*, or *Dysfunction(s)*. Whichever *D* we use can mean different thing. Hence, unless we are certain which *D* we are referring to, the term *LD* can mean anything to anybody.

Figure 1: Chia’s Model of Cognition and Its Four Mental Components



Key: Words in blue indicate a developmental LD

Words in red indicate an acquired LD

Six Levels of LD

When we examine a child with LD, we have to look at it from several levels from lowest Level 1 to highest Level 6: at Level 1 are the Learning Disadvantages; at Level 2 are Learning Differences; at Level 3 are Learning Dysfunctions; at Level 4 are Learning Difficulties; at Level 5 are Learning Disabilities; and finally, at Level 6 are Learning Disorders.

According to the Longman Dictionary of Contemporary English (Pearson Education, 2003), *Learning Difficulties* and *Learning Disability* mean the same thing: “a mental problem that affects someone’s ability to learn” (p.916).

Learning Difficulty or Learning Disability?

What is what? However, according to Chandler (n.d.), “*Learning Disabilities* are the basic brain functions which are abnormal in a child with a *Learning Disorder*. A *Learning Disability* is what makes up a *Learning Disorder*. A *Learning Disorder* is what you see is wrong from the outside. You see a child that cannot read, write, do math, or run properly. The best way to understand this is to see what the *Learning Disabilities* are. To understand this, you have to know a little bit about how we currently think people use their brains to learn” (p.2).

In layman’s terms, I would define *Learning Disability* as simply a lack of physical and/or mental capacity to learn, or power to do or act physically, mentally, legally, etc. to learn. In other words, for someone to have a *Learning Disability*, he or she is experiencing problems that prevent him/her from maximizing his/her learning potential. This article defines *Learning Disorder* as a condition of physical and/or mental health/function disturbance. *Learning Difficulties*, to me, will be defined as having trouble or struggling to learn.

Learning Disorders

Level 6: Learning Disorders, at the highest level, can be categorized into:

- (i) No issue of concern;
- (ii) Verbal Learning Disorders;
- (iii) Non-Specific Learning Disorders; and
- (iv) Non-Verbal Learning Disorders.

This is the level when the LD is taken to be a serious learning challenge faced by a child and that for most instances, it will last a lifetime with or without positive prognosis. It is often taken to mean that there is a neurological impairment or of an acquired causation. A diagnosis of LD at this level will involve several professionals such as a psychiatrist, a psychologist and other allied professionals that include occupational therapist, speech-language therapist, educational therapist and counselor.

Learning Disabilities

Level 5: Learning Disabilities can be categorized into:

- (i) No issue of concern;
- (ii) Disability due to good aptitude (IQ) but poor attitude (Behavior), i.e., poor behavioral learner;
- (iii) Disability due to poor aptitude (IQ) but good attitude (Behavior), i.e., poor cognitive learner; and
- (iv) Disability due to poor aptitude (IQ) and poor attitude (Behavior), i.e., poor cognitive-behavioral learner.

This level of LD is taken to mean that there is a developmental or maturational delay. Most of the time, at this level, a psychologist, a behavioral therapist and a counselor, each will play an important role in providing coping strategies for the child they are working with.

Learning Difficulties

Level 4: Learning Difficulties, at the level just below the previous, can be categorized into:

- (i) No issue of concern;
- (ii) Difficulties as a result of can learn but do not learn (reluctant learner);
- (iii) Difficulties as a result of can learn but with problems (disabled learner); and
- (iv) Difficulties as a result of do not learn because cannot learn (illiterate learner).

In Singapore, teachers in either mainstream or special schools as well as allied educators, who provide additional learning and behavioral support to the mainstream teachers, come into picture at this level of LD to provide counseling, learning support and short-term intervention sessions.

Co-morbidity of Learning Difficulties, Learning Disabilities and Learning Disorders

When there is a combination or co-morbidity of Levels 6, 5 and/or 4 LDs (two or more of them from the same or different levels), a syndrome comes into existence. For an example, Gerstmann Syndrome is characterized by dysgraphia/agraphia, dyscalculia/acalculia, finger agnosia, and left-right disorientation. Other examples include Costello Syndrome, Angelman Syndrome, Prader-Willi Syndrome and Asperger Syndrome. Understanding the different LDs within a syndrome calls for different special education professionals to work collaboratively to discuss and design the most appropriate treatment plan for that individual concerned.

What's next about LD?

Currently, there are some selected official operating definitions of *Learning Difficulties*, *Learning Disabilities*, and *Learning Disorders*. The definitions of *Learning Difficulties* and *Learning Disabilities* are differentiated by the Australia's National Health & Medical Research Council (NHMRC) (1990) as two separate terms to mean dissimilar things.

The NHMRC's (1990) definition of *Learning Difficulties* is "a generic term that refers to the substantial proportion (10%–16%) of children and adolescents who exhibit problems in developmental and academic skills. These difficulties are considered to result from one or more of the following factors: intellectual disability, physical and sensory defects, emotional difficulties, inadequate environmental experiences, lack of appropriate educational opportunities" (NHMRC, 1990, p.2).

On the other hand, according to NHMRC (1990), the term *Learning Disabilities* refers to "the much smaller proportion (2%–4%) of children and adolescents who exhibit problems in developmental and academic skills which are significantly below expectation for their age and general ability. The disabilities, which often include severe and prolonged directional confusion, sequencing and short-term retention difficulties, are presumed to be intrinsic to the individual, but they are not considered to be the direct result of intellectual disability, physical and sensory defects or emotional difficulties. Neither do they appear to derive directly from inadequate environmental experiences, or lack of appropriate educational experiences" (NHMRC, 1990, p.2).

Unlike NHMRC, the National Joint Committee on Learning Disabilities (NJCLD) (1994) does not differentiate between *Learning Disabilities*, *Learning Disorders* and *Learning Difficulties*, and uses the three terms interchangeably in the following given definition.

The NJCLD's (1994) definition of *Learning Disabilities* is as follows: *Learning Disabilities* as a generic term: "a heterogeneous group of *disorders* manifested by significant *difficulties* in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These *disorders* are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Problems in self-regulatory behaviors, social perception, and social interaction may exist with *learning disabilities* but do not by themselves constitute a *learning disability*. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g., sensory impairment, mental retardation, social and emotional disturbance) or environmental influences (e.g., cultural differences, insufficient or inappropriate instruction, psychogenic factors), it is not the result of those conditions or influences" (p.65–66).

The Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition-Text Revision (DSM-IV-TR) (American Psychiatric Association, 2000) provides the following definition of LD: It uses the term *Learning Disorders* instead of the other *LD* terms. According to the DSM-IV-TR, an individual is diagnosed to have a *Learning Disorder* when his/her achievement on individually administered, standardized tests in reading, mathematics, or written expression is substantially below that expected for age, schooling, and level of intelligence. The learning problems significantly interfere with academic achievement or activities of daily living that require reading, mathematical or writing skills. "A variety of statistical approaches can be used to establish that a discrepancy is significant. Substantially below is usually defined as a discrepancy of more than two standard deviations (SDs) between achievement and intelligence quotient (IQ). A smaller discrepancy between achievement and IQ (i.e., between one and two SDs) is sometimes used, especially in cases where an individual's performance on an intelligence test may have been compromised by an associated disorder in cognitive processing, a co-morbid mental disorder or general medical condition, or the individual's ethnic or cultural background. If a sensory deficit is present, the *learning difficulties* must be in excess of those usually associated with the deficit. *Learning Disorders* may persist into adulthood" (p.46–47).

Learning Dysfunction

The term *Learning Dysfunction* refers to the malfunctioning of an organ, neuro-chemical imbalance or structure of the body that results in learning problems. For instance, damage to white matter (i.e., myelin sheath) in the brain (the crucial organ of the nervous system) results in non-verbal *learning disabilities* (Rourke, 1989). In this case, it is not an issue of poor attitude towards learning.

Level 3: Learning Dysfunctions can be categorized into:

- (i) No issue of concern;
- (ii) Cannot learn (but want to learn), e.g., attention deficit/hyperactivity disorder (ADHD) and executive function disorder (EFD);
- (iii) Will not learn (but might learn), e.g., opposition defiant disorder (ODD); and

(iv) Do not care to learn, e.g., conduct disorder (CD) of either childhood or adolescence onset. In other words, the causes of these learning dysfunctions are neurogenic in nature.

It is still debatable if learning dysfunctions should be considered as learning disorders rather than be separated to be placed at a separate LD level. On the one hand, there are those professionals who argue that these learning dysfunctions are neurobiological disorders that require psychiatric treatment using medication. On the other hand, learning dysfunctions are also considered as behavioral challenges that many professionals believe can be rectified with various cognitive behavioral therapies or other creative therapies (e.g., music therapy, art therapy and drama therapy) rather than using medication that may result in other unwanted side effects. Hence, these dysfunctions are not *real* disorders.

Learning Differences

As for *Learning Differences*, Sykes (2009) has defined such a learning different child as one “with average or above average intelligence, with adequate vision and hearing, without primary emotional disturbance who has failed or is at high risk to fail when exposed to school experiences using conventional educational techniques” (para.1). It is important not to forget that the attitude of a child towards learning can also make a difference.

Euphemism of LD terms ... this particular *LD* is a euphemism for the other *LD* terms. *Learning Difference* carries the connotation of unlikeness or dissimilarity. In other instances, it may also mean a mismatch between one particular learning style and another particular teaching style. For example, a student is a kinesthetic learner, but his/her teacher is using an auditory teaching style. A mismatch results and *Learning Difference* comes into picture.

Level 2: Learning Differences can be categorized into:

- (i) Issue of sensory concern;
- (ii) Auditory-sequential learning style, which is further divided into two sub-categories:
 - a. Auditory/Sequential-Visual/Spatial learning; and
 - b. Auditory/Sequential-Kinesthetic/Tactile learning;
- (iii) Visual-spatial learning style, which is further divided into sub-categories:
 - a. Visual-Auditory learning; and
 - b. Visual/Spatial-Kinesthetic/Tactile learning; and
- (iv) Kinesthetic-tactile learning style, which is further divided into two sub-categories:
 - a. Kinesthetic/Tactile-Visual/Spatial learning; and
 - b. Kinesthetic/Tactile-Auditory/Sequential learning.

Unlike all the previous levels mentioned earlier, learning differences are more of pedagogic nature.

Learning Disadvantages

When we talk about the *Learning Disadvantage(s)*, we are referring to the learning problems as a result of “inadequate environmental experiences, socio-cultural differences, or lack of appropriate educational experiences” (to take from the last sentence of the operating definition of

LD given by the NHMRC, Canberra, Australia), and it is not the result of intellectual disability, physical and sensory defects, and/or socio-emotional-behavioral problems.

Level 1: Learning Disadvantages can be categorized into:

- (i) No issue of concern;
- (ii) Disadvantages due to inadequate environmental experiences;
- (iii) Disadvantages due to socio-cultural differences; and
- (iv) Disadvantages due to lack of appropriate educational experiences.

It is important for all teachers and allied educators as well as those who are in one way or another working with children to be able to differentiate between a child with learning disadvantage/s and another with a *real* learning difficulty, disability or disorder. The former is more of sociogenic nature; the latter, psychogenic.

Why we need to know & understand the Six Levels of LD

As a result of the categorization of the six levels of LD, professionals working in the special education field in Singapore are able to:

- Provide more accurate operating definitions of various LDs;
- Identify LDs more accurately;
- Be aware of the severity of LD as it moves up from Level 1 (least severe) to Level 6 (most severe);
- Understand that a combination of Levels 4, 5 and 6 of LDs results in a syndrome; and
- Design appropriate treatment plans.

At the National Institute of Education here in Singapore, in-service special education teachers, who attend the Master of Education in Special Education program, are taught how to come up with an appropriate treatment plan for a student with some kind of syndrome that affects his/her learning process and behavioral development. Take for instance, Gerstmann Syndrome, a neurological disorder that can be either developmental or acquired, characterized by four primary LDs as tabulated in the chart below:

Gerstmann Syndrome

Developmental	Brief description of deficiencies/difficulties	Acquired
Dysgraphia	Deficiency in the ability to write	Agraphia
Dyscalculia	Difficulty in learning or	Acalculia

comprehending mathematics

Finger agnosia

Inability to distinguish the fingers on the hand Finger agnosia

Left-right disorientation

Left-right disorientation

In the case of the developmental Gerstmann Syndrome, dysgraphia and dyscalculia are the Level 5 LDs, finger agnosia is the Level 6 LD, and left-right disorientation is Level 4 LD. On the other hand, in the acquired Gerstmann Syndrome, agraphia, acalculia and finger agnosia are the Level 6 LDs with left-right disorientation as the Level 4 LD. Hence, the two forms of Gerstmann Syndrome are differentiated by their respective combinations of different levels of LD.

In designing a suitable treatment plan for a student with either developmental or acquired syndrome, there are two design approaches. The first approach targets from Level 6 LD downward to the lower levels. That is to say the treatment plan will focus on the more severe LD to begin with. This approach tends to be more intensive and aggressive in addressing the syndrome. On the other hand, the second approach starts with the least severe LD upwards as it believes that self-confidence building is essential for both the individual with the syndrome and the professional who is dealing with that syndrome for the very first time.

Moreover, with the knowledge of LD Levels, mainstream teachers and other allied professionals, who provide learning and behavioral supports to students with special needs, are now more aware that LDs can be many different types and of different levels of learning challenges. They will be in a better position to advise and help the parents of children with special needs as well as to know the best strategies available to work with these children.

Summary of LD Levels

Below is the chart that summarizes all the six levels of LD:

LD Levels	Categories			
Level 6: Learning Disorders	No issue of concern	Verbal LD	Non-specific LD	Non-verbal LD
Level 5: Learning Disabilities	No issue of concern	Poor cognitive learner	Poor cognitive-behavioral learner	Poor behavioral learner
Level 4: Learning Difficulties	No issue of concern	Can learn but don't learn	Can learn but with difficulties	Don't learn because can't learn

Level 3: Learning Dysfunctions	No issue of concern	Can't learn but want to learn	Won't learn but might learn	Don't care to learn
Level 2: Learning Differences	Issue of sensory concern	Auditory- sequential (AS)	Visual-spatial (VS)	Kinesthetic- tactile (KT)
Level 1: Learning Disadvantages	No issue of concern	Inappropriate environmental experiences	Socio-cultural differences	Lacking appropriate educational experiences

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Students with Multiple Sclerosis Participating in Recess

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Abstract

The participation of a student with Multiple Sclerosis (MS) in recess can often be both challenging and rewarding for the student and teacher. This paper will address common characteristics of students with MS and present basic solutions to improve the experience of these students in the recess setting. Initially, the definition and prevalence of MS will be presented. This will be followed by a brief discussion of MS in regards to special education law. Next, the benefits of the recess setting for all students will be addressed. The paper will then address the modifications for specific MS symptoms in the recess setting. Lastly, specific methods of proactively including a student with MS in three recess activities will be discussed.

Definition and Prevalence of Multiple Sclerosis

Multiple Sclerosis (MS) is described by the Mayo Clinic as “a potentially debilitating disease in which the body's immune system eats away at the protective sheath that covers the nerves. This interferes with the communication between the brain and the rest of the body. Ultimately, this may result in deterioration of the nerves themselves, a process that's not reversible.” (Mayo Clinic, 2011, p.1). MS is a progressive neurological condition with a variety of symptoms, such as loss of strength, numbness, vision impairments, tremors, and depression. It is interesting and important to note that the intensity of MS symptoms can vary greatly. As an example, one day a person might be extremely fatigued and the next day feel strong. Extreme temperatures can also adversely affect a person with MS. Causes of MS are currently not known and there are no cures for the condition (Disability Specific Instructional Strategies, 2008).

In the United States today, there are approximately 400,000 people with MS. This number increases at a rather fast rate with more than 200 people diagnosed weekly. Worldwide, MS is thought to affect more than 2.1 million people. The disease is not contagious or directly inherited, but scientists have identified factors that may eventually help determine what causes the disease. These factors include gender, genetics, age, geography, and ethnic background (National Multiple Sclerosis Society, 2011).

Of particular interest to this article are children with MS. Although the number of cases for children is relatively small, the authors would like to point out the fact that neurologist believe that there are many undiagnosed cases of MS in children. Of the 400,000 diagnosed cases of MS in the U.S., 8,000 to 10,000 are in children up to 18 years old. The symptoms of MS in children are similar to those in adults and may include:

- Problems with bladder or bowel control
- Weakness
- Problems with walking
- Vision changes
- Muscle Spasms
- Sensory changes, tingling, or numbness
- Tremors
- Seizures (more common in children than adults)
- Lethargy (more common in children than adults) (Webmd, 2011).

Treatment by doctors includes efforts to treat attacks, to prevent future attacks, and to relieve symptoms.

Multiple Sclerosis and Special Education Law

The Individuals with Disabilities Education Act (IDEA) states that children who are determined to have an orthopedic impairment receive special education services if the disorder adversely affects the educational performance of the child. An orthopedic impairment is defined by IDEA as follows:

“a bodily impairment that is severe enough to negatively affect a child’s educational performance. This disability category includes all orthopedic impairments, regardless of cause. Examples of potential causes of orthopedic impairment include genetic abnormality, disease, injury, birth trauma, amputation, burns, or other causes.” (IDEA, 2004).

MS is considered an orthopedic impairment. IDEA states that children should be placed in their “least restrictive environment” in school activities. In terms of the recess setting, a placement with children without disabilities is considered the least restrictive environment for most children with MS. This placement is often important to ensure a quality experience for a child with MS in the recess setting. This positive experience is displayed by the many benefits of recess for children.

Benefits of the Recess Setting for Children

There are a variety of benefits of recess for children with and without disabilities. These include a variety of physical and social benefits. In terms of physical benefits, studies have shown that recess leads to an improvement in participation in out-of-school activity levels – children usually are involved in after-school physical activities on days in which they participate in in-school physical activities (Dale, Corbin, & Dale, 2000). Increased recess levels have also shown to lead to an improvement of general fitness and endurance levels for children (Kids Exercise, 2009). In terms of social benefits, recess has been shown to lead to an improvement in the following social skills:

- Attentiveness (Pellegrini, Huberty, & Jones, (1995)
- Conflict resolution
- Cooperation
- Taking turns
- Using language to communicate
- Problem solving in situations that are real (Council on Physical Education for Children, 2001)

Modifications for Specific Multiple Sclerosis Symptoms in the Recess Setting

With a basic understanding of MS as well as the benefits of recess for children, one can understand the importance of including children with MS in the recess setting. The following table notes some basic MS symptoms and modifications that can be utilized to address them during recess. The reader should note that many modifications address multiple symptoms.

Table 1: Basic Modifications for Specific MS Symptoms in the Recess Setting

MS Symptoms	• Modifications to Address MS Symptoms in Recess (it is interesting • to note that some modifications apply to multiple symptoms)
Weakness, Muscle Spasms	• Allow for many breaks during the recess period • Provide a variety of equipment sizes such as smaller & lighter balls • Provide for engagement in non-competitive games • Provide shorter distances when throwing objects
Problems with walking	• Discourage activities in which students are playing at a high elevation (e.g. walking on playground equipment at a high elevation) • Provide activities that allow the student to remain stationary such as throwing/catching a ball from one location • Provide for engagement in non-competitive games • Provide shorter distances to walk during activities
Vision changes	• Discourage activities in which students are playing at a high elevation (e.g. walking on playground equipment at a high elevation) • Provide activities that allow the student to remain stationary such as throwing/catching a ball from one location • Provide for engagement in non-competitive games • Provide shorter distances when throwing objects • Provide shorter distances to walk during activities • Use “safe” throwing objects such as soft balls because of vision problems • Use throwing objects with a “strong” color contrast to the

	background
Sensory changes, tingling, or numbness	• Discourage activities in which students are playing at a high elevation (e.g. walking on playground equipment at a high elevation) • Provide activities that allow the student to remain stationary such as throwing/catching a ball from one location • Provide for engagement in non-competitive games • Provide shorter distances when throwing objects • Use “safe” throwing objects such as soft balls because of tactile difficulties
Tremors	• Allow for constant direct supervision to assist the student when needed • Allow for many breaks during the recess period • Discourage activities in which students are playing at a high elevation (e.g. walking on playground equipment at a high elevation) • Provide activities that allow the student to remain stationary such as throwing/catching a ball from one location • Provide for engagement in non-competitive games
Seizures	• Allow for constant direct supervision to assist the student when needed • Discourage activities in which students are playing at a high elevation (e.g. walking on playground equipment at a high elevation) • Provide for engagement in non-competitive games • Remember the effects of seizure medicine such as disorientation and thus allow for breaks and discourage activities in which the student is constantly moving
Lethargy	• Allow for many breaks during the recess period • Provide a variety of equipment sizes such as smaller & lighter balls • Provide for engagement in non-competitive games • Provide water for the student during the recess period

Methods of Including a Student with Multiple Sclerosis in Basketball, Soccer, and Bowling - Related Recess Activities

With an understanding of basic modifications for children with MS in the recess setting, modifications for specific recess activities can be discussed. The following list notes three recess activities and modifications for these activities for children with MS that can allow for a positive experience.

Table 2: Modifications for Including a Student with MS in Recess Activities

Recess Activity	Possible Modifications
Basketball Games	• Avoid competitive games where the student is forced to move at a high intensity level • Have students participate in basic shooting games such as “horse” in which students can remain in one place • Use a lighter ball for shooting • If possible, lower the basketball goal when needed • Allow for a variety of breaks
Soccer Games	• Avoid competitive games where the student is forced to move at a high intensity level • Have students participate in basic passing and trapping drills • Set a shorter distance to pass the ball • Remember that partner and group activities would be a good choice especially since they facilitate the development of social interaction • Allow for a variety of breaks
Bowling-Like Activities	• Provide a lighter ball for the activity • Set a shorter distance to pins • Allow for a variety of breaks

Conclusion

Children with MS often struggle in a variety of school activities. MS affects a child’s abilities in a variety of manners. However, the incorporation of simple modifications during the recess period can help to alleviate some of these negative effects in this setting. Like other children, children with MS can benefit in a variety of ways from participation in recess.

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Perspectives of Parents Who Have a Child Diagnosed with an Autism Spectrum Disorder

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Abstract

The purpose of this study was to understand the experiences and perceptions of parents having a child diagnosed with an autism spectrum disorder (ASD). Interviews with 12 parents were audio-recorded and subsequently analyzed to reveal the following themes: (a) Diagnosis of an autism spectrum disorder was not confirmed until years and/or several doctor visits after parents identified concerns. (b) Because they were given little guidance by medical professionals, parents took the initiative to educate themselves about their child's disorder and optional therapies. (c) Lack of daycare options and the cost of interventions were stressors for these families. (d) Parents were torn between their child with an ASD and other family members and friends. (e) Anxiety about the future was prevalent. (f) Parents felt judged by others when with their child in public. (g) Many parents felt that vaccinations may have played a role in their child's ASD.

Perspectives of Parents Who Have a Child Diagnosed with an Autism Spectrum Disorder

The study that will be described was conducted by the first author for her dissertation research at a university in the upper Midwest. Her interest in exploring the experiences and perceptions held by parents having a child diagnosed with an autism spectrum disorder stemmed from her extensive work as a teacher in this field for nearly a decade. The second author served as her dissertation advisor, assisting in the selection of the qualitative research design chosen for the study as well as with the subsequent data analysis. Before introducing the conceptual framework on which the study was based, a brief literature review on autism spectrum disorders in terms of definitions, causation, and parental experiences is provided.

Literature Review

The American Psychiatric Association (2000) defines autism spectrum disorders (ASD) as pervasive developmental disorders characterized by impairments in social interaction, restricted and/or repetitive behaviors, and receptive and/or expressive communication. The following five disorders are included on the autism spectrum: Autism, Asperger's Syndrome, Childhood Disintegrative Disorder, Pervasive Developmental Disorder-Not Otherwise Specified, and Rett Syndrome. Currently, the Center for Disease Control (2011) estimates "that between 1 in 80 and 1 in 240 with an average of 1 in 110 children in the United States have an ASD" (¶ 1), with boys four to five times more likely than girls to have ASD.

To date, researchers have not identified a definite cause of ASD. However, they have identified many factors that are associated with an increased risk of developing the disorders. These include being an identical twin of a person with ASD, being a sibling of a person with ASD, being diagnosed with an identifiable genetic disorder including, but not limited too, fragile X, Down syndrome, or tuberous sclerosis, having an intellectual disability, and being nonverbal or developing language normally and then losing those skills (Center for Disease Control, 2011, ¶ 6-11).

In the literature, it is noted that the rapid increase in the prevalence of ASD may occur for a number of reasons. In part, the expansion of the diagnostic criteria described in the DSM-IV_TR for ASD must be factored in. In addition, the awareness and knowledge related to ASD among healthcare and education providers has increased; this, in turn, has resulted in children being more accurately diagnosed (Aspy & Grossman, 2008).

In addition to the expansion of the definition of ASD and increased knowledge of professionals, some experts and parents of these children believe that other causes have stoked the increase in prevalence of ASD. These causes include mercury poisoning, vaccination preservatives, and virus contents (Aspy and Grossman, 2008). At this time, there is not any research to support this controversial theory of causation.

Many studies have been conducted involving parents of children with disabilities and how these may impact stress levels. One such example is a comparison study conducted by Rao and Beidel (2009) of parents with children diagnosed with high functioning autism to parents of typically developing children. They concluded that the parents of children with high functioning autism experience higher levels of stress related to parenting than those of typically developing children. Having taught typically developing children prior to and following her work with children having ASD, the first author noted higher stress levels among parents of children with ASD as well.

Renty and Roeyers (2005) surveyed 244 parents who had children with an ASD regarding their experiences with the diagnostic process, education, and support received. In addition, 15 of these parents provided supplemental interviews. The primary findings from the study include the following: Parents reported having difficulties throughout the diagnostic process, with the instruction provided to their child, as well as the availability of autism-specific services. Again, the first author has heard from the parents of the children having ASD on her caseload that they have experienced similar difficulties. It seemed appropriate to design a study that would provide further understanding of their experiences.

Conceptual Framework

Two theories guided the development of interview questions for the parents involved in the study. The first was John Rolland's theory of chronic illness, and the second was Elizabeth Kubler-Ross's theory of coping with death.

Rolland (1994) has described three phases families transition through when an immediate family member is diagnosed with a chronic illness: the crisis phase, the chronic phase, and the terminal

phase. The crisis phase begins with initial signs and symptoms of illness and closes with the diagnosis of the illness. The chronic phase involves family members attempting to adjust to this diagnosis by finding a new “normal” way of living, while they are surrounded by abnormal conditions. Finally, the terminal phase begins when the family member diagnosed with the illness dies. After death, the other members of the family exhibit symptoms of grief and mourning. In the first author’s experience, the crisis and chronic phase of chronic illness described by Rolland aligns well with what she has experienced working with families having children diagnosed with ASD.

Kubler-Ross (1969) described the grief process a family member traverses when coping with the death of a loved one and can be extended to include families coping with the disability of a family member. According to Bowe (2004), parents are often in shock and enter a period of denial upon learning of the diagnosis of a disability, which is then followed by anger. Next, it is common for parents to bargain with God and think, “If you cure my child, I promise to . . .” (p.11). After progressing through the bargaining stage, the parents may fall into a state of depression that is hopefully followed by acceptance of the disability.

Rolland’s theory of chronic illness and Kubler-Ross’s theory related to death both guided the development of interview questions for parents of children with ASD. For example, one question asked these parents to reflect on when their child first displayed signs of having an autism spectrum disorder. Another asked that they describe the process through which their child was diagnosed with ASD. Finally, parents were asked to reflect on effective and ineffective interventions that had been utilized with their children.

Methodology

Purpose of the Study

The purpose of this study was to understand the experiences and perceptions parents of a child with ASD have had. It was hoped that this understanding might provide parents of a child newly diagnosed with an autism spectrum disorder a better experience.

Qualitative Design of the Research

A phenomenological design was chosen to conduct the study. According to Creswell (2007), a phenomenological design is appropriate when a researcher’s goal is to describe the lived experiences that all participants in a particular study have in common. More specifically, Moustakas’ procedures, as outlined by Creswell (2007), guided this study. These procedures included determining the importance of understanding the common phenomenon of parenting a child diagnosed as having an autism spectrum disorder, investigating the lived experiences of these parents through in-depth interviews, and asking open-ended questions about this phenomenon.

Participant Selection

Only parents who had a child diagnosed with ASD were asked to participate in this study. Letters of invitation were sent to the presidents of three support groups for parents of children with ASD, special education case managers for children with ASD, and directly to parents of children with ASD. Finally, by attending support group meetings for one of the parent support groups, additional contacts were made. At these meetings, the study was described and a voluntary sign-up sheet was made available; this allowed interested parents to be contacted. Those parents previously interviewed were also asked to recommend other parents who may be interested in sharing their stories. The selection process described resulted in interviews with 12 parents of children diagnosed with an autism spectrum disorder, including Autism, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), or Asperger's Syndrome, from four different geographical locations within a pre-designated state in the Midwest.

Throughout the study, protection of privacy and of human subjects was assured. This was accomplished by informing participants of the purpose of the study, giving permission to the participants to withdraw at any time, asking the participants to give written consent using pseudonyms during the interview transcription process, altering identifying information, and locking recorded interviews in a file cabinet separate from the list of interviews.

Instruments

Open-ended parent interview questions, a site observation form, an interview transcription form, and a formulated meaning form were utilized during this study. These materials were chosen to record interview data and to later analyze that data.

An open-ended parent interview was used to collect the data for this study. The interview began with asking the parents to converse about their diagnosed child. As the interview progressed, they were asked to reflect on when they first questioned their child's development, the diagnostic process, the interventions they utilized with their child, their experiences with healthcare professionals, support systems they had in place, and advice they would give to a family with a newly diagnosed child. They were also asked to examine 14 word cards (i.e., success, anxious/worried, touched/moved, angry, guilt, important to me, torn between, sad, trust/rapport, strong conviction or belief, happy, lost, frustrated, and surprised) and comment on the cards that had specific meaning to them. The purpose of the word cards was to assist the parents in engaging in deeper examination and reflection of their experience as a parent of a child diagnosed with ASD.

The site observation form was utilized to write observation field notes. The interview transcription form was used for transcription of all conducted interviews. Lastly, a formulated meaning form was developed to organize the meaningful statements of the interviewees and used as a means to guide the member checking and peer examination processes.

Procedures

Observations.

Observing, while taking detailed field notes, is one component of qualitative research methods. Throughout the observation portion of this study, the first author was a participant observer in one support group for parents having children with ASD. The president of this support group became the gatekeeper and negotiated access for the first author to attend four monthly meetings of this group. While observing at the site meetings, it was possible for her to interact with possible research participants. The goal was to “make the strange familiar and the familiar strange” (Glesne, 2006, p. 51), while attempting to formulate generalizations about this particular social situation. At the first meeting, she was introduced to the group by the president and was given time to address the group about her educational background and experiences working with children diagnosed with ASD, her interest in understanding the experiences of the parents, and, ultimately, the goals of the study. As the monthly meetings progressed, the parents appeared increasingly comfortable with her presence, as evidenced by their social interactions and the professional advice they sought on a regular basis. Topics of conversation included possible strategies for difficult behaviors their children were displaying, information on possible interventions, and useful resources for parents. By becoming a recurring visitor to this support group for parents of children with ASD, it was possible to develop the rapport necessary to identify others interested.

Interviewing Process.

Participants were invited to participate in one to three recorded interviews with follow-up interviews scheduled when additional time or clarification of content was needed. All interviews occurred in the parents' homes, except for two that occurred in a school within the school district the child attended. Each interview was approximately 90 to 120 minutes in length. Written permission was obtained at the time of the interview to audio record the interviews for transcription and analysis at a later time. The interview questions were used as a guide to help the interview stay on track, but these questions remained flexible with new questions emerging based on the participants' responses and/or the need for the clarification and deeper insight into their experiences. Potential interview questions were formulated to gain insight into the phenomenon and included the following:

1. Tell me about your child starting with the beginning.
2. Looking back, please reflect on when your child first displayed signs of having an autism spectrum disorder.
3. Describe the process of how your child became diagnosed with an autism spectrum disorder.
4. With regard to healthcare services (doctoring, dentist, optometrist, etc.), what have your experiences entailed?
5. Reflect on the effective and ineffective interventions that have been utilized with your child.
6. The interviewees were shown word cards (success, anxious/worried, touched/moved, angry, guilt, important to me, torn between, sad, trust/rapport, strong conviction or belief,

- happy, lost, frustrated, and surprised) and asked to reflect on what came to mind with regard to their child with autism spectrum disorders and any experiences they have had.
7. Describe the types of support systems that are in place for you.
 8. What advice would you give to a parent who has a child recently diagnosed with an autism spectrum disorder?
 9. Please take some time to tell me anything else you would like to share with me that you have not had the chance to do so already.

During the interview, field notes were taken to record relevant information and other insights gained during the interview process.

The purpose of the study was shared with the participants and the opening statement, “Tell me about your child starting with the beginning,” invited the parents to begin sharing their story, while allowing the other questions to emerge. While listening to an interview, new questions were generated based on the participant’s response, the need for further clarification, and the insight gained during the process. At the final interview, the participants were given permission to provide additional information in writing, and two did so.

Participant Description

Twelve parents of children diagnosed with an autism spectrum disorder, including Autism, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), or Asperger’s Syndrome, from four different geographical locations within a pre-designated state in the Midwest were ultimately selected and interviewed. Provided in the section that follows is an overview of each participant’s experience. All participant names are pseudonyms.

Anne.

Anne is the mother of a kindergarten child, Brandon, diagnosed with autism. Brandon’s diagnosis changed periodically between Pervasive Developmental Disorder-Not Otherwise Specified and autism beginning at the age of two and one half years. The diagnosis he was given was dependent on the specialist conducting the assessment. Anne was forced to quit her job due to the inability to find daycare for Brandon and became a stay-home mom. Anne spent much of her time educating herself about ASD and has become a leader for a support group for parents.

Beth.

Beth is the mother of a pre-school child, Cory, diagnosed with autism. She had many delays in her search for answers with regard to Cory’s behavior and was told to “wait and see” and that he was fine. Beth was given very little guidance from the medical community and became a self-learner. She spent 10 years earning her four-year degree and then was forced to quit her job due to the lack of appropriate daycare for Cory. Beth has become a leader for a support group for parents.

Dave and Lisa.

Dave and Lisa are the parents of Evan, a middle school boy, who lives full-time in a residential school placement facility. As his parents, they searched for answers for years and finally opted to go out of state to find a doctor who could help them. Lisa, much like Beth and Anne, was

forced to quit her job due to the inability to find daycare for Evan. Dave and Lisa enrolled Evan in a school specializing in full-time education for children with special needs after many years of trying to meet his needs on their own. Dave currently holds a leadership position in a support group for parents in their community.

Jason and Karen.

Jason and Karen are parents of Hunter, a middle school boy diagnosed with Pervasive Developmental Disorder-Not Otherwise Specified. Hunter was diagnosed at the age of three. Upon learning of the diagnosis, Jason and Karen were in the room with the doctor while Hunter screamed and screamed. The doctor put his hands in the air and said to them, "I don't know what on earth you are going to do with this kid." With the lack of guidance given to them from the medical community, Jason and Karen relied on Internet searches for information and interventions. They became part of a core group of parents who pushed for educational programming specific to children with autism in their school district.

Cindy.

Cindy is the mother of Landon, a elementary school boy diagnosed with Pervasive Developmental Disorder-Not Otherwise Specified. Cindy was employed as a nurse for many years and currently works in the field of early intervention. She often referred to Landon as her "little rainman" prior to his diagnosis. Cindy was not given any direction from the medical community upon learning of the diagnosis and has taken it upon herself to bring Landon to a Defeat Autism Now (DAN) doctor out of state. DAN doctors specialize in the treatment of children with autism. Cindy has helped create a non-profit organization dedicating the funding raised to the treatment of children with autism and for financial support to parents.

Genna.

Genna is the mother of Jonah, a kindergarten boy diagnosed with Pervasive Developmental Disorder-Not Otherwise Specified at the age of three. Jonah has extreme meltdowns that typically last 45 minutes to an hour, making it difficult for her to take him on community outings. Genna currently works at Jonah's preschool and is increasing her knowledge in the area of autism by taking online courses. The computer became her best friend as she searched for answers for her child. Genna has also helped create a non-profit organization specializing in the treatment of children with autism and funding support options for families of these children.

Sean and Tonya.

Sean and Tonya are the parents of Tommy, a middle school boy diagnosed with Asperger's Syndrome in the 3rd grade. As parents they questioned his development at age three, as he was engaging in many repetitive actions. Tommy was previously diagnosed with Obsessive Compulsive Disorder, Attention Deficit Disorders, and sensory integration problems. Tonya, a speech pathologist, was working with children on the autism spectrum and began to question Tommy's diagnosis. Sean and Tonya brought Tommy to see a psychologist and the diagnosis of Asperger's Syndrome was confirmed. Sean feels they have an easier situation than most parents who have a child diagnosed with ASD because of Tonya's expertise; had they been left to struggle through possible intervention paths on their own and feel that, without, they would have had a much more difficult situation on their hands.

Dennis and Sandy.

Dennis and Sandy are the parents of Max, a recent high school graduate diagnosed with Asperger's Syndrome. Even though Dennis and Sandy questioned Max's development at the age of three, they did not get an accurate diagnosis for him until he was in the 11th grade. Prior to his diagnosis of Asperger's Syndrome, Max was on an Individualized Education Plan for a learning disability in the areas of reading and math. After watching a news report on ASD, they asked for an evaluation. Max received the diagnosis of Asperger's Syndrome shortly thereafter; both parents feel lost with this new diagnosis. They realize that Max has many social disadvantages and worry about his future now that he is entering the adulthood.

Rigor and Trustworthiness

Having an extensive background knowledge of autism spectrum disorders, as well as the struggles that the parents with whom the first author has worked have, it was extremely important to ensure that researcher bias was addressed. The validity of research refers to the degree to which the data collected from the study are accurate (Glesne, 2006). According to Maxwell (2005), "internal generalizability refers to the generalizability of a conclusion *within* the setting or group studied, while external generalizability refers to its generalizability beyond that group or setting" (p. 115). Although it was impossible to assure that threats to validity in this phenomenological study were not present, the following steps were utilized to strengthen the credibility of the conclusions drawn:

1. "Triangulation – use of multiple data-collection methods, multiple sources, multiple investigators, and/or multiple theoretical perspectives" (Glesne, 2006, p. 37). For this study, observations, interviews, and member checking were used.
2. Member checking – "sharing interview transcripts, analytical thoughts, and/or drafts of the final report with research participants" (Glesne, 2006, p. 38) to be sure the participants' ideas are being represented accurately.
3. Peer examination – the process of "asking colleagues to comment on the findings as they emerge" (Merriam, 1998, p. 205). This was utilized to combat researcher bias. Three experts in the field, a child psychologist specializing in ASD, a teacher specializing in the education of children with ASD, and a special education coordinator involved in the origination of an ASD education program, were consulted throughout this study. While conducting interviews and analyzing the data, these professionals were consulted by telephone and e-mail. In addition, all three professionals were sent copies of the data analysis forms as well as the information displayed in Table 1: Data Analysis. At this time, they were asked to read through the information and render their opinions; all three professionals submitted their opinions in writing. When further clarification was needed, it was gathered through telephone or e-mail contact.
4. Saturation of data – Interviews were conducted until saturation of data had been reached. Saturation of data can be defined as the point at which no new information or themes are observed in the data (Glesne, 2006).

5. “Rich, thick description – writing that allows the reader to enter the research context” (Glesne, 2006, p. 38). While the interviews were being audio recorded, the first author took copious notes related to her observations during the interview.

Data Collection and Analysis

“The main categorizing strategy in qualitative research is coding” (Maxwell, 2005, p. 96). In qualitative research, the goal of coding is not to count things, but to “fracture” . . . the data and rearrange them into categories that facilitate comparison between things in the same category and that aid in the development of theoretical concepts. (Maxwell, 2005, p. 96)

After the participants were interviewed, the following steps were employed to “provide an understanding of the common experiences of the participants” (Creswell, 2007, p. 61). First, the interviews were transcribed and then examined for “‘significant statements’ [or] sentences that provide[d] an understanding of how the participants experienced the phenomenon” (p. 61). Next, clusters of meaning were developed into themes. These “significant statements” and themes were then used to create the formulated meaning of the participants’ experiences. Finally, the formulated meaning statements were compiled to write a composite description that captured the essence of the participants’ experience in hopes that the reader would walk away with an understanding of what it would feel like to walk in the shoes of a parent who has a child diagnosed with an autism spectrum disorder. Reflection on these formulated meanings led to an assertion. The codes, categories, and formulated meanings are summarized in Table 1: Data Analysis.

Table 1. Data Analysis.

Codes	Categories/Themes	Formulated Meanings	Assertion
Warning sign Questioned development Early indicator Lost milestones Diagnosis	Early Signs and Diagnostic Struggles → →	Eight out of 12 parents interviewed identified specific concerns about their child's development between the ages of 12 and 18 months. Four out of 12 parents were seeing signs by the age of three years. Despite these early concerns, the diagnosis of an autism spectrum disorder was not confirmed until years and/or doctor visits later.	Parents who have a child diagnosed with an autism spectrum disorder are constantly faced with barriers and complications while raising their child. Many of these complications are chronic, in that they continue throughout numerous everyday experiences and are the direct result of raising a child on the autism spectrum while continually searching for answers. The complexity of this experience persists throughout periods of crisis.
No knowledge Self-learner Self-advocate No guidance No plan for treatment	Lack of Guidance From Medical Professionals → →	Eleven out of 12 parents interviewed felt lost after their child was given the diagnosis of having an autism spectrum disorder. They felt they were given very little guidance from the medical community, after receiving their child's diagnosis, with regard to helping their child. In addition, these parents felt they were not made aware of therapy options for their child. Therefore, these parents took the initiative to educate themselves about their child's disorder and optional therapies.	
"Lost" job Daycare issues Treatment expense	Limited Daycare Options and Financial Stressors → →	Four out of 12 parents interviewed believed they had limited options for daycare. They struggled finding and keeping childcare. They had to quit their jobs in order to care for their child with an autism spectrum disorder. All of the families interviewed were also financially responsible for many of the interventions utilized. Both of these became financial stressors for the families.	

Table 1 (cont.)

Codes	Categories/Themes	Formulated Meanings	Assertion
Family stress Lack of support	Torn Between → →	Six out of 12 parents interviewed expressed feelings of being torn between their child with the autism spectrum disorder, as well as other family members and friends.	
Anxious Worried Important to me Questioning future	Concerns for the Future → →	Ten out of 12 parents interviewed expressed feelings of concern for what the future will hold for their child. They are anxious and worried about the unknown.	
Judged by others Invisibility of autism Spectrum disorders Public struggles	Judgment of Others → →	Five out of 12 parents interviewed expressed feelings of being judged by the public due to the fact their child may look “normal” but does not behave that way. Their child may have a meltdown in a public place and the stares of strangers are difficult for these parents to bear. Their child may also engage in abnormal behaviors, which, in turn, lead to stares.	
Vaccinations Food allergies Innate sensitivities Illness – never healthy	Parent Perceptions of Vaccinations → →	Seven out of 12 parents interviewed felt that vaccinations may have played some role in causing their child’s autism. They felt that this may be due to an innate sensitivity their child had, timing of the vaccinations, or multiple doses given at the same time.	

Findings

Theme One – Early Signs and Diagnostic Struggles

Eight out of 12 parents interviewed identified specific concerns about their child's development between the ages of 12 and 18 months. Four out of 12 parents were seeing signs by the age of three years. Despite these early concerns, the diagnosis of an autism spectrum disorder was not confirmed until years and/or several doctor visits later.

Six of the families or eight of the parents interviewed have children diagnosed with autism or Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS). Of these parents, all had concerns about their child's development between the ages of 12 and 18 months. Two of the families or four of the parents interviewed have children diagnosed with Asperger's Syndrome. These parents discussed concerns with development at the age of three. All of the parents interviewed brought their concerns to medical doctors. However, the diagnosis of ASD was not confirmed for these families until years and/or doctor visits later. Anne described when she first noticed concerns with Brandon's development.

Brandon was meeting his milestones at 12 months. It was at 15 months when Right Track came in and we were seeing things that made them come back in a month or two for another evaluation and he was not passing these. We started to be concerned, because he wasn't making the evaluations.

Anne later portrayed her feelings about the diagnosis.

I think a doctor should have done it, saw the red flags. I think that when I took Brandon in to his appointments, they should have noticed it. I think that missing autism is like missing a train wreck. I think somebody should have said, "Looks like your child has autism." I would have hated them, but I think that is their job. I think they should have told me that. Absolutely.

Beth also described concerns with Cory's development, both at 12 and 18 months of age.

A little after 12 months of age Cory started having a lot of night awakenings where he would get up and also didn't want to be rocked anymore, he would fight it. He started waking a lot at night and arching his back, really stiff like a back. He also had constant diarrhea. He was sick a lot, which I blame a lot of his misery on. He would imitate, crawl, he would walk, sit up. He did everything textbook fashion, but he didn't talk a lot. At about 18 months, my husband and I wondered what was wrong here. We noticed something wasn't quite right. We would pull him in the wagon in the spring and he wouldn't even look at anything, he just had this glazed over look on his face. My mother-in-law even said that he wouldn't look at her when she would say his name and we thought it was due to the ear infections, maybe a hearing loss, you know. But then, that summer we hired a high school kid to come and watch the kids so I wouldn't have to take everyone out in the morning and that was when he started banging his head, bad. He

was very miserable; he did not talk or coo at all. He would bang his head on the floor and the door and then on the wall when I would leave in the morning.

When Beth brought her concerns to the doctor she had difficulties, as well.

I made an appointment with a local physician and he said he was fine. I said, "He is not playing. He's banging his head on the floor, and he won't talk." The doctor said he was fine that everyone had been talking for him. I was like, "Okay." I left saying, "That is not right." So, I went to a bigger city to find a pediatrician who knew everything about autism, supposedly. We walked in and Cory banged his head on the floor and then went to sit in the corner. And then, the doctor said, "He is not autistic. He is fine." He said that he was banging his head because he was frustrated because he couldn't talk.

Beth continued depicting her frustration.

I think the medical community was definitely a failure. Definitely. I was disappointed with the first two pediatricians. If I would have been one of those mothers who would have been relieved at the fact that they said he was fine, I probably would not have seen another doctor until I really had to. However, I needed to keep searching for that answer.

Dave described concerns with Evan's development.

Evan developed normally throughout his first year. He crawled on time, did all the normal things that he was supposed to do. He was really a fun kid – a little clingy to mom, but a fun kid. At about a year and maybe a few months, we noticed that he wasn't talking. He wasn't saying mom or dad or any of these sorts of things and it was very hard to direct him. You couldn't tell him anything. He had his own mind on how he was going to do things. He wouldn't listen. He was very noncompliant. The speaking was the biggest thing. In terms of having an autism disorder, at about a year we noticed he was not talking. We didn't think autism at that time, but looking back that would have been one of the first signs that we saw . . . even younger than that, had we known all the signs, we would have questioned his clinginess and his clinginess to mom and his noncompliance. He also loved to swing. This would have been a sign to us now.

Lisa added to Dave's concerns.

I think it was about 18 months that I really noticed. He just didn't play like the other kids on the playground. He had this fascination with watching wheels turn on cars.

Dave and Lisa brought their concerns to their doctor many times. After seeing a news program on autism, they brought their concerns back to their doctor. The lack of direction and of a diagnosis from their own doctor led them to seek a specialist in a bigger city.

We went back to the doctor and I told the doctor that I felt bad about diagnosing my child

off of the TV and I certainly didn't want to do that, but I said, "Could our child have autism?" I said that I saw this show on 20/20 and Evan acted just like that. He took his glasses off and put them on the table and set his pen down and then he looked at us and said, "Dave, one thing we know for sure is that your son does not have autism." Then he kind of mumbled about autism being the word this week, because he already had two other parents in this week thinking their sons had autism. We felt kind of small and wished we hadn't said anything, and out the door we went. We were very, very disappointed with the local medical system here. We just struggled with it.

Dave continued explaining their experience with a specialist in a bigger city.

The doctor down there didn't state that his diagnosis was autism, but he went over the findings and how each person that reviewed Evan said the same things. Then he pulled those things off and put them into another chart/calculator, and it came up with a more than average possibility that this child has autism. Then he said, "I am not saying your child has autism, but I think it is something we should be focusing on as we move forward." In the back of my mind, I went back to this TV show that I saw and thought that I had seen some of these things and it made sense to me.

Tonya described when she first questioned Tommy's development.

I want to say it was around age three that I started noticing things. He was doing a lot of repetitive actions and wanted to do the same thing over and over. Just because I am a speech pathologist I noticed it more than my husband and was clued into it. I would mention it to my friends and they would be like, "No, Tonya, you are looking too much into this." He was finally given his actual diagnosis of Asperger's when he would have been going into 2nd grade.

Tonya explained the diagnostic process, as well.

Tommy was seeing our family physician for "attention," but I had a gut feeling he had Asperger's Syndrome. We requested some testing be done at school due to some language concerns, as well as attention concerns. He was diagnosed with ADHD (Attention Deficit Hyper-Activity Disorder), OCD (Obsessive Compulsive Disorder), sensory integration, and language delays. Still in my gut I felt it was Asperger's. Finally, when going into 2nd grade he still had those repetitive behaviors and he still did some very different things. We knew he was attention deficit, and OCD, and had some sensory integration problems. Even though he had all of these things, something just didn't seem quite right. So, then we took him to another doctor to see if it might be Asperger's. At that point I was reading a lot more and dealing with a lot of kids in the school system with Asperger's. The psychologist that we took him to confirmed the diagnosis of Asperger's.

Sandy also had concerns about her son's development around the age of three.

When he was very young, around three years old, he didn't like the feel of grass on his

bare feet. He was very sensitive to touch and loud noises. He didn't like to eat anything too cold or frozen, like popsicles and ice cream. We had him in tball and I remember that his hands flapped when he ran. Also, when he got interested in something it was to the point of obsession. Max did not receive the diagnosis of Asperger's Syndrome until he was a junior in high school, when his parents questioned his learning disability and OCD diagnosis and asked for further evaluations.

Three professionals in the field were asked to review the formulated meaning statements generated from the interviewee's meaningful statements. When asked to reflect upon the early signs and diagnostic struggles that these parents had encountered and described, the school psychologist stated that she partially agreed with the findings.

I agree that many parents of children with autism spectrum disorder have concerns about their child's development before the age of two or three. I disagree with the statement that diagnosis is not confirmed until years later, because this is specific to individual children and the severity of their autism spectrum disorder and is vague. Children with Asperger's Syndrome are usually not identified until well into elementary school, but many children with more severe autism are identified before kindergarten.

It seems the school psychologist misinterpreted the findings, because her statement "Children with Asperger's Syndrome are usually not identified until well into elementary school, but many children with more severe autism are identified before kindergarten" ultimately agrees with the formulated meaning. The parents in this study who have children with autism and PDD-NOS expressed concerns regarding their child's development between the ages of 12 and 18 months. Even if these children are receiving a diagnosis prior to kindergarten, it is years and several doctor visits after the parents' initial concern. In addition, the parents of children with Asperger's Syndrome expressed concern regarding their child's development around the age of three. If these children are not diagnosed until well into elementary school, again this is years and doctor visits after the parents' initial concern. Therefore, the formulated meaning is actually in agreement with the school psychologist's opinion.

Another expert in the field described her thoughts when asked to reflect upon the diagnostic process.

I would agree that there is a frustration among many parents of kids on the autism spectrum that their concerns weren't taken seriously early on when reported to the family physician. With the importance of early intervention for kids on the autism spectrum, valuable time can be lost.

In summary, the parents interviewed in this study who brought concerns to their doctors between the ages of 12 and 18 months finally received the diagnosis prior to kindergarten, but many doctor visits later and approximately three years after their initial concerns. Therefore, despite the diagnosis happening prior to kindergarten, there was a significant period of time between their expression of concern and actual diagnosis. Max was not officially diagnosed until he was a junior in high school and Tommy did not

receive an accurate diagnosis until he was in 2nd grade. This delay in diagnosis meant lost time for appropriate interventions, resulting in parents and educational professionals playing catch-up. According to Taylor et al. (2009), children who receive interventions specific to ASD by the age of three show greater improvements than children who do not receive these interventions until after the age of five.

Theme Two – Lack of Guidance from Medical Professionals

Eleven out of 12 parents interviewed felt lost after their child was given the diagnosis of having an autism spectrum disorder; they were given very little guidance from the medical community, after receiving their child's diagnosis, with regard to helping their child. In addition, these parents felt they were not made aware of therapy options for their child. Therefore, these parents took the initiative to educate themselves about their child's disorder and optional therapies.

Anne reflected on her feelings of being lost after receiving Brandon's diagnosis.

I cannot believe that we saw so many people and nobody gave us any real direction. No real direction at all. I kept hearing about specific therapies, like floortime and ABA [applied behavior analysis] and other things. I thought it was odd that no one was really pushing any of them on us, but I was starting to hear about kids that did really well with some of these. I remember that even though the doctor agreed with the diagnosis of autism, he told us that it was a lifelong disability, that symptoms progress, this isn't something he grows out of, he will get worse, and speech may not happen. Practically in the same sentence that he told us this was a lifelong disability, he also didn't need to see him for another year and didn't give us any direction. These [autism spectrum disorders] are one of the most common childhood disorders right now: 1 in 150 kids, let's be generous and say 1 in 250 kids or 1 in 500 kids. I should not feel alone. I should not feel lost. I should not wonder what we do next. I should be given more guidance.

Karen recalled her frustration with the lack of direction given to them upon receiving Hunter's diagnosis.

After the three hours of testing, Hunter had to sit in a room with a doctor and it was pretty bad. He screamed and screamed and screamed. He cried and cried and cried. At this point the doctor just put up his hands and said, "I don't know what on earth you are going to do with this kid." And that was kind of his diagnosis: He has autism and cannot imagine what we were going to do. So, that was kind of hard. Tears were rolling down my face and Hunter was screaming, and he just said that he didn't know what we were going to do. I said that he was the one that was supposed to tell me what to do and was not given one answer, not a single one. No direction whatsoever. We just left there devastated. I didn't know what we would do. Then, after that we read tons of things on the Internet about autism. We got our autism degree on the Internet.

Karen continued.

Probably the best explanation I have heard about it is that if your kid has cancer they say you need to do this, this, this, and this, and there is a set plan. There is just no one stop set plan for autism and you just don't know where to begin or what to do. I think the biggest thing that we did was to not give up and to do as much as we can.

Justin added to Karen's feelings.

It is sad that there are not enough people around that are knowledgeable about autism therapies. There are no avenues to take when trying to find where to go from here. Even if they would say that there are many different therapies and give information on them . . . that would help. You would think that the hospital or somewhere there would be information on therapies. Nobody really did.

Cindy also educated herself on autism therapies.

From the diagnosis we were not given any real direction, just told that behavior modification and therapy were what was needed, but nothing beyond that, such as what to pursue and when. They made it sound pretty hopeless. I started doing my own research. We don't see a psychologist and psychiatrist, because we would go to the appointments and they would ask me what we were doing. I felt like they should be telling me what I should be doing, not the other way around. As it turned out I would tell them what we were doing, where we were going, and I just thought it was stupid. Therefore, the computer was my best friend after the diagnosis.

Tonya stated that it was very difficult not having any answers after the diagnosis and that she had to rely on her knowledge, as a speech language pathologist, and self-education to help Tommy. She also had to use this knowledge to educate others who worked with him.

I feel that a lot of what has happened for Tommy has been a result of the research that I have done, as a parent. The things that we have asked for, and the services put in place have been things that I have asked for. Again, the school system has been great, but there are still so many people who don't know or aren't educated about Asperger's or the autism spectrum.

When asked to reflect upon the lack of support given to these parents from the medical field, the special education coordinator stated:

I would say that the medical community, in general the family doctors, could use more training in the area of autism. I would hope that the majority of psychologists/psychiatrists would have more guidance for parents. I would say, however, that in my experience, the parents that I have worked with have had to learn much on their own.

Another expert in the field of autism described her views regarding parent support and education from the medical community.

I feel these statements vary based on different experiences of individual families and the needs of children. I feel that parents of children with autism spectrum disorders feel lost and parents may mourn after receiving the diagnosis. I agree that some parents may receive little guidance from the medical community and in some areas of the country it is difficult for parents to even get a confirmed diagnosis from medical professionals, which prevents children from getting proper treatment and special education services. I agree that parents are often not made aware of therapy options or parenting styles that would benefit their family. Some parents are able to educate themselves about this disorder and therapies but, unfortunately, if parents are uneducated or uninformed themselves, this is not likely to happen.

To summarize this last theme, the parents interviewed in this study were given very little information after receiving the diagnosis with regard to where to go next or what interventions were proven to be effective for children on the autism spectrum. Therefore, many parents took the initiative to educate themselves. Unfortunately, most often they relied on the Internet. While there is a vast amount of information on the Internet regarding autism and possible interventions, it is also difficult to decipher which interventions are research-based and proven and which interventions are the newest hoaxes. Therefore, having the guidance of professionals in the field is essential to ensuring that effective interventions are utilized.

Theme Three – Limited Daycare Options and Financial Stressors

Four out of 12 parents interviewed believed they had limited options for daycare and struggled finding and keeping childcare. They felt they had to quit their jobs in order to care for their child with an autism spectrum disorder. All of the families interviewed were also financially responsible for many of the interventions utilized. Both of these factors became financial stressors for the families.

Anne described her frustration with limited daycare.

I lost my job. Most people would view it as I quit my job to stay home with my kids. (Crying) I really lost my job. There was nobody to take care of him. It is easier to say that I quit my job to stay home with my kids and that I am lucky to do so, but that is not factual. That is not factual.

Beth also had to quit her job to stay home due to the lack of daycare available to her. She stated:

It took me 10 years to get my four-year degree and then I ended up quitting my job to stay home. It is very lonely, and it is something that people who have experienced it can really only talk about.

Dave and Lisa also had to make a choice regarding one parent quitting a job to stay home with Evan. In their case, it was Lisa.

It is tough because usually both parents are working and trying to find a fit for a child with special needs. It gets to be a load. We had Evan in daycare when Lisa went back to work. All of a sudden we got a call from the daycare center saying that they didn't really know if Evan was the right fit for childcare. Basically, he got kicked out of daycare and I have heard that from other parents, as well. We had no choice. One parent needed to quit working. In our case it was Lisa. I am sure in most cases it is the mom who ends up quitting work to take care of the child. I can tell you about several families where the mom has quit her career to stay home for this same reason.

The lack of one parent's income may become a financial stressor for the family. In addition, the parents expressed that they are financially responsible for many of the therapies they choose for their child. Beth shared her feelings of anger at the lack of financial support for her child's therapies:

I get angry because the medical field and insurance companies in our state will not help me. They will not pay for anything. I would say financially it is a huge struggle when you are trying to help your child. Nobody wants to be accountable for any of it.

Upon hearing that many of the parents interviewed felt they had limited options for daycare, that they struggled finding childcare, and some had to quit their jobs in order to care for their child with special needs, the special education coordinator stated: This is very true and very stressful for parents.

The school psychologist agreed with this, as well.

I agree that there are little options for daycare for families of children with autism (as well as many other disabilities). I agree that some parents do quit their jobs in order to care for their child, depending on the severity of their child's needs and other family support.

In summary, finding childcare for children with ASD can be challenging. The parents interviewed in this study were often forced to make a decision regarding one parent quitting his or her job and staying home. Also, many of the therapy options, including applied behavior analysis, are expensive and the responsibility of the parents rather than their insurance companies. The lack of one parent's income and the added financial responsibility for therapies can become a hardship for many of these families.

Theme Four – Torn Between Child with ASD and Others

Six out of 12 parents interviewed expressed feelings of being torn between their child with the ASD, as well as other family members and friends. Dave described his feelings of being torn between Evan and his other family members and their friends. We are torn between our own lives at home, our work, and whether we should be with Evan more or with relatives. That is probably the biggest thing. Some weekends we would like to go home and visit Lisa's mom and dad or Lisa's brothers and sisters, but we

feel we need to see Evan every weekend. We are torn a little bit that way or sometimes we would like to see friends. That tears us a little bit, but we are making it work.

Cindy has three other children that she has to care for in addition to Landon. She has difficulty dividing herself between them and is constantly torn between them and Landon, along with time for her husband. She expressed the stress of this and the guilt she feels.

I think I get torn between how to get Landon better and my other three kids. I have talked about this to other parents, too. I know that he needs me the most, so I justify that in my mind. I want to perfectly divide myself up between my husband and my other kids and my job and myself. However, I think that guilt component would still be there.

Beth has many feelings of guilt associated with the amount of time she spends with Cory and her other children, as well as not being able to do things as a family.

There is that guilt with the other children. My life is consumed with autism and their lives are consumed by autism. Also, the fact that mom and dad cannot go everywhere with them, that we usually have to split up is not fair to them. There are all sorts of things that we want to do as a family that we can't. It is way too hard to bring Cory. We cannot go out to eat as a family. This is hard on everyone.

Karen has a daughter who is older than their son Hunter and feels badly that so much of their time and energy is focused on Hunter's therapy.

I think about his older sister, because we are so focused on all of Hunter's therapy. We are still trying to help her, but feeling like we don't give her enough time. She tells us that we don't give her enough attention, that it is always her brother. I often feel torn between the two of them and trying to give them enough time each.

The experts were asked to reflect upon the idea that some of the parents interviewed feel torn between their child with autism and their other family members. The school psychologist agreed with this.

They are torn between their child with autism and their other typically developing children who may not get as much attention because of the needs of the child with autism. In addition, they may feel separated from extended family members who do not want to spend time with their family, may feel uncomfortable around them, may be overly judgmental or blame the parents of the child with autism.

The special education coordinator agreed, as well.

This is also very true. The child on the autism spectrum consumes a lot of time, money, energy, effort, and emotional reserves. Many times the impact on the family unit is impacted greatly.

In summary, the parents interviewed for this study had a difficult time dividing their time among their other children, family members, and friends. When spending their time and energy on their child with autism, they had feelings of guilt regarding their other children. When focusing their time on their children without an ASD and other family members and friends, they experienced feelings of guilt because they were not spending this time on improving their child's disorder. These parents experienced this sense of being torn between the child with ASD and others important to them on a constant basis and struggled with finding a balance.

Theme Five – Concerns for the Future

Ten out of 12 parents interviewed expressed feelings of concern for what the future will hold for their child. They are anxious and worried about the unknown. Cindy exemplified this concern.

I worry about his future and if something would happen to me, what would happen to him. I am kind of the instigator for all of this.

Dave expressed his concern about Evan's future, as well.

Every day Lisa and I wonder about Evan's adult life – and if we think too much about it, we can make ourselves literally sick. We just have to concentrate on today. However, we never know what is going to be the future with Evan. He will teach us and we will figure it out as we go along. We are anxious and we are worried a lot, certainly there is not a day that goes by that there isn't a prayer or two said for Evan. Of course, my dad and mom have both passed away now and we certainly want for them to watch over him. We worry about his future and would like to make it as trouble free and as easy for him as possible.

Beth described her worries.

I am anxious and worried about Cory's future. I don't know what else to say there. I want him to be able to have a friend and I don't care if he knows his social studies, to be honest. More importantly, I want him to have a friend so that is what we will be working on in the next couple of years. I want him just to continue to get better.

Anne expressed her hope for Brandon to become independent enough to live on his own away from home.

It is important to me that Brandon moves away from me at some point. I really don't want him to live with me forever. That is my goal. When people ask how we do this, my answer is, "I do it because I want him to move away someday." You assume that that is going to happen with your kids. It might not happen here, but I really want it to. I mean that in the bad ways and in the good ways. I do mean that I really do want him to move away someday. I want him to go away. (Laughing) I know that doesn't sound nice, but I don't want to have to raise children until I'm 80. I would like them to live by themselves.

I would really like my kids to grow up and move away at some point. That is important to me. I don't know if that will happen with Brandon.

Sandy had many questions about what the future will hold for Max.

We just want Max to have a better future or more normal future. We just don't know where to go from here. Do we enroll him in college? I don't even know. Is he going to be able to get a job? I don't know. Is he going to qualify for disability services? How do we know?

Tonya worried about Tommy's future due to the cruelty of other children.

Socially things are so scary in this world right now. He can be taken advantage of so easily because he trusts everyone. Anyone could lead him to do anything and he would do it and he wouldn't think about it, even if he might think it is wrong. That is very scary for us. Kids are very cruel. As kids get older we see it more often. We try to teach him that he cannot do things that are wrong. I tell him, "Please don't do things that are wrong." It could happen – something could ruin his life, because he is a very trustworthy person.

The special education coordinator who was asked to review the themes has many years of experience working with families who have a child diagnosed with ASD. She has also accumulated many years working with families who have children diagnosed with other disabilities. She speculated about the concerns these families have for their child's future.

I think any parent with a child with a disability has a fear and worry as to whether or not their child can lead a productive and fulfilling life. This fear looms large.

Another expert in the field agreed with the special education coordinator, stating that this fear could be generalized to all parents who have a child with a disability. She also felt that parents of children with Asperger's Syndrome might not have this same fear. However, all parents who were interviewed in this particular study who have a child with Asperger's Syndrome expressed a concern for their child's future. In addition, in the first author's experiences working with parents of children with Asperger's Syndrome, she has heard them express concerns regarding their child's future. Although their concerns may be different from the concerns parents who have a child diagnosed with autism have, they are concerns, nonetheless.

To summarize this theme, the parents interviewed in this study were anxious and worried about the unknown or future for their child. These concerns varied from having real friendships to having the ability to live and work independently. There were also concerns about what would happen to their child after they, the parents, die.

Theme Six – Judgment of Others

Five out of 12 parents interviewed expressed the feelings of being judged by the public due to the fact their child may look “normal” but does not behave that way. Their child may have a meltdown in a public place and the stares of strangers are difficult for these parents to bear. Their child may also engage in abnormal behaviors which, in turn, lead to stares.

Genna described the uncomfortable feelings she has when she goes out in public with Jonah.

It is so hard because I think people look at me like I can't control my kid, but if they only knew. I want to tell everyone, but I would never be able to leave the store. Do I put a shirt on him every day when we go to Wal-Mart that says, "I don't misbehave. I can't help it, I am autistic."? People look at me like I cannot control my kid, but I don't owe them an explanation anyway. But it is hard because they look at me like that.

Tonya explained the frustration she has with the lack of knowledge the general public has regarding ASD.

I just think our public, in general, doesn't have the knowledge about this population. Some people are so quick to judge and don't want to look beyond what is normal in their world. Just because a child looks normal doesn't mean they are normal. Like Tommy, he looks normal, but he has these goofy behaviors, and there are many times that we have been looked at and I think, "He is our son, and we are doggone proud of him." They don't know what he is going through. He may want something or there may be a schedule change. Sometimes he can handle it and other times he may melt down. However, we may be at a store or a restaurant and he may start crying and people will stare because here is this big kid crying.

Karen and Jason described an outing that Hunter and his after-school therapist took to a local pizza restaurant. While waiting for their pizza to arrive, the therapist was conversing with Hunter and he was engaging in some abnormal behaviors, such as blowing bubbles with his spit and repeating things from favorite television shows. Another table of customers asked the therapist to leave with Hunter, because they felt that his behavior was inappropriate. Karen stated that this sort of thing is very common when they go on outings and wishes that there were something she could do. She also stated that the stares from others are very uncomfortable.

One expert in the field had the opportunity to assist parents with community outings early in her work with the autism population. She described her thoughts regarding the judgment the parents of these children feel, along with the anxiety of taking their child with them to do simple errands.

I strongly agree with the statement that the parents of children with autism feel judged by others because their child looks "normal." In addition, I feel that sometimes the parents

themselves may get angry with their own children for the same reason and may not understand that their child does not choose to behave in an autistic way. For parents of children with autism going in public causes great anxiety, even running routine errands such as shopping or eating out.

Another expert supported this.

This is absolutely true. I have heard quite a few sad stories about times when people who didn't know the "whole story" judged these kids and their parents inappropriately and harshly.

In summary, autism has been described as an "invisible disorder" in that these children typically look "normal." Due to the "normal" look of these children, people, who do not understand ASD, often wrongfully judge these families and children by expecting them to act and behave as a typically developing child would behave. The judgmental stares and comments made it difficult for parents interviewed in this study to take their children out in public.

Theme Seven – Parent Perceptions of Vaccinations

Seven out of 12 parents interviewed felt that vaccinations may have played some role in causing their child's ASD. They felt that this might be due to an innate sensitivity their child had, timing of the vaccinations, or multiple doses given at the same time. After looking at the interview affect cards and picking up the "strong conviction or belief" card, Anne discussed her views about vaccinations.

I strongly believe that immunizations are a problem. It took me a long time to say that out loud. I had to be very sure of that. I know that most people think that is just insane to think that vaccines that save lives can harm our kids. I don't think we should not vaccinate our kids, but I do think there is a smarter way instead of treating all kids the same, as if they all weigh the same, as though nothing could ever go wrong. I believe that vaccines are about pharmaceuticals making money. I blame food allergies and vaccinations for Brandon's autism – those two things combined. I don't know what came first, the chicken or the egg, but he just was not able to tolerate his immunizations like most kids can, probably due to the make-up of his body previous to the vaccinations.

Beth also discussed a similar conviction.

I would say a strong conviction or belief is that vaccines have something to do with autism – Cory's autism. In fact, there wasn't really a period when he was really healthy. Even if he was healthy for a week, he probably shouldn't have been given five vaccines at a time if he was still struggling. If I were to go back now, I surely would have done it differently. I would have vaccinated later and split them up instead of doing combination vaccines or any of that. It seems like once he got five in one day it just tipped him over the edge. There is a lot of controversy out there. You just don't know if your child might have that immune disorder that might tip them over the edge. Cory did get a flu vaccine,

which nobody else in my house has ever gotten. He got it at 12 months along with three other shots at that time. After that he got really sick, really, really, really □sick – asthma, bronchitis, always on medicine. He didn't sleep ever. He wasn't that get up in the middle of the night and giggle or talk to himself kind of kid autistic child, he was up crying a lot and did not feel good and couldn't breathe.

Justin described his feelings about vaccinations, as well.

I don't think autism is probably caused by vaccinations but, I do think it is the overall cause of that coming into their system, a person who cannot handle it, probably accelerates that a little bit. I am not so sure that he would be any different any other way. It is just that, it seems like a lot of things became more pronounced at that time or if it was just his age or his vaccine.

Karen added to Justin's thoughts.

I think that vaccines should not be a one size fits all sort of thing, especially for kids who are sick or behind, maybe they should spread them out so they don't get such a big jolt of them all at once. We never did give Hunter his third MMR shot; I don't know, it was just at that time he was doing so much better that we just wanted to revert back to what he had been. Who knows if that is the right call or not, we will never know, but, I don't know. I think it is genetic, but I also think that there is something environmental that is making it happen, too. I don't know. That is the time that all these kids seem to change, so it really makes you wonder if there isn't some sort of connection, but I think it is inborn, too.

Cindy also discussed her belief about the role vaccinations play in causing autism disorders.

I always ask myself about what if I wouldn't have given Landon the flu shot when he was sick or given him vaccines when he was ill or if I should have spread them out. I think that for some kids vaccinations can definitely cause their autism. I believe that it was the vaccines that spiral them down into this world. I think that for some kids it can be part of it. I think there is definitely a genetic component, too. I think that we need to do our homework a little bit better before loading these kids up with vaccines. I think that we can spread vaccines out; that they don't need to be given nine at once. I do believe that they can wait until the age of two to vaccinate and that some kids probably shouldn't be vaccinated at all. However, I don't think it should be up to the parents to decide. I think that mainstream medicine needs to get in touch with that. I don't know when that is going to happen. I think it deserves to be researched, but it hasn't so far. I don't think that full load of vaccines caused Landon's autism. I think the vaccines that he got when he was so sick maybe pushed him over, but I think he was already somewhat there. He just wasn't as deep. That is how I feel. I am not antivaccine, but I am anti-crap in our vaccines. I think that we really need to look at the specific contents. It is not just the thimerisol, it is also the aluminum and lead that don't need to be there.

Dave described his view of vaccinations.

The “experts” are telling us there is not a link between autism and vaccinations. If someone finds a link, certainly I would be one of the first to have Evan tested to see if there is a causal relationship. Certainly there was no indication of Evan having any disability until around 12-18 months, so to say I believe there is no link wouldn’t be exactly correct either, but we can’t change what has happened.

When asked to reflect upon the idea that vaccinations may play a role in the cause of ASD, all experts asked did not feel comfortable drawing conclusions on this topic and did not feel they had spoken about this topic to many of the parents to give adequate thoughts. One expert stated:

I agree with this statement in that some individuals and families do believe that vaccinations may have played a role in causing autism, but there are also many families who do not believe this to be true. It is my understanding that the preservative used in some vaccinations is in question in addition to the innate sensitivity, timing, and dosage. I personally do not believe that the research is conclusive enough one way or the other to take a stance on this issue.

To summarize this theme, several parents interviewed felt that vaccinations may have played some role in causing their child’s autism. They felt that this might have been due to an innate sensitivity their child had, the timing of the vaccinations, or multiple doses given at the same time.

Limitations

The purpose of this study was to understand the experiences and perceptions parents of a child with an ASD have had that may provide parents of a child newly diagnosed with an autism spectrum disorder a better experience. Participants in the study were parents of male children diagnosed with an ASD, including Autism, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), or Asperger’s Syndrome, who were selected for interviews from four different geographical locations within a pre-designated state in the Midwest. The majority of these parents attended regularly scheduled support group meetings in their communities, which may have led to the possibility of groupthink. Groupthink refers to the idea that the members of the support group have cohesive ideas rather than independent thoughts. The geographic location, lack of parent participants of female children, and the possibility of groupthink, result in parents’ experiences not being representative to all parents with children diagnosed on the autism spectrum.

Conclusions

Parents interviewed in this study felt constantly faced with barriers and complications while raising their child. One of the first barriers originated with the realization that their

child was not developing typically and continued throughout the diagnostic process, which often spanned a long period of time and/or numerous doctor visits. This continued as parents were given very little guidance from the medical community about how to proceed with therapy options, resulting in the parents becoming self-educated. The complications continued as parents became overwhelmed by the amount of information they encountered in their search for answers and were faced with making decisions for how to help their child.

The parents in this study also felt constantly scrutinized by outsiders, making it difficult for them to engage in many community activities as a family. Many of these complications were chronic, in that they continued throughout numerous everyday experiences and were the direct result of raising a child on the autism spectrum while continually searching for answers. The complexity of decisions persisted throughout periods of crisis, such as preparing for transitions, both big and small.

Recommendations

Recommendations for Medical Professionals

Parents of children with an autism spectrum disorder are often left with many questions and few answers upon learning of their child's disability. Participants in this study felt lost and were given very little guidance from the medical professionals regarding what steps to take or interventions to pursue to improve their child's level of functioning. Therefore, these parents became self-educated on the topic of ASD primarily through information provided to them via the Internet. Once a diagnosis of ASD is confirmed, it is the responsibility of the medical community to provide parents with information regarding research based interventions and therapies for children with ASD. This practice would give parents a starting point for helping their child. Furthermore, medical professionals should provide the parents with information regarding where to go for additional help, guidance, and services that would assist them in getting interventions in place for their child as soon as possible after receiving the diagnosis.

Recommendations for Research

Continued research is needed regarding the experiences and perspectives of parents who have children with ASD. As stated in the limitations, the geographic location, lack of parent participants of female children, and the possibility of groupthink, result in parents' experiences not being representative of all parents with a child diagnosed on the autism spectrum. Conducting research studies involving parents of children with a single, specific autism spectrum disorder, children of similar age groups, and parents of female children would result in richer, more vivid experiences that may be generalized across a multitude of situations.

Closing Statement

Raising a child with an autism spectrum disorder, as well as any disability, is challenging. The provision of support, guidance, and information to the parents of these children is not only essential to ensure that these children receive proven interventions in their

programming, but it also empowers the parents with knowledge at the beginning of their journey and ultimately throughout.

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High Fructose Corn Syrup, Mercury, and Autism - Is there a Link?

Heather A. Opalinski

Abstract

The purpose of this article is to review relevant background literature and research regarding the evidence linking high fructose corn syrup (HFCS), mercury, and the increased incidence of autism among the population in the United States. Results of review suggest that rigorous scientific studies need to be performed to conclusively identify the link between autism and HFCS containing mercury. In addition, if factories continue to use mercury to process HFCS, a warning label identifying mercury in foods containing HFCS is absolutely necessary. In terms of practice implications, parents are often in the position of deciding which foods their children will consume in their daily lives. Families need to be informed to the current and credible evidence to make healthy decisions for their children and themselves. Excellent high fructose corn syrup information as well as, mercury resources are available online.

High Fructose Corn Syrup, Mercury, and Autism - Is there a Link?

The purpose of this article is to review relevant background literature regarding the evidence linking high fructose corn syrup (HFCS), mercury, and the increased incidence of autism among the population in the United States. Consumption of mercury primarily from dietary sources, such as high fructose corn syrup (HFCS), is related to the increased prevalence of autism (Wallinga, Sorenson, Mottl & Yablon, 2009). This literature review provides information regarding the relationship between the raise of autism and the increase use of high fructose corn syrup (HFCS) in everyday foods. High fructose corn syrup is being consumed in massive amounts in everyday diets, particularly in children (Ray, 2008).

A brief review of the literature pertaining to the increase in autism, the increase of high fructose corn syrup (HFCS) found in foods, the effects of HFCS and addressing the finding of mercury in HFCS are included for examination (Dufault, Le-Blanc, Schnoll, Cornett, Schweitzer, Wallinga, Hightower, Patrick & Lukiw, 2009). For illustrative purposes, research is provided linking HFCS and mercury to the increase in neurological defects found in the brain, which are similar to those with autism (Default, Schnoll, Lukiw, LeBlanc, Cornett & Patrick, 2009).

Autism

What is autism? According to the American Psychiatric Association, autism is defined as, "Autism is the most severe developmental disability, involving impairments in social interaction—such as being aware of other people's feelings—and verbal and nonverbal communication" (American Psychiatric Association, 2000). Autism is a relatively low-

incidence developmental disability that results in impairments of socialization, communication, and imagination (Frith, 1991). People with autism often exhibit major language problems such as delayed or absent speech. Repetitious behaviors often occur, such as rocking (Wing, 1991). Rituals seem almost universal among individuals with autism (Dewey, 1991; Tsai, 1992). Most people with autism also have severe intellectual disabilities (Yeung-Courchesne & Courchesne, 1997).

The understanding of autism has dramatically increased over the past 50 years. In the early 1940s Leo Kanner and Hans Asperger independently used the term "autistic" to describe children who appeared to have unusual reactions to sensory stimuli, exhibit stereotyped and repetitive behavior, lack imitative responses, desire sameness, and develop strong attachments to objects rather than people (Wing, 1991). Is the autistic brain neurology structured differently than "normal" developing brains? MRI scans of autistic brains showed abnormalities in the medial temporal lobe, including the hippocampus. Other scientific studies show biochemical abnormalities or abnormalities in the development of the cerebellum (Default, et al. 2009).

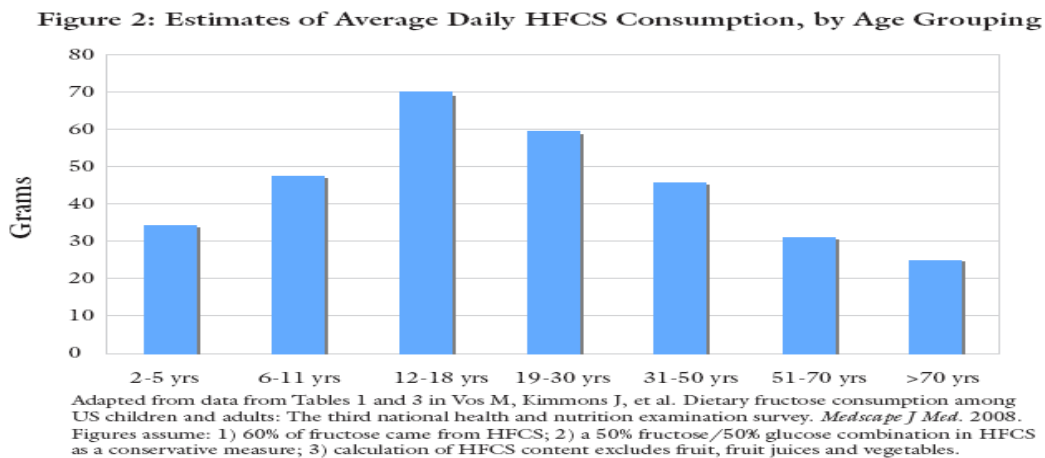
Some brain scans indicated that prenatal autistic brain development is abnormal. The scans also show evidence of regional cerebral blood flow abnormalities. These structural and biochemical abnormalities may account for the behavioral manifestations of autism and may also account for a psychological condition which prevents autistic people forming "theory of mind" (Default, et al. 2009). The person is unable "to predict and explain the behavior of other humans in terms of their mental states" (Carlson, 1994). Differences in neurological development can result in altered sensitivity to sound, touch, visual input, and movement (Default, et al. 2009).

Children with developmental disabilities by definition do not develop along the same paths as nondisabled children (Goldberg, 1981). According to Courchesne and Townsend (1995) pervasive developmental disabilities affect the individual from infancy. Researchers suggest that difficulties with communication, social interaction, organization, and attention are symptomatic of damage to specific areas of the central nervous system (Default, et al. 2009). However they disagree on the exact site of the damage (Cox & Mesibov, 1995).

Furthermore, food allergies and sensitivities have been shown to produce a variety of neurological signs associated with autism (Default, et al. 2009). Neurons lacking in plasticity are a factor in neurodevelopment disorders such as autism and mental retardation. Nutritional deficiencies and mercury exposure have been shown to alter neuronal function and increase oxidative stress among children with autism (Default, et al. 2009). Mercury, either individually or in concert with other factors, may be harmful if ingested in above average amounts or by sensitive individuals (Default, et al. 2009). High fructose corn syrup has been shown to contain trace amounts of mercury as a result of some manufacturing processes, and its consumption can also lead to zinc loss, which is needed for the elimination of mercury from the body (Default, et al. 2009).

High Fructose Corn Syrup (HFCS)

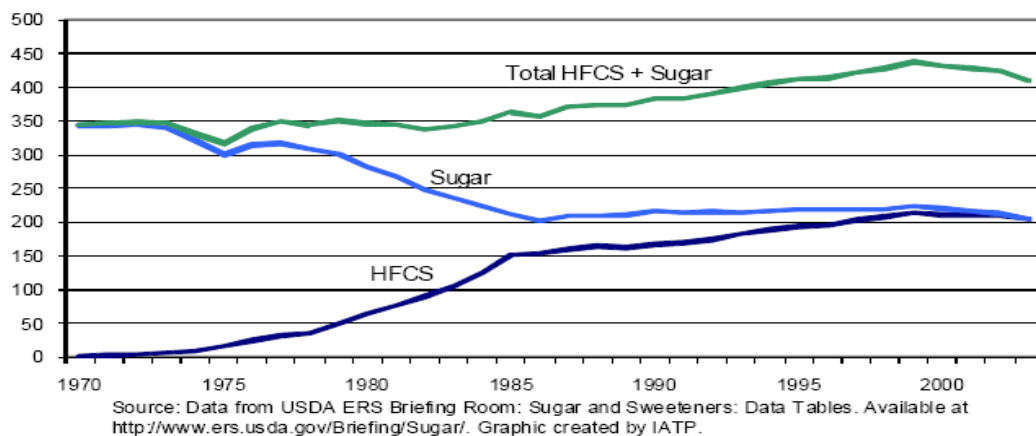
High fructose corn syrup has been announced as being a health danger, while the Corn Refiners Association shouts the additive is safe (Wallinga, Sorenson, Mottl & Yablon, 2009). The bottom line of the corn refiners' stance is the consumer who chooses not to use products with corn syrup is simply misinformed as to how safe corn syrup is, especially in moderation. Are children moderate in their intake of high fructose corn syrup? Are pregnant women moderate in their use of this substance? According to Fig. 2, the highest consumers of HFCS are two groups ages 12-18 and 19-30 years old, presumably the years when women reproduce the most often.



Source: Fig. 2- Wallinga, Sorenson, Mottl & Yablon , 2009. Not so sweet: Mercury and high fructose corn syrup. Institute for Agricultural and Trade Policy.

Today, high fructose corn syrup is in almost everything you buy, from sodas to catsup (Ray J, 2008). It wasn't until the 1970's that high fructose corn syrup was created from the sugar in corn (Wallinga, Sorenson, Mottl & Yablon, 2009). This sweetener is certainly sweet, easy to make and cheaper than sugar. Many companies jumped on the high fructose corn syrup bandwagon, from sodas to pasta sauces to catsup to beer and even so-called health bars (Ray J, 2008). Take a look in your cupboard and start reading labels, you will be surprised at how many products contain this syrup. With regards to food allergies and intolerances, high fructose corn syrup is a major factor in behavior and intolerant reactions in both children and adults today (Wallinga, et al. 2009).

Figure 1: HFCS vs. Table Sugar (Sucrose) Consumption



The diets of many today include daily sodas, which are filled with high fructose corn syrup. Juices and juice boxes are higher in HFCS. Snack bars, candy and many other snacks contain this syrup (Ray, 2008). You can even be consuming it unknowingly, while dining on spaghetti, adding some pizzazz with Worcester sauce, or dipping something into catsup (Wallinga, et al. 2009). How common is HFCS in everyday foods? Check any label and you're likely to find high fructose corn syrup listed as an ingredient. Not only is it an ingredient, but it is usually second or the third ingredient listed. Consumption of HFCS jumped 135% from 1977 to 2001(Wallinga, et al. 2009).

Corn syrup is found in everything from cereals to breads, frozen foods to condiments, especially in children's snack foods. Sometimes surprisingly, HFCS is a component in so-called "health" foods such as protein bars, granola, and sports drinks (Ray, 2008). Unfortunately, HFCS is most often the primary sweetener in juices and soft drinks, which children consume readily. Between 1978 and 1998, soft drink consumption among youth ages 6 to 17 years increased 48% (Ray, 2008).

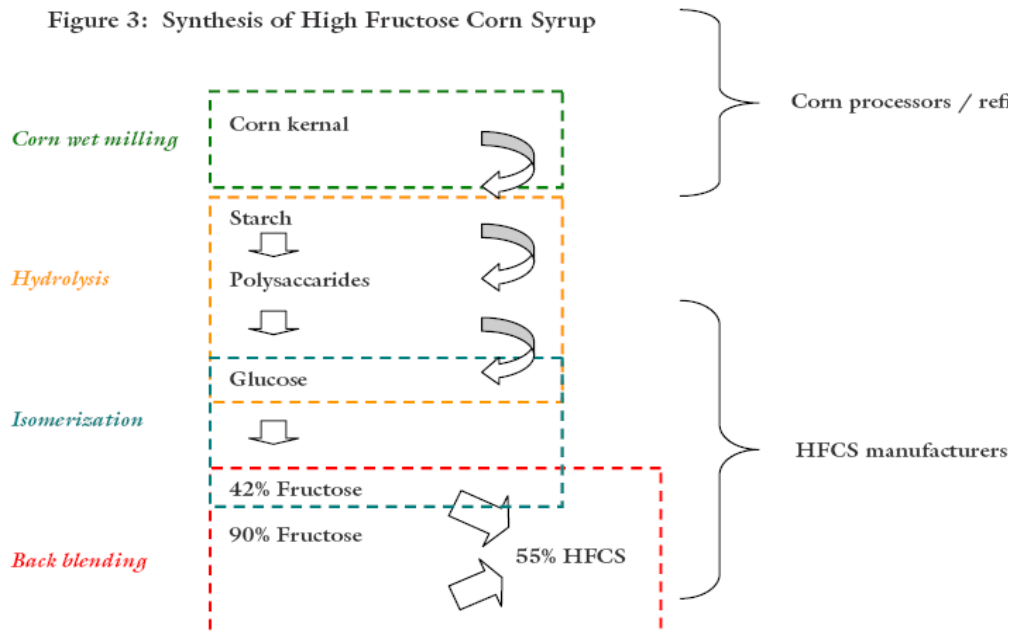
Addressing Mercury in HFCS

Mercury cell chlor-alkali products are used to produce thousands of other products including food ingredients such as citric acid, sodium benzoate, and high fructose corn syrup. High fructose corn syrup is used in food products to enhance shelf life (Ray, 2008). A pilot study was conducted to determine if high fructose corn syrup contains mercury, a toxic metal historically used as an anti-microbial. At *Environmental Health*, researchers studied high fructose corn syrup samples from three manufacturers, finding levels of mercury ranging from below a detection limit of 0.005 micrograms to detectable 0.570 micrograms mercury per gram of high fructose corn syrup (Default, et al. 2009). Average daily consumption of high fructose corn syrup is about 50 grams per person in the United States (Default, et al. 2009). With respect to total mercury exposure, it may be necessary to account for this source of mercury in the diet of children and sensitive populations since it is consumed so readily and in such large amounts (Default, et al. 2009).

Chlorine and caustic soda are produced at chlor-alkali plants using mercury cells or the increasingly popular membrane technology that is mercury free and more energy-efficient. Worldwide there are approximately fifty mercury cell chlor-alkali plants in operation (Oceana, 2010). Of those eight are in the United States (Environmental Protection Agency, 2009). In 2003 the EPA reported in the Federal Register that on average approximately seven tons of mercury were missing from each plant in the year 2000 (National Archives and Records Administration, 2000). These chlor-alkali plants have an average of fifty-six cells, each containing as much as 8,000 pounds of mercury (Natural Resource Defense Council, 2009) and, every year the chlor-alkali industry reports unaccounted for mercury losses to the EPA (United States Environmental Protection Agency, 2009).

Mercury is a danger to unborn children whose developing brains can be damaged if they are exposed to low dose microgram exposures in the womb (Goldman, 2001). Since mercury is a potent neurological toxin, these unaccounted for mercury losses from the chlor-alkali industry and the large amounts consumed daily through HFCS could be a source of exposure for fetuses, humans, wildlife, and the environment. An Environmental Health Officer (EHO) at the Food and Drug Administration (FDA) conducted an investigation to find the missing mercury in the chlor-alkali industry (Wallinga, et al. 2009). A representative of the Chlorine Institute confirmed in a telephone interview that the amount of mercury residue in mercury cell chlor-alkali products varies; depending on the manufacturing process at each plant (Gross, 2009).

Mercury grade caustic soda and hydrochloric acid are primarily used by the high fructose corn syrup industry (Wallinga, et al. 2009). HFCS industry uses both mercury grade caustic soda and membrane grade caustic soda in their manufacturing process to enhance product and indeed used as a sweetener by food manufacturers to stabilize food products and enhance product shelf life (Ray, 2008). Several chemicals are required to make HFCS, including caustic soda, hydrochloric acid, alpha-amylase, gluco-amylase, isomerase, filter aid, powdered carbon, calcium chloride, and magnesium sulfate (Tufts University, 2007). The caustic soda and hydrochloric acid are used throughout the milling process to adjust the pH of the product line (Krisberg, 2009). The product line starts with corn and the cornstarch molecule is then converted to different products by various methods that involve acids, bases, sodium hypochlorite and enzymes (Wallinga, et al. 2009).



Source: Fig. 3- Wallinga, Sorenson, Mottl & Yablon, 2009. Not so sweet: Mercury and high fructose corn syrup. Institute for Agricultural and Trade Policy.

Should mercury grade caustic soda, hydrochloric acid, or sodium hypochlorite (derived from mercury grade chor-alkali chemicals) be used in the milling process? It seemed likely to the EHO that mercury may well end up in the final product – HFCS. A limited screening of HFCS samples for mercury was initiated by the EHO and researchers at NIST found low levels of total mercury (Default, et al. 2009).

To determine the extent of total mercury in HFCS products, the EHO then used additional government resources to collect HFCS samples from different manufacturers and collaborate with individuals outside of the federal government to analyze the samples for total mercury content. It should be noted that these activities occurred before the EHO retired in January 2008 (Default, et al. 2009).

A list of the foods that were recently tested for total mercury along with the results of the analyses may be found at the FDA website (Lurgi Life Science GmbH, 1999). In 2003, FDA tested 48 foods for mercury during the TDS and of those only three may have contained HFCS (Wallinga, et al. 2009). However, in January 2009 a study, "Not So Sweet: Missing Mercury and High Fructose Corn Syrup" reveals the presence of mercury in 17 of 55 brand-name food and beverage products that contain HFCS, or one-third of those selected products taken from store shelves in the fall of 2008 (Wallinga, et al. 2009). The average daily US consumption of HFCS for the year 2007 was approximately 49.8 g per person according to the US Department of Agriculture website (United States Department of Agriculture, 2007). High-end consumers of beverages sweetened with HFCS could easily be ingesting more HFCS than the average person. Results of a recent study of dietary fructose consumption among US children and adults indicate that

fructose consumption by Americans represents ten percent (10%) of calories consumed in a 24-hour period (Vos, et al. 2008).

Table 2.	No. of Samples	No. with detectable mercury (above LOD)	Mercury detected
Beverages	19	3	15.8%
Dressings and condiments	10	4	40.0%
Dairy products*	5	3	60.0%
Snacks and desserts	8	3	37.5%
Soups and entrees	3	1	33.3%
Syrups and jellies	10	3	30.0%
Total	55	17	30.9%

* Two of three dairy products with detectable mercury were chocolate milk, which also could easily be categorized as beverages.

Source: Table 2- Wallinga, Sorenson, Mottl & Yablon, 2009. Not so sweet: Mercury and high fructose corn syrup. Institute for Agricultural and Trade Policy.

According to Table 2, mercury is detected in everyday items that contain HFCS. Mercury in any form, either as water-soluble inorganic salt, a lipid-soluble organic mercury compound, or as metallic mercury, is an extremely potent neurological toxin (Wallinga, et al. 2009).

Organic mercury compounds such as methyl mercury that are fat-soluble and readily cross the blood brain barrier are especially damaging to developing nervous tissues (Langford & Ferner, 1999) and (Castoldi, Johansson, Onishchenko, Coccini, Roda, Vahter, Ceccatelli & Manzo, 2008). For example, prenatal exposure as low as 10 mg/kg methyl mercury, as measured in maternal hair growing during pregnancy, may adversely affect the development of the fetal brain (Castoldi, et al. 2008) and (Myers & Davidson, 2000). Confounding associations and concerns with various stages of brain development related to cumulative early life exposure to mercury include the following sources of mercury: maternal fish consumption during pregnancy, the thimerosal (sodium ethylmercurithiosalicylate, approximately 49% mercury weight) content of certain vaccines and dental amalgam (Oken & Bellinger, 2008).

There has never been a blinded, placebo, controlled study published giving humans mercury or methyl mercury, nor would this kind of study be ethically considerable. Quantitative information on long-term effects of inorganic mercury compounds on humans does not exist. Inorganic mercury compounds react with DNA and are clastogenic, which can cause breakages of chromosomes (World Health Organization, 2009). Because the mechanisms of these reactions remain unknown, it is currently impossible to establish a safe level of mercury for humans. The implications for mercury in ingested HFCS are not known and clearly more epidemiological and neurotoxicological studies are required (Wallinga, et al. 2009).

An EHO at the FDA conducted an investigation of the chlor-alkali industry in 2004 and found mercury residue in all of the mercury cell chlor-alkali products including caustic soda, chlorine, potassium hydroxide, and hydrochloric acid. Mercury is widely accepted

to be a neurotoxic heavy metal (Agency for Toxic Substances and Disease Registry). The American Academy of Pediatrics has recommended that minimizing any form of mercury exposure is essential for optimal child health and nervous system development (Goldman & Shannon, 2001). Current international food processing standards allow 1.0 µg mercury/g caustic soda (Institute of Medicine: Food Chemicals Codex, 2003) and (World Health Organization) and there is no standard for mercury in food grade hydrochloric acid. Both of these chemicals may be used to make HFCS (Wallinga, et al. 2009).

Linking Mercury, HFCS, and Autism

Mercury contamination of food products as a result of the use of mercury contaminated HFCS seems like a very real possibility (Wallinga, et al. 2009). With daily per capita consumption of HFCS in the US averaging about 50 grams and daily mercury intakes from HFCS ranging up to 28 µg, this potential source of mercury may exceed other major sources of mercury especially in high-end consumers of beverages sweetened with HFCS (Gross, 2009). Food products that contain a significant amount of HFCS should be tested for mercury contamination in the end product and the public should be informed of any detections.

In 2004, a study led by Raymond F. Palmer, et al. of the University of Texas Health Science Center in San Antonio compared the rate of special education programs in Texas and the amount of mercury found in the environment and the results were alarming: "On average, for each 1000 lb of environmental mercury released, there was a 43% increase in the rate of special education services and a 61% increase in the rate of autism" (Palmer, Blanchard, Stein, Mandell & Miller, 2009). He conducted a second study from February 2008 that took into account the proximity to sources of mercury output -- like coal-fired utility plants, which account for 33% of the 158 tons of mercury spewed into the atmosphere annually, municipal/medical incinerators, which account for 29%, commercial/industrial boilers, which account for 18%. This second study found that "for every 10 miles from industrial or power plant sources, there was an associated decreased autism Incident Risk of 2.0% and 1.4%, respectively" (Palmer, et al. 2008). In other words, the study found the more mercury in the environment of a child or woman of childbearing age, the more likely for the child to develop autism (Oken & Bellinger, 2008).

The reason that HFCS contains mercury is so alarming is two-fold: First, the FDA had evidence of this in 2005 and did absolutely nothing. No testing, no warning the companies using the tainted HFCS to produce their ketchup, chocolate syrup, cereal bars and soda (Krisberg, 2009). Therefore, more time has passed when mercury could bio-accumulate in humans. Second, there has been a previous association made between diet and autism, and particularly HFCS has been singled out as a cause for worsening the disorder (Wallinga, et al. 2009). This means that there has been a growing body of evidence relating mercury to autism for some time, in which HFCS is only a new development (Langford & Ferner, 1999). This could amount to one of the worst scandals by our government, which has been sitting on the evidence of mercury's relationship to

our health for too long, and if this is not true, could be testing HFCS further to dispute the findings of mercury found.

In 2005, Robert F. Kennedy, Jr. saw the correlation between autism and childhood vaccines (Mickleborough, 2009). It became clear to him that the parents of autistic children who blamed the vaccines for their child's disorder were onto something. He stumbled onto a report from a conference in 2000 called Simpsonwood, where high-level officials from the FDA and Center for Disease Control (CDC), the top vaccine specialist from the World Health Organization in Geneva, and representatives of every major vaccine manufacturer, including GlaxoSmithKline, Merck, Wyeth and Aventis Pasteur gathered to discuss a new study that linked a mercury-based preservative in vaccines to increasing rates of autism (Myers & Davidson, 2000). This group, instead of changing direction, and assessing the data, decided to cover up the research to presumably save the companies' bottom line.

Mercury is a potent brain toxin that we know accumulates in fish and seafood, although diet is not the only route by which we are exposed (Wallinga, et al. 2009). When babies are exposed to elevated mercury in the womb, their brains may develop abnormally, impairing learning abilities and reducing IQ. For these youngest children, the science increasingly suggests there may be no "safe" level of exposure to mercury (Weiss, 1994). Yet for decades an increasingly common ingredient in processed foods, HFCS, has been made using mercury-grade caustic soda. "Mercury-grade," also known as "rayon grade" caustic soda, comes from chlorine plants still using an outdated 19th century technology that relies on the use of mercury (Wallinga, et al. 2009). While most chlorine plants around the world have switched to newer, cleaner technologies, some still rely on the use of mercury. These mercury cell plants may rival coal-fired power plants as sources of mercury "leaked" to the environment. What has not been publicly recognized is that mercury cell technology can also contaminate all the food grade chemicals made from it, including caustic soda, as well as hydrochloric acid. It was unrecognized, that is, until the lead author of the *Environmental Health* study, a longtime environmental investigator of the Food and Drug Administration (FDA), thought to look into it (Wallinga, et al. 2009). What was found was that possible mercury contamination of these food chemicals was not common knowledge within the food industry despite the availability of product specification sheets for mercury- grade caustic soda that clearly indicate the presence of mercury (as well as lead, arsenic and other metals) (Vos, et al. 2008). Through this public scientist's initiative, the FDA learned that commercial HFCS was contaminated with mercury (Wallinga, et al. 2009). The agency has apparently done nothing to inform consumers of this fact or to help change industry practice (Wallinga, et al. 2009).

Consumers probably are not the only ones in the dark. While HFCS manufacturers certainly should have been wary of buying "mercury-grade" caustic soda in the first place, the food companies that buy finished HFCS and incorporate it into their processed food products may be equally unaware of how their HFCS is made, i.e., whether or not it is made from chemicals produced by a chlorine plant still using mercury cells (Potts & Bellows, 2006). The HFCS isn't labeled "Made with mercury," just like contaminated pet foods, chocolates and other products have not been labeled "Made with melamine."

Under current regulations, that information is not made available to either consumers or to companies further down the food supply chain.

Study Found Mercury in Common Everyday Foods

In a January 2004 report from the Institute for Agriculture and Trade Policy, researchers detected mercury in almost one-third of 55 brand name food and beverage products in which the first or second labeled ingredient was HFCS (Wallinga, et al. 2009). The study included some of the most recognizable brands on supermarket shelves: Quaker, Hunt's, Manwich, Hershey's, Smucker's, Kraft, Nutri-Grain and Yoplait. Mercury was not detected in the majority of beverages tested (Wallinga, et al. 2009). That may be important since sweetened beverages are one of the biggest sources of HFCS in our diets.

Table 1: U.S. HFCS Consumption by Type of User Industry (thousand short tons)		
Industry	2002	Percent
Beverages (mostly soft drinks)	5270.2	57.0
Canned, bottled, and frozen foods	685.7	7.0
Bakery, cereals and allied products	513.1	6.0
Ice cream and dairy products	258.5	3.0
Confectionery and related products	83.0	1.0
Total	9294.0	
Source: Beghin JC, Jensen HH. Farm policies and added sugars in US diets. Working Paper 08-WP 462. 2008. Iowa State University. Calculated from U.S. Census Bureau data available as of February 2008. ⁴		

Source: Table 1- Wallinga, Sorenson, Mottl & Yablon, 2009. Not so sweet: Mercury and high fructose corn syrup. Institute for Agricultural and Trade Policy.

On the other hand, mercury was found at levels several times higher than the lowest detectable limits in some snack bars, barbecue sauce, sloppy joe mix, yogurt and chocolate syrup. Although closer to the detection limit, elevated mercury levels were also found in some soda pop, strawberry jelly, catsup and chocolate milk. The top products containing mercury are summarized in Table 3.

Table 3 indicates the food products for which total mercury was detected, highest to lowest.

Table 3.

Product Name	Total Mercury	Limit of Detection (ppt)
Quaker Oatmeal to Go	350	80
Jack Daniel's Barbecue Sauce (Heinz)	300	100
Hershey's Chocolate Syrup	257	50
Kraft Original Barbecue Sauce	200	100
Nutri-Grain Strawberry Cereal Bars	180	80
Manwich Bold Sloppy Joe	150	80
Market Pantry Grape Jelly	130	80
Smucker's Strawberry Jelly	100	80
Pop-Tarts Frosted Blueberry	100	80
Hunt's Tomato Ketchup	87	50
Wish-Bone Western Sweet & Smooth Dressing	72	50
Coca-Cola Classic	62	50
Yoplait Strawberry Yogurt	60	20
Minute Maid Berry Punch	40	30
Yoo-hoo Chocolate Drink	30	20
Nesquik Chocolate Milk	30	20
Kemps Fat Free Chocolate Milk	30	20

Source: Table 3- Wallinga, Sorenson, Mottl & Yablon, 2009. Not so sweet: Mercury and high fructose corn syrup. Institute for Agricultural and Trade Policy.

"Mercury is toxic in all its forms," said David Wallinga, MD, a co-author of both the report and article and director of the Food and Health Program at the Institute for Agriculture and Trade Policy. "Given how much high fructose corn syrup is consumed by children, it could be a significant additional source of mercury never before considered. We are calling for the Food and Drug Administration to help stop this avoidable mercury contamination of the food supply" (Wallinga, et al. 2009).

In response to the reports, the Corn Refiners Association said the findings were "based on outdated information of dubious significance," adding that the mercury levels found in the supermarket food products were "far below levels of concern" set by federal agencies (Gross, 2009). However, Wallinga noted that while the *Environmental Health* findings were based on samples taken in 2005, they are the only such high fructose corn syrup samples available. He said that if the "corn refiners or anyone else" has more recent samples of the food additive, in the form a food company would receive it before it is added to the final product, he urges them to make such samples available for study. He added that any level of mercury contamination should be viewed as undesirable. The U.S. Food and Drug Administration has long recognized that HFCS is safe. In 1983, the FDA listed HFCS as "Generally Recognized as Safe" for use in food, and reaffirmed that ruling in 1996 after a thorough review. However, the FDA did not conduct further testing despite the evidence of mercury found everyday common foods found in the supermarket (Gross, 2009).

Comments Regarding HFCS and the Corn Refiners Association

HFCS has made headlines before. The additive has been criticized by nutrition, whole-food and parent-advocacy groups for the correlation between increased consumption and rising obesity and diabetes rates in children. The Corn Refiners Association has staunchly disputed claims of the detrimental health effects of HFCS. It's released a slew of pro-HFCS advertisements touting the substance's "natural" origins (Gross, 2009).

Products have not yet been removed from grocery store shelves because the origins and legitimacy of the IATP study results are still being questioned by *corn* industry groups and implicated manufacturers. The researchers and scientists who compiled the IATP report suggest that the work in the study was "never intended to take the place of a full-scale safety test by the FDA." But they caution that the findings have serious implications for public health, since the U.S. consumes so many HFCS-containing products (Gross, 2009).

In a February 2009 press release, Corn Refiners Association (CRA) President Audrae Erickson said, "The article's authors and the IATP engage in unfounded claims and speculations based on scant data of questionable quality. High fructose corn syrup is safe for use in foods and beverages. To imply that there is a safety concern based on this incomplete and flawed report is irresponsible. The article and the report are based on outdated information of dubious significance" (Gross, 2009). The CRA questions the legitimacy of the IATP report because it is based on Food and Drug Administration (FDA) data from 2005. Former FDA researcher Renee Default and a team of scientists found that nine out of 20 products contained mercury, or 45% of the samples. But not until Default retired from the FDA in March 2008 were the findings made public (Gross, 2009).

Despite mercury contamination, HFCS continues to be used widely in the U.S. because it is significantly less expensive than table sugar. Sugar farmers do not receive subsidies in the U.S., which is why prices have generally been higher than those of corn. Most manufacturers switched to HFCS in the 1970s and 1980s, as corn subsidies made the sweetener extremely cheap as food manufacturers sought a less-expensive alternative to sugar (Zmuda & York, 2010). However, increased ethanol production in recent years has boosted the price of corn, and consequently corn sweeteners. According to the USDA, the average price of HFCS during fiscal 2009 was 31¢ a pound, while sugar prices averaged 36¢ a pound. Yet sugar prices have spiked dramatically in 2010, 53¢ per pound in February, compared with 27¢ for HFCS (Zmuda & York, 2010).

In response to consumer concerns with HFCS, the Corn Refiners Association has mounted a massive advertising and PR offensive to dispel the myth that corn sweeteners are less healthy than sugar. The organization's research underscores that the body processes all sweeteners the same, be they processed or natural. Working with the ad agency DDB and a team at Ogilvy Public Relations, the Corn Refiners Association has plowed more than \$30 million over the last two years into an ad campaign called; "*Sweet Surprise*" that highlights what it says are vague and unsubstantiated opinions (Gross, 2009). In one of the TV ads, a woman at a picnic stares critically at her friend who is

pouring a drink containing high-fructose corn syrup. "Wow, you don't care what the kids eat, huh?" she asks. When the mom can't identify why the syrup is so bad, she awkwardly changes the subject, announcing, "Love that top!" (Gross, 2009).

Among the numerous spoofs of the campaign, one of the more outrageous recreates the picnic scene with a man in drag playing the syrup-loving mom, though this time she is also defending lead from China, female genital mutilation ("It's safe in moderation") and K.K.K. cross-burning. Two Los Angeles comedians created the YouTube video, which has been watched more than 225,633 (YOUTUBE- HFCS Spoof, 2010). Clearly, there are still many who are not in favor of HFCS despite the Corn Associations efforts.

Ms. Erickson says she has heard of the spoofs but has not bothered to watch most of them. "We're really focused on trying to correct the record since a lot of the information consumers have is incorrect," she says. "High-fructose corn syrup is a case of mistaken identity." And as for those mercury studies that spread like wildfire last year, Ms. Erickson says that there is no reason to believe that the mercury detected in various foods was coming from high-fructose corn syrup. In a further attempt to improve its image, the Corn Refiners Association has petitioned the Food and Drug Administration to allow a name change to the simpler, "corn syrup" (Gross, 2009). In January, the FDA issued a letter to the Corn Refiners giving its thumbs-up to the name change. However, after an objection from the Corn Refiners' rival, the Sugar Association, FDA officials sent another letter saying that they needed to give the matter further thought (Gross, 2009).

The Quaker Oatmeal To Go Bar was one product found to contain mercury in its HFCS. Quaker Oats Company Public Relations Manager Candace Mueller says, "Based on our initial observations of the environmental health study, we are concerned that the methodology and assumptions relied on in the study are critically flawed and that their purported findings are insufficient to support their claims and to warrant alarm." Quaker will continue to sell the bars (Gross, 2009). The FDA suggests that the IATP report does not provide any specific information about "any appreciable risk from this potential exposure from mercury," saying, "The authors provide no information as to what form of mercury the total is comprised of. It is very probable that the total mercury level represents mostly inorganic mercury; this represents no health hazard since it is so poorly absorbed when ingested. In addition, the potential levels of exposure are extremely low" (Gross, 2009).

David R. Brown, Sc.D., director of public health toxicology at Environment and Human Health, Inc. and professor of environmental ethics at Fairfield University in Fairfield, Connecticut said, "Currently, under FDA guidelines, the products (listed in the IATP report) are not 'contaminated' but 'adulterated,' meaning that mercury is not meant to be there. It's not right to have mercury in Quaker Oats (bars) or any other food," he adds. Although many companies with products on the list have questioned the merits of the IATP report, the presence of mercury in any food sources leaves Brown concerned. "It's a situation that warrants more than passing attention," he says. "The major question is how in the world did we have mercury in food sources and nothing was done about it?" (Gross, 2009).

Saying Goodbye to HFCS

According to a recent article, “*Major Brands no Longer Sweet on High-Fructose Corn Syrup*,” consumers are demanding major brands are removing high fructose corn syrup from some of their products in favor of sugar. Few, however, are shouting it from the rooftops as it would cast a shadow on those products that still contain HFCS (Zmuda & York, 2010). As a result, sales of the ingredient have fallen in the United States were down 9 percent in 2009, compared with 2007. A further decline is expected this year (Zmuda & York, 2010). According to the NPD Group, a market research firm, more than half of all Americans, 53 percent, now say they are concerned that high fructose corn syrup may pose a health hazard, up from 40 percent in 2004 (Zmuda & York, 2010). Hunt's ketchup, Gatorade and Wheat Thins are all permanently ditching corn syrup for sugar. Heinz has created a sugar-sweetened version of its iconic ketchup, while Pepsi and Mountain Dew launched limited-time, sugar-sweetened versions of their colas. But with all of these reformulations, only Pepsi and Mountain Dew have made any noise to date (Zmuda & York, 2010). "We know moms don't like it, and they don't want to feed it to their kids," said supermarket expert Phil Lempert, who has pushed for HFCS removal for a decade. "As a result, the brands that lead the pack to get rid of it, they're going to see an uptick in sales." He added that the sugar shift is an easier one for consumers than say fat-free cheese. Most consumers either don't notice a taste difference or prefer the sugar version (Zmuda & York, 2010).

"We know HFCS was of interest to some of our consumers, but not all," a Wheat Thins spokesman said. The brand chose not to broadcast its shift to sugar, though it did market the broader product overhaul, focusing on the benefits of whole grains. New packaging references the lack of HFCS in the product, but it's "not a core message in our marketing," the spokesman said (Zmuda & York, 2010). Gatorade declined to share specifics of its marketing plans around the reformulation of Gatorade and G2. But a spokeswoman said that targeted communications are planned to address audiences who have expressed concerns about HFCS, namely moms and health professionals. "Removing HFCS is part of our long-term strategy to reinforce the functional benefits and quality of Gatorade and G2," she said. "Through our research and understanding of athletes, we have learned many have a negative perception of HFCS" (Zmuda & York, 2010).

Hunt's is planning to market its ketchup overhaul, hitting shelves in May. "We made the decision to take it out due to consumer's desire for shorter, simpler ingredient lists," a spokeswoman said, adding, "Consumers preferred the taste" (Zmuda & York, 2010). Kraft products that don't include the sweetener include the Back to Nature product line; Nabisco Oreo 100 Calorie Pack Chewy Granola Bars; Lunchables Pizza and some Kraft Salad Dressings. "We know some consumers are interested in items without high-fructose corn syrup, so we have eliminated it in some of our products," says a spokeswoman for the food maker. Kraft says it has no plan to eliminate HFCS entirely from its product line (Zmuda & York, 2010).

Further Action

On February 16, 2009 (ENS, 2009), the Obama administration reversed the former U.S. position on limiting mercury pollution worldwide. According to The United Nations Environment Programme Governing Council (UNEP) Executive Director Achim Steiner, "It covers reducing demand in products and processes - such as high intensity discharge vehicle lamps and the chlor-alkali industry - to cutting mercury in international trade," Steiner said. "Other elements include reducing emissions to the atmosphere, environmentally-sound storage of stockpiled mercury and the cleaning-up of contaminated sites." Steiner also stated that the mercury policy framework is the result of seven years of intense discussions spearheaded by UNEP and it represents the first, coordinated global effort to tackle mercury pollution (ENS, 2009).

The U.S. Environmental Protection Agency has determined that mercuric chloride and methyl mercury are possible human carcinogens and exposure to high levels of mercury can permanently damage the brain, kidneys, lungs, and developing fetus (ENS, 2009). "The Obama administration has clearly shown a new day has dawned for U.S. leadership and engagement with the rest of the world," said Michael Bender, director of the U.S.-based Mercury Policy Project, and a coordinator of the international Zero Mercury Working Group. "And the momentum created by the U.S. appears to be galvanizing other governments around the world to step up to address the global mercury crisis" (ENS, 2009).

Conclusion

Clearly, more research is needed to determine the extent of mercury exposure in contaminated HFCS in food products. Research is still unsure as to the exact cause or causes of autism in general. A thorough review of the literature indicates, among other things, that some researchers believe children's diets including high fructose corn syrup and mercury are a contributing cause of the increase of autism (Wallinga, et al. 2009). Dietary exposure to mercury can pose life-threatening risks to adults, children, and developing fetuses by attacking the nervous system (Default, et al. 2009). News reports and research that indicate mercury, whether present in fish, vaccines, high fructose corn syrup, proximity to coal-burning power plants or occurring naturally in the environment may be linked to increasing incidents of autism (Default, et al. 2009). Rigorous scientific studies need to be performed to conclusively identify the link between autism and HFCS containing mercury.

In addition, if factories continue to use mercury to process HFCS, a warning label identifying mercury in foods containing HFCS is absolutely necessary. Parents are often in the position of deciding which foods their children will consume in their daily lives. Families need to be informed to the current and credible evidence to make healthy decisions for their children and themselves. Most importantly, informing the population, especially families, on the possible dangers of HFCS is critical and the public must stop buying and consuming products that contain high fructose corn syrup until further action and research are taken.

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***The Use of a Functional Behavioral Assessment-Based Self Management Intervention
for Students with Emotional/Behavioral Disorders***

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Abstract

The research literature on the use of Functional Behavioral Assessments (FBA) to develop Behavior Intervention Plans (BIP) for students with emotional/behavioral disorders, who present problem classroom behaviors for use in the schools, is well documented. There are school-wide, district-wide, and state-wide plans that are currently being implemented to satisfy the requirements imposed by IDEA (2004). The results from this study indicate that both participants experienced a significant reduction in their problem behaviors. The FBA-based self-management intervention procedure was both less intrusive on the teacher's instructional time and effective, and can easily be incorporated into a student's BIP.

***The Use of a Functional Behavioral Assessment-Based Self Management Intervention
for Students with Emotional/Behavioral Disorders***

Since the 1997 reauthorization of the Individuals with Disabilities Education Act (IDEA), much has been made of the requirement to conduct Functional Behavioral Assessments (FBA) prior to developing or modifying a Behavior Intervention Plan (BIP). This requirement has generated an extensive body of research on the subject of conducting FBAs. While much of that work has focused on students with developmental disabilities, this article will focus on existing literature on the application of FBAs and intervention techniques to students with or at risk for emotional/behavioral disorders (EBD) who present problem behaviors. It will also focus on the new requirements for conducting FBAs under IDEA (2004) and the limited research base examining the use of FBA procedure with students with or at risk for EBD. Since one of the most important outcomes of FBA is using self-management to address problem behaviors, as they occur in the naturalistic environment of today's schools, the article will discuss self-management strategies as well as any trends in implementation procedures and

interventions derived from these skills for students with EBD. Finally, given the mandate under IDEA that local education agencies (LEA) conduct FBAs, this article will only identify those studies that were carried out in school-based, rather than clinical settings (Heckaman, ConAdam, Fox, & Chiat, 2000).

Definitions of Functional Behavioral Assessment

Functional Behavioral Assessment can be defined as a collection of methods for gathering information about antecedents, behaviors, and consequences in order to determine the reason (function) of behavior. Once the function of behavior is determined, this information is used to design interventions to reduce problems and to facilitate positive behaviors (Witt, Daly, & Noell, 2000). FBA is not a single test or observation, but rather a multi-method strategy involving observations, interviews, and review of records regarding student behavior, its antecedents and consequences. The central goal of FBA is to identify environmental conditions that are associated with the occurrence or nonoccurrence of problem behaviors. In this approach, the function of behavior is represented by a change in an independent variable (environmental conditions) and the effect is represented by a change in a dependent variable (behavior) (Skinner, 1953). It should be noted, however, that there are different kinds of functional relationships. Some functional relationships are correlational, meaning that certain environmental events are associated with the occurrence of certain behaviors. Other functional relationships may be causal in the sense that these environmental events are both necessary and sufficient for the occurrence of a behavior (Gresham, Watson, & Skinner, 2001; Johnson & Pennypacker, 1993).

The function of behavior refers to the purpose that behavior serves for the individual. Behavioral functions typically fall into five categories: (a) social attention/communication (positive social reinforcement); (b) access to tangibles or preferred activities (material or activity reinforcement); (c) escape, delay, reduction, or avoidance of aversive tasks or activities (negative reinforcement); (d) escape or avoidance of other individuals (negative social reinforcement); and (e) internal stimulation (automatic or sensory reinforcement) (Carr, 1994). Functional Behavioral Assessment and the Individuals with Disabilities Education Act of 1997

Functional behavioral assessments are addressed specifically in the section of the reauthorization of the Individuals with Disabilities Education Act (IDEA, 1997) regarding the suspension of students with disabilities who present problem behaviors. When school officials propose to take disciplinary action against a student that involves suspension in excess of 10 days, expulsion, or a change in placement, and if the local education agency (LEA) did not conduct a FBA and implement a behavior intervention plan for such a child before the behavior occurred, then the agency shall convene (the IEP team) to develop an assessment plan to address that behavior. Or, if the child already had a behavioral intervention plan in place, the IEP team shall review the plan and modify it, as necessary, to address the behavior (IDEA). The law requires an FBA and behavior intervention plan (BIP) when suspension, expulsion, or a change in placement is

contemplated. IDEA clearly anticipates that FBAs and BIPs will be included in the education programs of students with problem behaviors before such disciplinary procedures are needed (Yell & Shriner, 1997). This provision is the outcome of applied behavior analytic approaches and a strong research base that repeatedly has shown the utility of conducting functional assessments to develop effective intervention plans for students who demonstrate problem behavior.

Research on the Use of Functional Behavioral Assessments

Functional assessments provide information on environmental events that may predict the occurrence and nonoccurrence of problem behavior and the consequences that may be maintaining the problem behavior. In the functional assessment process, hypotheses typically are developed that describe the possible relationships between the predictor events, the problem behavior(s), and the maintaining consequences (O'Neill et al., 1997). Functional assessment procedures include indirect measures (e.g., interviews, rating scales, record reviews); direct measures (e.g., scatter plots; direct observation of antecedents, behaviors, consequences); and functional analysis, in which identified variables are manipulated experimentally to determine any functional relationships between the identified variables and the problem behaviors.

The research base on functional assessment, however, primarily reflects studies that have been conducted with students who have developmental disabilities (Blakeslee, Sugai, & Gruba, 1994; Nelson, Roberts, Mathur, Rutherford, & Aaroe, 1999). Fewer studies have been published extending this work to students who are higher functioning intellectually and/or at risk for emotional and behavioral disorders (EBD) (Dunlap et al., 1993; Fox, ConAdam, & Heckaman, 1998; Lewis & Sugai, 1996). Recently, a number of articles (Gable, 1996; Lane, Umbreit, & Beebe-Frankenberger, 1999; Nelson et al.; Sugai, Horner, & Sprague, 1999), books (Repp & Horner, 1999), and instructional manuals (McConnell-Fad, Patton, & Polloway, 1998; O'Neill et al., 1997) concerning the application of functional assessment procedures with students identified as having EBD have been published. While determining the application of functional assessment procedures and protocols for their use with this population of students certainly is important, of critical concern is the validation of these procedures. In other words, do interventions derived from functional assessment procedures result in positive outcomes for students with EBD; and, more specifically, are the interventions derived from functional assessment procedures more effective than interventions that are not based on these procedures (Nelson et al.; Schill, Kratochwill, & Elliot, 1998).

There is substantial research on the use of FBAs in the area of problem behavior, especially for individuals with developmental disabilities (Neef, 1994). Moreover, there is ample evidence that using FBAs to guide interventions is an extremely effective approach for reducing problem behavior in this population. For example, Didden, Duker, and Korzilius (1997) conducted a meta-analysis of treatment effectiveness for problem behavior of people who have mental retardation. Their meta-analysis included 482 empirical studies that addressed 34 distinct types of problem behavior (e.g., aggression, hyperactivity, and stereotypy). The results of this meta-analysis clearly indicated that

FBAs make an important and significant contribution to treatment success outcomes. Interventions derived from the results of an FBA that address the purpose (e.g., avoiding task demands) of problem behavior rather than the form (e.g., aggression) of the behavior are effective approaches for reducing problem behavior in people with developmental disabilities (Bird, Dores, Moniz, & Robinson, 1989; Carr & Durand, 1985).

Although procedures have been applied successfully in problem behavior interventions for people with developmental disabilities, FBA procedures have been used only recently with higher functioning students who exhibit problem behaviors (Dunlap et al., 1993; Gable, 1996; Kamps & Tankersley, 1996; Kern, Childs, Dunlap, Clark, & Falk, 1994; Reed, Thomas, Sprague, & Horner, 1997). Extending FBA procedures to higher functioning students with problem behavior may require some changes and refinements in the assessment process because of the differences between these students and students with developmental delays (Dunlap & Kern, 1993; Dunlap et al.; Reed et al.). For example, Dunlap et al. note that higher functioning students with problem behaviors often have average intelligence and well-developed language systems. Their challenges may be mainly in the areas of interpersonal relations, emotionality, and control over inappropriate behaviors. This makes the FBA of these students more difficult than the FBA of developmentally delayed, whose problem behavior often serves a communicative function (Carr, 1994; Carr & Durand, 1985; Sprague & Horner, 1995). The behavior of high functioning students with problem behavior may be quite complex, diverse, and variable, and therefore, identifying and defining the function(s) of their problem behavior is much more difficult. The application of FBA to higher functioning students with problem behavior can move teachers away from a punishment-oriented perspective and towards a proactive educational perspective (Horner, 1999).

A related area of needed analysis, however, is whether it is always necessary to conduct a functional assessment. In other words, do all behavioral challenges require the time and effort involved in conducting a functional assessment? Sugai et al. (1999) noted that simple behavior problems could often be resolved with an increased emphasis on preventative strategies and interventions that address those behavior problems; they do not require the more extensive functional assessment process. How we determine which behavior problems require a functional assessment to develop an effective intervention is an area that is not yet clearly defined.

Finally, the process by which interventions are developed from functional assessments needs further research. In the studies reviewed, it was not always clear how the functional assessment results led to the hypotheses and interventions that were developed. Both Horner (1994) and Heckaman et al. (2000) have addressed this issue, noting that we are better at describing the process involved in conducting a FBA than we are in describing how to develop an intervention based on the results of the assessment.

Defining Self-Management

The term self-management is sometimes used synonymously with the term self-control, a hypothetical construct sometimes referred to as will power, suggesting an internal source

of control (e.g., John has a great deal of self-control). In the discussion that follows, self-management refers to strategies that a person uses to alter his/her behavior, frequently to make a behavior less aversive to others and possibly to replace it with behavior more likely to be reinforced.

Self-management generally refers to actions designed to change or maintain one's own behavior (Shapiro, McGonicle, & Ollendick, 1981). Self-management interventions in the classroom involve teaching a child to engage in some behavior, such as self-monitoring, self-instruction, etc., in an effort to change the target behavior, e.g., completing a math problem, talking out in class, paying attention, etc. Although all self-management interventions assume that a child's behavior reflects a skill deficit, the broad umbrella of self-management encompasses a variety of approaches. These approaches vary from Applied Behavior Analysis (ABA) procedures emphasizing contingency management to cognitive behavioral approaches designed to teach children various mediational strategies (Kendall & Finch, 1978; (Robertson, Simon, Pachman, & Drabman, 1979)). Generally, contingency-based approaches target the consequences of the behavior, whereas cognitive-based procedures focus more on the antecedents of behavior (Shapiro & Cole, 1994).

A significant technology has been developed to teach self-management skills to children and adolescents. Examination of the literature shows that self-management strategies have been applied to children across assorted developmental levels, including preschool-age, elementary-age, and secondary-age students (Brigham, 1989; Connell, Carta, & Baer, 1993; Fantuzzo & Polite, 1990; Miller, Strain, Boyd, & Jarzynka, 1993). These strategies have been effective in working with students with a wide variety of handicapping conditions, such as severe, moderate, and mild levels of mental retardation, learning disabilities, and serious emotional disturbance (Hughes, Kornieck, & Gorman, 1991; Nelson, Smith, Young, & Dodd, 1991; Reid, 1996; Shapiro, Browder, & D'Huyvetters, 1984). Further, self-management strategies have been applied across a wide range of academic and nonacademic behavior problems (Shapiro & Cole, 1994).

It is helpful to conceptualize self-management interventions as existing on a continuum. At one end of it, the intervention is completely controlled by the teacher or other external agent. This individual provides feedback regarding whether the student's behavior met the desired criteria and administers the appropriate consequences for the behavior. At the other end of the continuum, the student engages in evaluating his or her own behavior against the criteria for performance, without benefit of teacher or external agent input. The student also self-administers the appropriate consequences for his or her own behaviors. In working with students with disruptive behavior problems, the objective should be to move the student as close towards the self-management side of the continuum as possible. Although some of these students may not be capable of reaching levels of independent self-management, most are certainly capable of approximating this goal (Shapiro, DuPaul, & Bradley-Klug, 1998).

Establishing a Behavioral Objective and Program Considerations

In a self-management program it is important that the target student accepts the behavioral objective as a personal goal. Since self-evaluation is a major aspect of this behavioral change program, self-assessing (recording) behavior and comparing it to a pre-selected criterion are two critical tasks of the target individual (Packenham, Reid, & Shute, 2004). If a student does not accept the goal of improving that particular behavior and reaching the performance standards, the self-evaluation process will have limited therapeutic benefits.

Once the treatment objective is established, an intervention program must be developed. With a teacher-managed change program, some of the common elements that might be included in an intervention are the establishment of specific classroom rules, development of a feedback system, instructions, a reinforcement system (e.g., token reinforcement program), and/or procedures to eliminate inappropriate behaviors (e.g., the use of time-out, response cost) (Packenham et al., 2004). Some self-management procedures may be included in an intervention include self-instructions, self-recording, self-evaluation, selecting one's own reinforcement, goal setting and/or goal option. It may be awkward or difficult to have students manage their own reinforcers inasmuch as they may be obtained even though the contingencies have been violated; therefore, many self-management programs require the external management of reinforcers. Regardless of how they are managed, reinforcers should be selected only after careful consideration (Packenham et al.).

A final consideration in the development of a treatment plan is assigning responsibility for elements of the program to individuals involved. It is not necessary for every activity to be managed by the individual whose behavior is to be changed in order for the program to be considered a self-management program. Some activities may be managed appropriately by an external agent. Ideally, self-management is developed best by a combination of teacher managed and self-management activities which are shifted from the teacher to the student (Young, Smith, West, & Morgan, 1997).

Self-management involves teaching an individual two behaviors: the target behavior, if the individual has not acquired it, and the specific self-management behavior being used. The self-management behavior taught can be a variety of specific procedures designed to promote student awareness of his or her own behavior or specific procedures designed to promote student awareness of his or her own behavior and/or independent functioning (Nelson et al., 1991). Typically, self-management interventions combine more than one of four general types of self-management categories: self-monitoring, self-assessment, self-instruction, and self-reinforcement (Nelson et al.). Self-monitoring involves training students to discriminate and to make a permanent record of the occurrence/nonoccurrence of antecedent conditions or target behaviors (Kamps & Tankersley, 1996). Self-monitoring has been used to help students identified as serious emotionally disturbed increase their on-task behavior and academic efficiency, and to minimize talk-outs (Ninness, Fuerst, & Rutherford, 1995). Self-assessment or self-evaluation can include students with emotional and behavioral disorders, comparing their performance to a set

trained criterion, and it has been used to maintain on-task behavior across settings (Rhode, Morgan, & Young, 1983). Self-assessment procedures are necessary for students to make discriminations involved in self-monitoring. Self-instruction requires students to prompt themselves to perform certain behavior. Self-reinforcement involves an individual providing or arranging for delivery of a reinforcer for him or herself for achieving a designated level of performance and often is termed self-recruitment of reinforcement. As mentioned earlier, however, self-reinforcement may not be practical unless monitored to determine whether all contingencies have been complied with before self-reinforcement can be allowed (Rhode et al.).

A new development in the use of self-management strategies in behavior support planning is the use of functional assessments to understand the problem in context and to suggest specific target behaviors for self-management. Using the strength of functional assessment technology to identify the antecedents to, and functions of problem behavior, the selection of replacement or alternative behaviors can become the target behaviors of self-management training. Todd, Horner, and Sugai (1999) used functional assessment-derived information concerning the consequences that maintain the problem behavior of an elementary school student. This information guided the development of specific target replacement behaviors that served as the focus of a self-management intervention, and making substantial changes in teacher perceptions of student success in the classroom.

The substantial documentation of successful uses of self-management strategies and their low effort requirement in implementation suggest their adoption as a promising practice in providing behavioral support (Todd et al., 1999). When based on functional assessment data, self-management strategies may offer educators an effective approach to assisting students to acquire and maintain pro-social skills.

Generalization of Self-Management Skills

One of the often touted advantages of self-management procedures is the potential for these procedures to facilitate generalization (Stokes & Baer, 1977). In particular, it is reasoned that, if the individual gains control over his or her contingencies, he or she will be likely to use such procedures across settings, times, and activities. As such, it is anticipated that behavior change in various areas of life will become evident once self-management procedures are learned.

It is, however, of significance that in almost all of the studies where generalized self-management occurred, it occurred only if the self-management procedures were specifically trained or prompted to be used in the alternative setting or with the alternative behavior. This should not be surprising, given the known variables that most likely foster generalizing behavior change (Stokes & Baer, 1977).

Future studies are clearly needed that continue to provide a better and more comprehensive understanding of the dimensions under which self-management will result in generalization. It is also clear, however, that achieving generalization by using self-

management skills is still a process in its infancy. Further, additional efforts need to be made at demonstrating the generalization of these skills (Shapiro & Cole, 1994).

Methodology

Participants

The participants in this single subject study included two members of a middle school self-contained class of students with EBD. Both students are males whose ages are 11 and 13, representing grades six (6) and eight (8). They scored within the average-to-low average range on the Weschler Intelligence Scale for Children (WISC-IV-R). In addition to EBD, both students maintain a clinical diagnosis of attention deficit disorder (ADD) and/or attention deficit/hyperactive disorder (AD/HD) as assessed by the Diagnostic Statistical Manual of Mental Disorders (*DSM-IV*). One student has been diagnosed with oppositional defiant behavior disorder (ODB) (see Table 1).

Table 1

Participant Information

Name	Age	Grade	Exceptionality	Classes	OHI
Adam	11-6	6	EBD*	self-contained	AD/HD** ODB***
Sam	13-9	8	EBD	self-contained	AD/HD

OHI = Other Health Impairment

* Clinical diagnosis of Emotional Behavioral Disorders

** Clinical diagnosis of Attention Deficit/ Hyperactive Disorder

*** Clinical diagnosis of Oppositional Defiant Behavior

Setting

The study was conducted in a suburban Atlanta middle school. The participants were observed in two separate self-contained classroom environments. The rooms are equal in size. One participant was observed between 9:30 - 10:00 a.m. during first period. The other student was observed between 12:45 - 1:15 p. m. in the afternoon. There are two certified teachers of students with EBD and one teacher paraprofessional, making the student-to-staff ratio approximately four-to-one. One teacher and at least one other adult staff assistant were in the classroom during all data collection times. Approximately six (6) to eight (8) other students identified as EBD were in the classes during data collection times.

Design

This study used an ABAB reversal single-subject design to demonstrate the functional relationship between the self-management intervention and the reduction of talking-out

behaviors. The ABAB reversal design showed a functional relationship between the strategy and a reduction of inappropriate classroom behaviors.

Dependent Variable

The dependent variable used in this study was talking-out behaviors. Operationally, the talking-out behaviors were defined as follows. Talking-out is any talking to peers, teachers or anyone without raising the hand and waiting for permission from the teacher or adult in charge.

An occurrence of talking-out behavior will be considered as such when the student emits a word or utterance that is not related to the present or immediate task. Talking-out is any speaking by the student that disrupts the class. Disruption is any act, which prohibits instruction from taking place. Talking-out behavior is further defined as any extraneous noises or utterances that is above a whisper and causes others to be distracted. Talking during open discussion, talking when recognized by the teacher or adult in charge, or talking when answering or responding to the teacher will *not* be considered as an occurrence of the target behavior.

Independent Variable

The independent variable used in this study was teaching the students how to raise their hands, and wait for teacher recognition, in order to speak in class. Talking out behaviors and raising hands while waiting for teacher recognition are two mutually exclusive behaviors which could not occur simultaneously either while paying attention or working quietly during class. For purposes of this study, the participants were instructed to mark a self-monitoring sheet when the researcher either taps the participants unobtrusively or used other non-verbal cues to indicate to the participant that they have been signaled to mark the self-monitoring sheets. The researchers cued the students at random intervals.

Materials

Observers used a pilot software program called Timerdata. The program was used to collect and organize direct frequency and durational data from the participants. In addition, the observers used the Problem Behavior Questionnaire (PBQ) and the functional assessment interview (FAI) to collect indirect data. Individualized self-monitoring sheets were made from standard 8 1/2 x 11 inch sheets of paper laminated with each participant's name on them. The question "*Was I working quietly?*" was printed on one of the sheets, while on a second sheet, the question, "*Was I paying attention?*" was printed. The sheets were divided into columns and contained the words "Yes" and "No" on them and were laminated. Dry erase markers were used so the participants could use the same sheet for each session. An identical sheet containing the statement, "*I will raise my hand and wait to be recognized before talking*" was used also to passively reinforce/remind the students of the new behavior.

Implementation

Phase 1: Functional analysis.

In the present study various FBA materials were available for use in determining the function of the target behavior. Once an agreement had been reached as to the function, the self-management intervention was developed to address the target behavior.

School records often contain a great deal of useful information for FBAs. A first step in conducting the FBA was a systematic review of these records, especially disciplinary records. In the present study, these records were used to identify patterns of behavior or behavior chains that might provide descriptive, indirect data that was used in the FBA. The researchers conducted an initial functional assessment interview (FAI) of both the participants and the parent(s) regarding the topography and setting of problem behaviors.

Before any baseline data was collected in the present study, initial interobserver agreement (IOR) data was taken using the Timerdata software in determining the function of the target behaviors for each participant by the EBD staff. The PBQ gives an indirect analysis of the function of the participant's behavior.

The FBA data was collected and analyzed by the researchers. When the analysis of all the above data was completed, a hypothesis statement on the function of the target behavior for each participant was developed. This information was used in the development of self-management interventions for each of the participants, based on the function of the target of the students' behaviors.

Phase 2: Self-management intervention.

The intervention procedures were evaluated with each of the participants using a reversal design (ABAB). All sessions, throughout the baseline and intervention phases, were approximately 30 minutes long or one class period in duration. One or two sessions was conducted daily. Baseline and intervention sessions were collected in the following manner.

Baseline

Baseline data was collected continuously during at least five (5) sessions on the target behavior of talking-out. The participants were seated in their assigned seats and worked independently on assigned tasks during the data collection periods. The paraprofessional was conducting the class during the data collection. During inter-observer reliability the second data collector was seated at a table on the opposite side of the classroom. The data was collected during the academic class in the morning (9:30 - 10:00 a. m.) and during an academic class in the afternoon (12:45 - 1:15 p. m.).

Intervention

Before beginning this phase of the study, a summary statement of the total number of observed inappropriate talk-out behaviors was graphed and shown to each participant, individually. Two self-monitoring sheets were distributed to the participants at the beginning of the period. The participant students were instructed that, when they were cued (randomly), they should place a check mark in the correct *Yes* or *No* column, the one asking whether they were doing their work and the other whether they were paying attention when cued. The researcher said, "Ask yourself, at the exact moment that I am signaled/cued, am I doing my work quietly or, in the alternative, was I paying attention?" The students had been directed beforehand that, if they were, or were not, doing their work quietly or paying attention, then they should check the box under the appropriate column. Although the new behavior was taught, and used through this conscious prompt/reminder, it still allowed the student self-manage their talking-out behaviors. The self-monitoring procedure was conducted for at least five sessions.

Return to Baseline

This phase lasted for approximately five sessions. The self-monitoring sheets were used. The procedure was the same as during the initial baseline.

Data Collection and Analysis

This study used a frequency data collection procedure. The dependent variable was the number of talk-outs per 30-minute class monitoring period. The researcher established the operational definition of talk-out behavior. Once established, the IOR person was allowed to collect frequency data.

The data was analyzed through visual inspection. The visual inspection consisted of the following criteria: The means was used to show a change in the treatment mean from the baseline mean. Level refers to the last and first data points in adjacent conditions (phases). Finally, trend analysis was used to see if there was a change in the trend.

In order to determine whether the baseline and self-monitoring data are stable, the occurrences for each collection phase were totaled and the average (mean) was determined. A factor of 0.5 was used to determine the stability of the data. That product was added to and subtracted from the mean to establish a range within which the data must fall to be considered stable.

Social Validity

The participants, teachers and parents were asked to complete a questionnaire. The questionnaire asked about their satisfaction with the self-monitoring intervention and whether it effectively reduced talking-out behaviors to the satisfaction of the teacher, the student, and the parent. The results from the questionnaire indicated that all three parties had noticed improvement in the participants' behaviors. The talking-out behaviors had been dramatically reduced using the procedure (see Table 2).

Table 2

Social Validity Questionnaires

Teacher (before)

1. The student's behavior affects your teaching behavior.
2. The student's behavior is severe enough to use this intervention.
3. This intervention is an appropriate procedure to address the student's problem behaviors.

Teacher (after)

1. The intervention was not too intrusive on my teaching behavior.
2. This intervention has reduced the student's problem behavior.
3. I will use this intervention again, as needed.

Student (before)

1. Your behavior causes problems in class.
2. Your behavior causes problems at home.
3. You are willing to improve your behavior.
4. You will cooperate with this procedure to improve your behavior.

Student (after)

1. You have noticed an improvement in your behavior
2. You like your level of improvement.
3. You will continue to use this procedure, as needed.

Parent (before)

1. Your child's behavior is a problem.
2. You are willing to allow this procedure to help with your child's behavior problems.

Parent (after)

1. You have noticed an improvement in your child's behavior.
2. You are willing to use a modified intervention procedure in your home.
3. You will encourage your child to continue to improve his/her performance.

Feasibility

This project was undertaken because of the task currently faced by most teachers whose job it is to teach students who display problem behaviors. Current research in the area of functional assessment-based self-management interventions suggests that these procedures, if applied in the natural school setting, can shift the responsibility for managing problem behaviors from the teacher to the student. This procedure, if successful, would also allow the teacher to spend more time teaching and less time

managing these problem behaviors. In the current climate of increasing teacher accountability, this procedure can provide the classroom with another effective tool. This research will further those efforts.

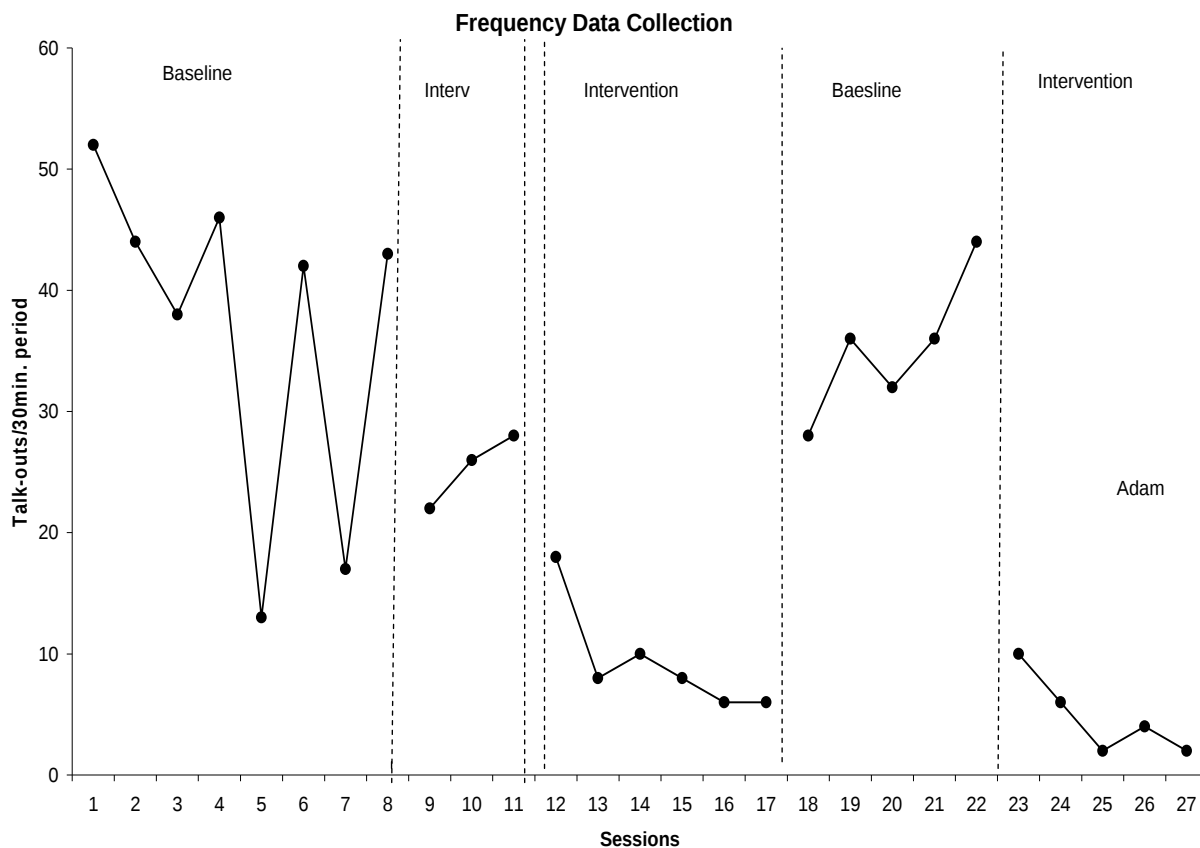
Results

Adam

During the first baseline for number of talk-out behaviors, eight data points were collected (see Figure 1).

Frequency Data Collection Graph

Figure 1. The number of talking-out behaviors by Adam in a 30 minute period. After an additional training phase was used, the intervention phase illustrates a significant reduction in talking-out behaviors.



The data path was extremely variable, with no discernible trend. The data began at 52 talk-outs per 30-minute class period, dropping to lower levels of 13 and 17 by the fifth and seventh data points, respectively ($M = 36.88$). During baseline, two of the eight data points did not meet these criteria of 50% around the mean. The addition of three data points did not add a stable baseline.

During the self-monitoring phase the first three points met criteria for stability. However, a visual analysis of the trend indicated a movement in the opposite direction of the expected outcome. To test the hypothesis that the participant did not understand fully the self-monitoring procedure, a training phase was inserted to provide instruction of the initial self-monitoring procedure. After the training phase, an additional six points were collected. A visual inspection of these data points, while still not meeting stable criteria, have shown a discernable trend by reversing the direction of the data points after the training session was inserted into the self-monitoring phase of the study. The data indicates an immediate change in level (22 points) from baseline to the first self-monitoring intervention in spite of the upward trend in the first three self-monitoring data points. The performance across phases between the baseline and self-monitoring intervention does however indicate a 40% overlap in the data points from baseline to intervention phase. However, the intervention data points collected after the training phase (six points) shows only a 12.5% overlap in data points.

During the return to baseline phase, the data indicate stability ($M = 35$). The range (28 – 44) is well within the criteria for phase stability or steady state within the phase. There was an immediate change in level of 22 points from the self-monitoring intervention to return to baseline. There was no apparent overlap in data points from self-monitoring phase to return to baseline.

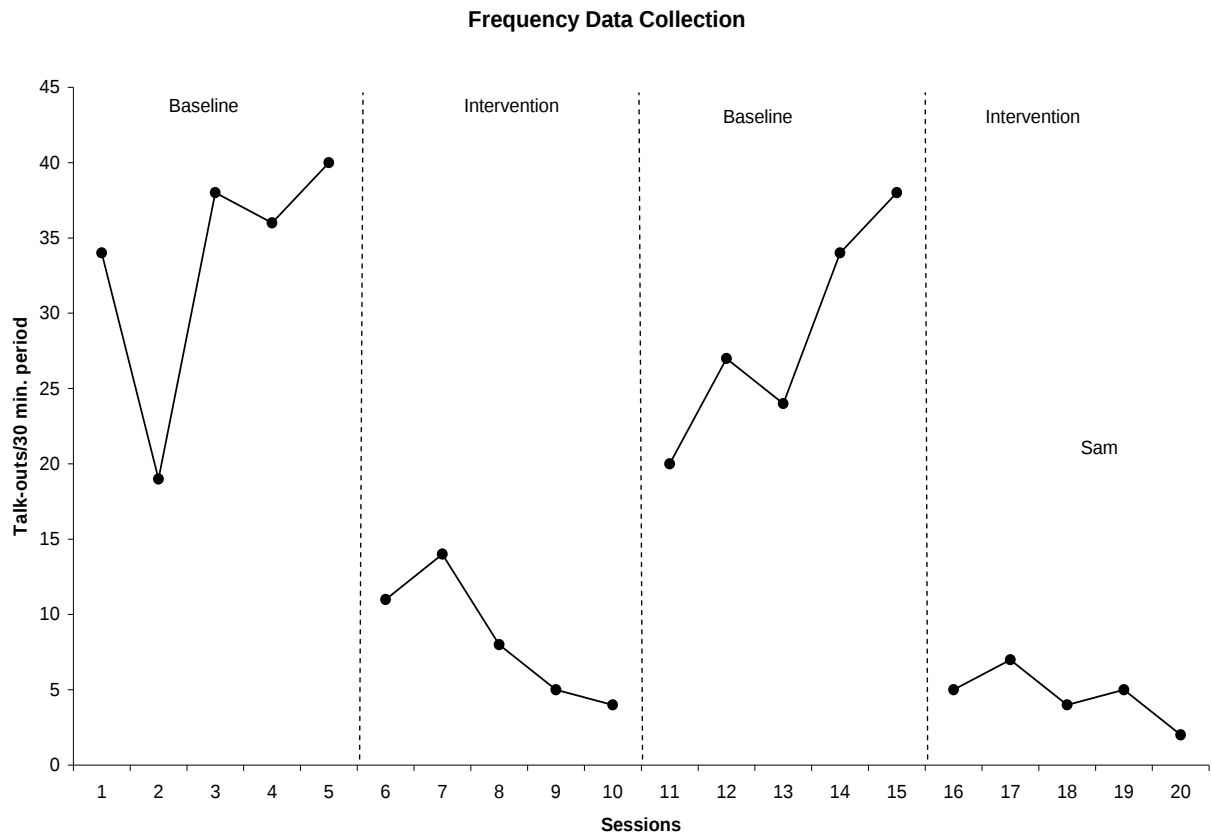
In the final self-monitoring intervention phase the data also indicate stability ($M = 4.8$). There is a change in level between the previous baseline and the self-monitoring intervention of 34 points. There was no overlap in data points (see Figure 1).

Sam

During the baseline measuring the number of talk-out behaviors for Sam, five data points were collected (see Figure 2).

Frequency Data Collection Graph

Figure 2. The initial number of talking-out behaviors by Sam in a 30 minute period were significantly reduced with the introduction of the self-management intervention.



The data are stable within the established criteria ($M = 33$). Sam's baseline variability was moderate, beginning at 36 talk-outs. Despite the variability in data points, a discernible upward trend was apparent. All of the baseline data points were within 50% of the mean for this phase and had achieved a steady state.

An immediate change in level when a phase change occurs is generally a visual indicator that the intervention is having some effect. During Sam's intervention phase, there is an immediate change in level. Between the baseline and self-monitoring phase, there is a level change of 29 points. This level change also indicates that there is no overlap in the data between these two phases.

During the return to baseline phase, five data points were collected. The data were apparently stable ($M = 29$) within the criteria range for stability. The range of data had attained a steady state within the phase. The visual analysis of the trend of data indicates a movement in the opposite direction of the self-monitoring intervention data. The level of change between phases was immediate, with data during this phase moving in the opposite direction from the intervention phase. There was no overlap in the data during this phase.

In the final phase with Sam, five data points were collected. A steady state was established within the phase. The data were also stable within the established criteria ($M = 4.6$) for this phase. The range indicates a change in level between the return to baseline and final self-monitoring intervention of 33 points.

As demonstrated with both participants in this study, the use of an ABAB reversal design has shown a functional relationship between a reduction of talking-out behaviors and the use of a self-monitoring intervention. Even with variability in the baseline for both participants, the level of performance behavior was significant and immediate. As the phase changed, the significance was evident during a visual analysis. For Adam, the change in level of behavior was 22, 22, and 34 data points respectively. For Sam, the change in level of occurrences was 29, 16, and 33, respectively (see Figure 2).

Discussion

The development of a behavior management system that would keep students, who are disruptive, on-task and reduce problem behaviors, while at the same time shifting responsibility for managing behavior from the teacher to the student, would enable the teacher to spend more time teaching. Such a system would allow teachers to better focus on their students' academic and social development. Learning these skills could benefit the students throughout their lives. The issue explored in this study then, is to what extent are self-management interventions effective for students with emotional/behavioral disorders (EBD)?

The results from this study indicate that, with proper instruction, both participants were able to significantly reduce talking-out behaviors using a self-monitoring intervention. The findings from this study confirm previous research in the use of self-management

interventions to reduce problem behavior. Shapiro et al. (1998) in a study applied self-management strategy to improve the classroom behavior of students with attention deficit/hyperactive disorder (AD/HD). Based on the work of Rhode et al. (1983), the intervention focused on teaching students to systematically rate their own behavior. Both of the participants in the present study have also been diagnosed with AD/HD. Adam and Sam were asked to systematically rate their behavior using the self monitoring sheets. This procedure reduced the rate of talk-outs for both. The results of the present study confirm the Shapiro et al. study.

Kern, Ringdahl, Hilt, and Sterling-Turner (2001), examined the efficacy of self-management procedures that were incompatible with the target behavior and extended the research of Frea and Hughes (1997) which applied these interventions to students of average functioning who engaged in challenging behaviors. The effective use of the self-monitoring intervention by Adam and Sam enabled them to maintain behaviors that were incompatible with the talking-out behaviors. As in the study by Frea and Hughes, Adam and Sam were average functioning students engaging in challenging behaviors (talk-outs).

Adam's initial baseline data was extremely variable. He had been diagnosed with AD/HD and was on medication during the study. Adam also had a history of not taking his medication regularly. Sam, also diagnosed with AD/HD, was not on medication, and this may also have affected the variability of his data during baseline. However, it must be noted that both participants eventually responded to the intervention phase with very little variability and both had stable data points within the established criteria.

It is reasoned that, if the individual gains control over his or her own contingencies, such as talking-out behaviors, he or she will be likely to use such procedures across settings, time, and activities. As such, it is anticipated that behavior change in various areas of life will become evident once self-management procedures are learned. Despite the logic of this argument, there has been limited empirical examination of this phenomenon. Although there have been fewer studies than expected that have actually aimed at assessing the generalized effects of self-management, the outcomes have been consistently positive (Shapiro & Cole, 1994). While not specifically within the scope of this study, these data would add to our knowledge in this area.

The social importance of this study is at least two-fold. First, to be able to use an intervention that will enable students to self-manage their problem behaviors will help to empower them to apply the techniques to the general education setting and beyond. Second, it will allow the teacher to spend more time teaching and less time managing these behaviors.

A hypothesis was developed identifying the target behavior for the participants in this study. Adam, Sam, and their parents identified talking-out behaviors as being problematic and were willing to try this intervention in an attempt to reduce these behaviors. After the study was completed they all were asked, informally, if they liked using the self-management procedure. They both answered in the affirmative. When asked if they

thought it helped them to control their talk-out behaviors, they also responded affirmatively. The parents expressed the hope that the effect would last. These positive responses, while certainly not formal, can form the basis of a social validity component.

Teaching adolescents who act out can be a difficult and frustrating task. This study was designed to confirm and extend previous studies that demonstrated the effectiveness of using a functional assessment-based self-management system that would reduce problem behaviors such as talk-outs. The ABAB reversal design was most appropriate for showing the functional relationship between the reduction of talk-out behaviors and the use of a self-management intervention. In spite of variable baseline data at the start, both participants responded well to the self-monitoring intervention procedure.

Limitations

There were several limitations of this study. To be truly effective for the participants, especially students with EBD in a self-contained environment, they must be able to generalize their success in other settings. This study did not address the issue of generalization. To address this limitation, the practitioner must provide a detailed explanation of procedures to the general education teacher, such that the latter understands the long-term benefits of the intervention (Shapiro et al., 1998). Another limitation of this study was the lack of an academic component. This study was not designed to show that a reduction in off-task (talk-outs) behaviors would result in an increase in on-task behaviors.

Conclusions

Research in functional assessment with students identified with or at risk for EBD has provided a preliminary data base attesting to the effects of functional assessment-based interventions in reducing problem behavior. However, we were unable to identify any specific trends in the research in terms of how or why specific interventions were selected and implemented. At present, the procedures used to assess the problem behavior of students with or at risk for EBD, as well as the interventions developed from the assessment outcomes, appear to be somewhat idiosyncratic to the specific researcher or situation. That is, different researchers use various procedures; thus, there does not appear to be a validated, integrated methodology for conducting functional assessments and developing interventions based on those assessments (Fox et al., 1998). Additionally, there is growing concern as to whether FBA procedures can be carried out by the classroom teacher. Ultimately, the success or failure of these procedures will eventually rest in the hand of the classroom teacher. The study by Packenham et al. (2004) does address the issue of whether a truncated, less complicated version of FBA procedure can be useful for the classroom teacher. However, as indicated by the study, more research is needed in this area.

A functional perspective on problem behavior suggests that generality of behavior change would not be an automatic outcome of the intervention. The function of a specific

behavior may differ from one setting to another. An intervention based on the behavioral function in one setting would not address a different function in a different setting effectively. The review of literature indicates that more research and analysis is needed in this area. Another area of needed research focuses on examining whether interventions that are based on functional assessments are, in fact, more effective than interventions that are not derived from this process (Heckaman et al., 2000).

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Teaching Common Core Math Practices to Students with Disabilities

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Abstract

The widespread adoption of the Common Core State Standards (2010) has caused mathematics and special educators to reconsider instructional methods. The Common Core introduces eight Standards for Mathematical Practice that outlines the dispositions that should be fostered in students. Most notable are those that push students to analyze problems, create a solution, explain/prove their reasoning to others and critique other students' methods. Although direct instruction has been the primary approach advocated in working with students who have disabilities, this approach tends to teach basic skill proficiency with less emphasis on the problem solving advocated in the Common Core. In this paper, we use examples from our own teaching to offer an alternative to direct instruction for special education teachers who are moving into mathematics or co-teaching, an approach that has the potential for fostering the disposition advocated in the Common Core State Standards.

Teaching Common Core Math Practices to Students with Disabilities

I had only been at my new school for three days when I met my math co-teacher. I had eight years experience teaching students with disabilities and knew the strategies for helping students learn math. Structure, structure, structure! When my new partner told me that she was not going to give students examples of problems and teach them the steps, I knew my kids were in trouble. What did she mean she was going to give a problem to students and expect them to come up with their own way? I had always been taught to show my students the best way to solve the problem and help them learn the steps by practicing it. Not only that, but language is my specialty, not math so how was I going to help my kids if she didn't show us a way to do the problems?

Imagine you are the special educator described in the scenario above. You have just started a job at a new school and are expected to be the co-teacher for a mathematics class in which the teacher utilizes very little direct instruction, going against the training you received. Add to that, you have avoided co-teaching math for years because it was your worst subject. In addition to the anxieties of working with a new person and teaching in an uncomfortable field, now the teacher informs you that there is little to no

lecture in class; you and she will be posing problems and listening to students' unique, personal solution methods. The co-teacher described above is actually one of the authors of this paper and luckily did not run out of the room requesting reassignment from the principal! Together with the regular education teacher, we spent three years crafting a co-teaching approach that incorporated the sentiments echoed in the new Common Core Math State Standards. We write this article to share this approach with others who may be facing similar challenges in their schools.

Recent reform recommendations (NCTM, 1991, 2006) and the adoption of the Common Core State Standards (2010) have led principals, teachers, parents and others invested in mathematics education to reconsider instructional methods. Not only are mathematics educators still expected to teach basic skills to students but they are also charged with engaging students in the critical thinking that creates deeper conceptual understanding. Besides detailing the key content that teachers need to teach, The Common Core State Standards introduces eight Standards for Mathematical Practice that outlines the dispositions that should be fostered in students. Most notable are those that push students to analyze problems, create a solution, explain/prove their reasoning to others and critique other students' methods. These Practice Standards lead us to question our approach to teaching students with disabilities. Although direct instruction has been the primary approach advocated in working with students who have disabilities, this approach tends to teach basic skill proficiency with less emphasis on the conceptual understanding. A question that comes to mind, then, is how do we teach the eight Mathematical Practice Standards to students with disabilities if we rely solely on direct instruction? Some researchers have recently explored blending direct approaches with those that are more discovery (Hudson, Miller, & Butler, 2006; Scheuermann, Deshler, & Schumaker, 2009; Sheffield and Cruikshank, 2005). In this paper, we offer an alternative approach for special education teachers who are moving into mathematics or co-teaching, an approach that has the potential for fostering the disposition advocated in the Common Core State Standards.

Common Core Mathematical Practice Standards

In the Introduction to the Common Core State Standards for mathematics, there are eight mathematical practices outlined (see Table One). The Common Core writers make it clear that teachers should weave these mathematical practices into their teaching of the Content standards but do not give much guidance as to how to do that. How does a teacher choose tasks that encourage students to create their own meaningful solution?

Mathematical Practice Standards (CCSS, 2010)

- 1. Make sense of problems and persevere in solving them.**
- 2. Reason abstractly and quantitatively**
- 3. Construct viable arguments and critique the reasoning of others.**
- 4. Model with mathematics.**
- 5. Use appropriate tools strategically.**
- 6. Attend to precision.**
- 7. Look for and make use of structure.**
- 8. Look for and express regularity in repeated reasoning.**

How do students learn to persevere in problem solving and what does a teacher do to support frustrated students? How does a teacher support students to construct an argument and analyze other students' solution for understanding? Add to that, what if the majority of the class is students who are performing below grade level, many of whom have special needs? What does a Standards-based classroom look like, in particular for students with disabilities? As mathematics and special education teachers who have had great success with all students, including students with disabilities, we begin to explore these questions by first defining more explicitly what we think is the goal of education for all students, not just regular education students. Then, we will illustrate what a Standards-based classroom looks like in an inclusion setting by sharing two examples from our classroom. Our intent is to show how this type of learning is possible for students with disabilities given the right teacher with the right conviction and disposition to believe this type of learning is possible for all students.

A Question of Autonomy

Many researchers contend that one of the most important contributions that education can make in individuals' lives is to their development of autonomy (e.g., Piaget, 1948/1973; Kamii, 1982; Yackel and Cobb, 1996). Autonomy is defined as the determination to be self-governing, to make rules oneself rather than rely on the rules of others to make one's decisions (heteronomy). Kamii (1982) suggests that autonomy is the ability to think for oneself and make decisions independently of the promise of rewards or punishments. The Eight Common Core Mathematical Practices might be viewed as principles that encourage students' autonomy in mathematics. Rather than viewing mathematics as a set of rules and facts to be memorized, students are encouraged to explore the domain, taking responsibility for creating a meaningful solution. Mathematics is rich with problems that beg creative solutions, and students' creativity, curiosity, and perseverance should be

fostered. This same type of autonomy and thinking parallels many of the initiatives we had for students' behavior and social skills in our classroom. Therefore, grounding practice in this approach reflects more than just the trends in mathematics standards. Both direct instruction and teaching for autonomy have been associated with increasing student achievement. Therefore, we do not argue that one approach is better than the other, but rather that teaching for autonomy has the potential to fulfill the call of the Core Mathematical Practices by creating autonomous mathematical thinkers and can address behavioral/social goals for many students included in traditional mathematics classes. In the following sections we show how co-teachers can use a standards-based approach in teaching students both with and without disabilities whether in a co-taught, self-contained or general education class.

Standards-Based Approach: Whole Class Example

The following episode is taken from our seventh-grade co-taught classroom where the students had been learning integer concepts and operations while working through a five-week unit. The class was comprised of 20 students, 5 of them were students with disabilities and 13 students were working below grade level. The special educator had 10 years experience teaching students with disabilities, and had been teaching in a standards-based environment for three years. In the classroom, students began instruction within a realistic context of finance, learning that a person's net worth is the difference between his total assets and total debts (CMP2¹). Problems progressed by encouraging students to compare the net worths of two or more people, sometimes with a person's net worth being negative. Students' activity moved towards reasoning with and symbolizing the effect of various transactions on a person's net worth (CMP2). For example, if Brad's net worth was \$10,000 but he added a debt of \$2000 (the transaction), what would be his new net worth (\$8000)? We introduced a vertical number line to record students' solutions, simultaneously recording their transactions in number sentences (e.g., $10,000 + (-2000) = 8000$; CMP4). For a full description of the instructional sequence, see Author (2009). Class periods were typically structured in three parts: Introduction (of the task), ranging from 1-7 minutes, Exploration, from 5-20 minutes, and Debrief Session, from 15-20 minutes. On this particular day, the teacher took approximately three minutes to introduce the task. Rather than direct instruct students how to find correct answers to the problem, the teachers merely introduced the problem and asked students to come up with their own solutions. RET is used to signify the regular education teacher with COT standing for the co-teacher:

RET: OK, here's the activity today [shows Figure One]. Ruben was looking at his net worth statement one night while he was drinking his coffee trying to stay awake, working out his finances. And he spilled coffee on it. What I want you to do is, he had a net worth to start with, Mariana, of \$10,000. That's not too bad, right Brad? That's pretty good. And a transaction or something happens or several, whatever, but it got a stain on it and

¹ We use the code CMP2 to refer to Core Mathematical Practice 2, for instance. These Practices are listed in Table One for reference.

you can't see what has happened under here. But he ends up with a net worth of \$7000. He wants to know, what are some possible transactions that could have happened under here?

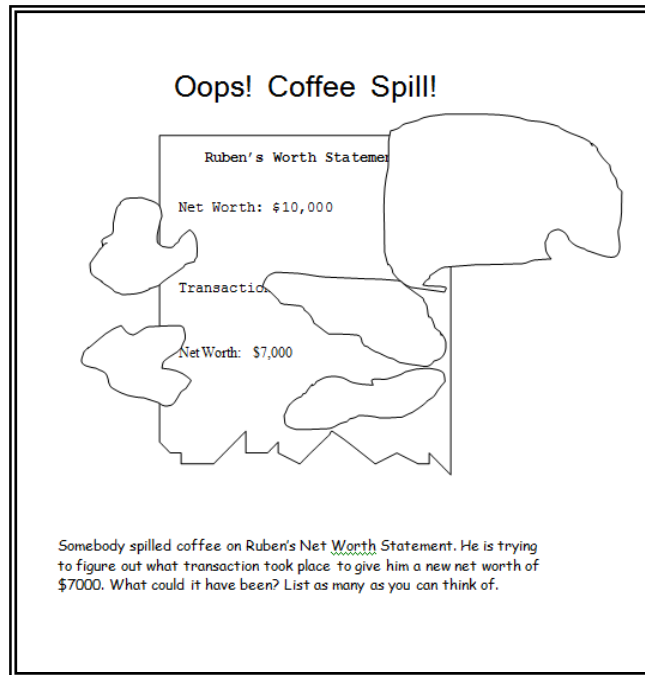


Figure One. Ruben's Coffee Stain Activity Page.

Students had been working in groups of three to this point in the year so they naturally fell into group work this day, asking their partners for help or comparing their answers with one another as they worked (CMP1). No one was off task as they worked and students with disabilities worked alongside those without to create their own answers to the task. While students created various transactions, the two teachers walked around the room to learn what transactions students had developed. Since over half the class was identified as below grade level, we expected a lot of questions. Both teachers fought our old instincts to direct instruct struggling students. We did not show students how to solve the problem, give hints to struggling students, or fix any students' mistakes, but merely asked students how they came up with their answers and encouraged struggling students either to keep trying (CMP1) or talk with their partners for ideas (CMP3). When students, including those with disabilities, asked if they had a correct transaction, the teachers either said, "Please share it during whole class discussion and we'll see what your friends say" (CMP3) or the teachers read the student's transaction out loud and encouraged her to write it in symbols (CMP4). In our prior teaching practice, we probably would have answered this student with either a yes and given him praise or a no and direct instructed him. This particular exploration time lasted about 3 minutes and then the debriefing session began. Just before the RET began the whole class discussion, she and the COT huddled at the side of the classroom to compare the strategies they had seen, discuss any difficulties students had, and plan who was going to present their thinking.

Gage: Can I show my way?
RET: We're going to get a bunch of ways up there. So, Brad², give us one of yours.
Brad^B: Uh, plus negative 3000 [RET writes $10,000 + (-3000) = 7000$ (CMP4)].
RET: How many people had that one? [Many students raise their hands]
Everybody had that one, I think. Did you have that one Anthony^{D, B} [nods yes]. Charlie^{D, B}, do you have a different one?
Charlie^{D, B}: Never mind.
COT: You've got one!
Charlie^{D, B}: I know, but it's the same as theirs.

The session continued with students offering - (+3000) and - (-3000). Students immediately rejected the second transaction (CMP3) because, as Marsha^B said, "but he's supposed to go down money" and "You're taking away a debt," said Seth^D. Dusty then offered - (+800) - (+2200) and some students noticed for the first time that more than one

² If a student's name has a superscript, a B means she was performing below grade level and a D means she had been identified as having a disability. If there is no superscript, she was at or above grade level with no documented learning disability.

transaction might be possible. The co-teacher asked students to analyze Dusty's answer to make sure they agreed (CMP3) and when they all did, Charlie^{D, B} offered - (+1000) + (-2000). The regular education teacher asked students to analyze Charlie's transactions (CMP3) and decide whether they agreed or not. Not all students agreed, so Marsha asked Charlie for permission to prove his solution.

The RET drew a vertical number line on the board with 10,000 near the top (CMP4).

Marsha^B: OK, so you do the minus an asset of 1000.
RET: So, which direction do I go? [COT restates the question]
Marsha: You go down. Down. Very, very down [RET draws a down arrow from 10,000].
Stuart^B: No you wouldn't.
RET: Take away a 1000 asset [writes - (+1000) next to the arrow]. You don't think she would go down? [to Stuart]
Stuart: No, yeah!
Marsha: And then.

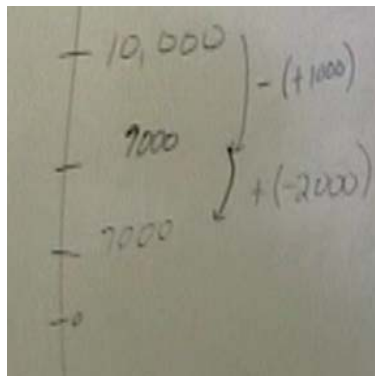


Figure Two. The teacher's symbolizing.

RET: Oh wait, where do I land?
Marsha: Then, you land at 9000. [RET writes 9000 at the end of the arrow] Then, you add a debt of
RET: I'm assuming that goes down [draws down arrow from 9000].
Students: It does go down.
RET: It does go down? Gage, yes, no?
Brad^B: You're taking away an asset.
Student: No, you're taking away a debt.
Student: No, then it goes up.
Tisha^B: If you add a debt it goes down.
Marsha: If you're adding a debt [RET writes +(-2000) on an arrow] you do that and it should get you to 7000.

RET: What do you think?
Seth^D: $2000 + 1000 = 3000$.

The class continued with other students offering transactions. The teachers asked students to study them and indicate (dis)agreement. When about five different transactions had been analyzed and accepted by students, the teacher launched a similar problem and began another cycle of exploration and whole class discussion. During the second exploration time, the RET and COT visited students who had processing disabilities to ensure that they had written down all correct answers and explicitly instructed if a student did not understand the solutions that had been presented.

Reflection on Example One

The example illustrates the roles and responsibilities that standards-based co-teachers take on during different parts of classroom instruction. First, a lot of work occurs outside of class in order to have a successful *introduction*. The problems that the co-teachers chose were essential for students' success and have the following qualities: grounded in real-world imagery, open-ended (not just one right answer), and accessible to all students regardless of ability. Students can readily relate to realistic scenarios and find them highly motivating, in contrast to memorizing basic facts or computing answers to a long list of symbolic problems. Almost all the students in the class above were highly motivated to find multiple solutions to the problem (CMP1) and strived to write them in symbolic means (CMP4). Students with disabilities, in particular, benefit from the concrete to abstract approach because too often they have difficulty processing the abstract symbols.

The tasks that co-teachers choose ought to connect enough with students' prior experiences so that all students have an entry point into the activity. Otherwise, co-teachers will find themselves employing direct instruction more than they intended. In our case, we expected that students with processing disabilities to be able to write at least two transactions, $+$ (-3000) and $-$ ($+3000$) and others who might be operating at a more abstract level would write more sophisticated ones. Tasks that allow both struggling students to be successful and challenge higher-level students are hallmarks of an inclusive, standards-based classroom.

Finally, a good introduction does not include a teacher-lecture on how to solve the problems. Rather, it is a brief time in which the teacher reminds students' of their previous work, tells the story or dilemma for the explore time, and clarifies any questions about the task. Direct instruction about the problem's solution would defeat the co-teachers' attempt to create autonomous mathematical thinkers, so we leave exploration time for *students'* explorations.

During *exploration* time, the co-teachers' role is to gather information about students' strategies. We will then use those data to engineer the whole class discussion. During the exploration, we learned that every student easily came up with the simplest solutions: $-$ ($+3000$) and $+$ (-3000). We also looked for erroneous solutions like $-$ (-3000) as well as

solutions that involved more than one transaction, like $- (+1000) - (+2000)$. If we saw erroneous solutions, depending on the error, we would not correct it. If the error was in a silly calculation, we often told students they made a calculational mistake. However, if the error was conceptual and would lead to great discussion, we did not fix it.

The co-teachers' role during *explore* is not just to gather data. In addition, we are managing the student groups, making sure they are on task and working collaboratively. When students raise their hands requesting her help, we often respond by encouraging them to attempt the problem and persevere (CMP1). We ask the student to re-read the problem or ask a partner to clarify the problem. Often this will spur a student to new thinking, but if they ask for help solving it, we generally suggest that they think for a few minutes by themselves, go back to some previous problems, or get help from a partner.

During *whole-class* discussion the co-teachers' role is to facilitate students' sharing and questioning. We did this by huddling in the classroom first to discuss who would be presenting and in which order. To give Brad a chance to participate and get the simplest solutions on the board first, we started with his. We then moved to the more sophisticated solution which was introduced by one of our students with a disability.

As the discussion ensued, the teacher checked for understanding, posted more answers on the board, asked students to defend or disprove solutions, clarified student thinking, organized turn-taking, and modeled student thinking with a vertical number line (CMP4). Never once did the teacher offer her own explanation, but she used direct instruction to help students visualize the thinking of their classmates on the number line. When students had come to some consensus about the correctness of Charlie's and Marsha's solution, the teacher posed another "coffee stain" question with different numbers to give students a chance to use what they had learned during this discussion. In fact, most students quickly wrote the two easiest transactions and then raced to find solutions with multiple transactions.

Standards-based Approach: Small Group Example

Our second example consists of dialogue that occurred during student exploration time. We share this example because it highlights the different role that the co-teachers, particularly the special educator, play during student exploration. During this exploration, students were deciding who had a higher net worth, Brad (-190,000) or Angelina (90,000) (See Figure Three). A student with a disability and below grade level had his hand up immediately as we broke for small group. When this happened, the RET assumed that Anthony was unable to answer the question or misunderstood the task, but as it turns out, he was eager to share his thinking.

Net Worth Statement		Net Worth Statement	
Client Name <i>Angelina</i>		Client Name <i>Brad</i>	
Cash Assets Checking Account Money Market Accounts Savings Account \$100,000		Cash Assets Cash Bank Accounts \$150,000 Money Market Accounts Savings Account Other	
Investments Restaurant \$500,000 Owns a movie production company \$250,000 Owns Land in Namibia \$90,000 Other		Investments Owns a Planet Hollywood \$450,000 Mutual Funds Real Estate Other	
Personal Assets		Personal Assets Car Other	
Total Assets		Total Assets	
Debts Boat Loan \$200,000 Penalty for pulling out of a movie deal \$650,000		Debts Owes George Clooney in gambling debts \$90,000 Auto Loans \$175,000 Owes Jennifer Anniston a divorce settlement \$525,000	
Total Debts		Total Debts	
NET WORTH		NET WORTH	

Who is worth more money when Brad and Angelina get married? Explain in complete sentences.

Anthony^{B,D}:

190,000. He has nothing.

RET: Wait, he's has \$600,000!

Anthony: But he has \$790,000 in debt and his debt overwhelms his assets.

RET: Oh, it overwhelms what he has.

Anthony: So he's worth nothing.

RET: He's worth nothing.

Anthony: He's worth less than nothing.

RET: He's worth less than nothing. Alright, you guys bring that up [in whole class].

The teacher's interactions with Anthony and his group lasted 35 seconds before she moved to the next group. Danny, Brad and Cody (two of whom worked below grade level) had decided that Brad had a lower net worth than Angelina.

Danny: He's in debt \$190,000.

RET: Wait a minute, he's in debt \$790,000.

Brad^B: His *net worth* is \$190,000.

Danny: His *net worth* is \$190,000.
RET: What does *that* mean?
Danny: He's in debt 190,000.
RET: But he's in debt 790,000. [looks confused]. I'm playing devil's advocate with you. Do you see why I would say that? Y'all figure that out.

When Danny said that Brad was in debt \$190,000, the teacher was not sure if he meant that his net worth was -190,000 or that he felt Brad had 190,000 of debt. Brad's actual debt is 790,000 and the teacher was trying to see what a negative net worth meant to this group. She then, left them to work on that together after having spent 26 seconds at the group.

The RET's final small group interaction was with Seth's group and lasted 21 seconds. When the teacher asked who they had chosen, they responded Angelina.

RET: But his [Brad's] net worth is a bigger number?
Stuart^B: He has more in debt.
Seth^D: Because Angelina has 90,000 in *positive* and negatives mean less than positives.

The co-teacher, for her part, spent 30 seconds with one group asking them to explain how they calculated Brad's net worth.

COT: What happened on this one?
Gage: We got Brad.
COT: How did you get that?
Gage: We got -190,000.
COT: How did you get negative?
Gage: Cause he has more debts.
COT: He has more debts.
Mark: Than assets. His *debts* are more than his assets.

Reflection on Small Group Example

We presented the small group interactions above to illustrate several points about the role of Standards-based co-teachers during small group exploration (CMP1). By its name, this time should be devoted to *student* exploration, not teacher problem solving. Our interactions lasted 28 seconds on average and were meant for us to both assess how students were thinking and, at times, provoke them to go deeper with the explanations. In the teacher's interactions with Anthony's small group, she was mainly there to be a sounding board for Anthony to share his answer and his reasoning (CMP3). When Anthony commented that a net worth of -190,000 meant Brad had nothing, the teacher merely repeated what Anthony's said leading him to modify his response to "less than nothing." In the second small group, the teacher again was invited by a student, Danny, to listen to his reasoning. He had also concluded that Brad's number was -190,000 but

called it his debt, not his net worth. The teacher again changed her role from listener/data gatherer to challenger by “playing devil’s advocate.” Instead of waiting around for them to think through the challenge, she left them to think about it making a note to herself to call on them during whole class discussion. The teacher’s final interaction was with Seth’s group and since they got -190,000 also, she played devil’s advocate with them as well asking them why they chose Angelina when Brad had a higher number (190,000 versus 90,000). For her part, the co-teacher also played the role of listener and challenged them to justify their answer.

Though this explore time lasted less than two minutes, we played the same role during more sustained small group interactions. We attempted to spend the same amount of time at each group as data collectors and challengers. Other roles that we played during explore time were less emphasized in these episodes. We have found ourselves having to:

- manage small groups to keep them on task,
- instruct students on how to work with partners,
- direct instruct certain students about the meaning of the task or on another student’s solution process,
- encourage students to record their thinking (CMP4), and
- encourage students to create more efficient or sophisticated solutions (CMP2).

We have never needed to take any student aside for individual one-on-one attention since they are asking for help from peers, learning from whole class discussion and are engaging with the mathematics at a level that makes sense to them. Allowing/expecting students to create their own solutions to problems, most times different from a teacher’s, has given our students, in particular those with disabilities, the desire to attempt problems on their own or with partners (CMP1). Additionally, the social and behavioral problems were minimal in this environment since all students were able to find a way to be successful in the tasks.

Teaching Students with Disabilities in a Standards-based Environment

The Common Core State Standards calls on teachers to create classrooms in which students can analyze a problem, create a meaningful solution, prove their thinking to their peers, and critique the reasoning of others. Can and should students with special needs be expected to participate in such classrooms and if so, what does it look like? We have shown examples from our own 7th grade, co-taught mathematics class as a way to illustrate that students with disabilities, as well as students who perform below grade level, can and should be expected to create dispositions consistent with the Common Core. There are three key components to creating a standards-based environment that we touched on in this paper:

- Choosing supportive problems,
- The role of the co-teachers, and
- The role of the students.

First, the co-teachers must find appropriate problems for students so that they do not have to rely solely on direct instruction to introduce concepts. The hallmark of good problems include being 1) grounded in real-world contexts at the beginning of problem solving, 2) accessible to all students regardless of ability, 3) open ended and rich enough for whole-class discussion, and 4) able to be modeled by students and/or the teacher. If good tasks are chosen, students will be motivated to attempt them and their prior successes can spur them to persevere when the problems get more difficult. Direct instruction will be necessary in a very limited role if the tasks are chosen to build on the students' current understanding. When students with special needs raise their hand immediately upon setting off to solve problems, it will be because they are excited to share their thinking, not calling the teacher over to solve the problem for them.

Second, the role of the standards-based co-teacher changes from information giver to inquisitor and data gatherer. During small group exploration, they can assess students' strategies as well as challenge students who are reasoning at a high level. Instead of showing students how to solve the problem or giving enough hints that students do very little of the work, the co-teacher can suggest that the student work with their peers to co-create a solution. She can also suggest that students invoke strategies that they had learned the previous day or use models shared by the class. The co-teachers use data assessed from questioning students to organize their follow-up, whole-class debrief session. They must huddle in the class to share observations and decide who will go first and which students' strategies will contribute to the mathematical ideas they are striving to teach. Careful sequencing, questioning, and modeling are the main pedagogical strategies the co-teachers must attend to in a standards-based environment. Additionally, the teachers should insure that students are explaining, asking clarifying questions, and critiquing the solutions of others.

Finally, the students play an important role in creating and maintaining a standards-based environment. We have found that many students with disabilities are so accustomed to direct instruction that it takes some of them a while to learn that we are no longer going to talk them through the steps for solving a problem. Early on in the school year we hear a lot of "Just tell me how to do it" from students with and without special needs. Although they are frustrated initially, they eventually become excited to learn that they are being entrusted to think for themselves and to know that they are able to do so. Many students with disabilities have commented to us that they appreciate being allowed to solve problems in a way that makes sense to them and that it is valued.

Regarding achievement, all students with disabilities made annual learning gains on the state test, with one jumping two levels to gain proficiency and one jumping two levels to get reach the highest level possible. Results like this show that students with disabilities and those performing below grade level can develop a mathematical disposition consistent with the call of the Common Core State Standards as well as make significant gains on the state assessment.

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***Involuntary Teacher Transfer in Special Education: Concepts and Strategies for
Teachers Facing New Assignments***

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Abstract

Special education teachers are more likely than general education teachers to experience involuntary transfers to new teaching assignments. Faced with the challenge of teaching students with disabilities they have not encountered before, at new grade or developmental levels, among unfamiliar colleagues in new settings, special educators may experience anxiety and respond with resistance. But there are steps teachers can take to minimize the stress of an unwelcome transfer. This article helps teachers view the transition to a new position as a process that can be understood and managed. Three distinct phases in the transition process are explained and illustrated with an extended case example. Strategies for managing each phase of the transition are offered.

***Involuntary Teacher Transfer in Special Education: Concepts and Strategies for
Teachers Facing New Assignments***

To Elena, the transfer seemed to come out of nowhere. She had been happy as a special class teacher for young children with intellectual disabilities and took pride in her students' progress. She knew that her efforts were appreciated by the students' families and by the principal, who routinely stopped by her classroom whenever he gave VIP visitors a tour. So when the director of special education told her that she was being transferred to the high school to teach in the learning resource center, Elena was stunned.

Involuntary transfers to a new teaching position can be very upsetting, especially when teachers have not been involved in the decision-making process leading to the reassignment. Boe and his colleagues (Boe, Bobbitt, Cook & Barkanic, 1998; Boe, Cook & Sunderland, 2008) examined data from four rounds of the Schools and Staffing Survey (SASS 1990-91, 1993-94, 1999-00, and the most recent available, 2003-04) and found that special educators are more likely than general educators to experience the major change of a transfer to a new school, and that more than half of such transfers are involuntary on the part of the teacher. The transfer rate has increased substantially since

1990 (Boe et al., 2008) and is likely to accelerate. The current budget crisis has led school boards in most states to seek ways to reduce personnel costs by offering retirement incentives, closing programs, and laying off some teachers, often resulting in involuntary transfers for the remaining teachers ("Teacher Layoffs and School Closures," 2010). It is easy to see how special education teachers, especially those with non-categorical certification, can find themselves facing challenges like Elena's – assigned to teach students with disabilities not encountered before, at new grade or developmental levels, among unfamiliar colleagues in new settings.

Special education teachers who remain in the field long enough are certain to encounter significant change, both voluntary and mandated. The good news is that change does not have to be a difficult or painful experience. In fact, when we understand how change typically proceeds and when we take steps to actively manage it, change – even change we did not volunteer for – can be an opportunity for professional growth that proves to be stimulating and ultimately gratifying (Stivers & Cramer, 2009).

Understanding Resistance to Change

It didn't take Elena long to decide to fight the administration's decision to transfer her. She doubted her ability to be successful at the high school level: she had never been drawn to adolescents or to the setting of a resource program. Moreover, she had many reasons to want to remain at the elementary school. She finally was working effectively with her teaching assistant and making friends with the other teachers. She felt comfortable asking veteran teachers for help, and recently had started a cross-age tutoring program that was just beginning to flourish. So Elena opposed the transfer in every way she could: she appealed to her building principal for support; she filed a grievance with her union; she even requested a private meeting with the superintendent.

Teachers have been unfairly characterized as resistant to change (e.g., Richards, 2002; Zimmerman, 2006). In fact, teachers readily engage in change that they initiate, but may resist change that is mandated (Richardson, 1998). Consider the growth of inclusive education as an example. The development of more inclusive settings for educating students with disabilities has led to many changes in teaching assignments, both voluntary and involuntary. Inclusive education began as a grass-roots movement with teachers volunteering for this very significant change in assignment. As the demand for inclusive placements grew, however, schools could not rely only on volunteers, so some teachers were involuntarily assigned to inclusive classes. A few were reassigned several times, as schools tried to find the most effective partnerships and accommodate changing student needs. (Arguelles, Hughes, & Schumm, 2000; Dieker & Murawski, 2003; Reinhiller, 1996; Walther-Thomas & Bryant, 1996). It's no surprise that resistance accompanied some of these involuntary transfers.

Resistance to change is as much a natural and desirable part of life as change itself. It is our way of trying to preserve all that we have achieved, to protect things of value that we fear will be lost if a change goes unchallenged (Hall & Hord, 2001). Experts on change management (e.g., Jick & Peiperl, 2003) identify several different sources of resistance,

including failure to be convinced that change is warranted; habit, or a preference for the familiar and a desire to avoid disruption; negative experiences with previous change efforts; pragmatic concerns about how the change will be implemented; fear of loss, and /or fear of failure.

Each of these sources of resistance may come into play when a teacher is faced with an involuntary transfer. The last two, fear of loss and fear of failure, have particular relevance for special educators because they reflect the reality that for most of us, teaching is more than just a job -- it is a calling that helps to define our identity. We may resist change because we do not want to lose the sense of professional satisfaction we derive from knowing that our efforts are responsible for the success of students who otherwise might not succeed (Hargreaves, 2003). Nor do we want to lose our daily connections to the students and families we have come to cherish, and to the colleagues we trust and rely on. Lurking not far below the surface of our resistance, of course, is an unspoken fear of failure. If we are not effective in the new assignment, we stand to lose the high regard of our colleagues and our sense of ourselves as good teachers. Worse, our failure will mean that student learning will suffer.

Though resistance to a major change like an involuntary reassignment is an understandable and even expected response, getting mired in it is counterproductive, especially when the change is one over which the teacher has little or no influence. Stivers and Cramer (2009) offer suggestions for teachers seeking to understand and overcome the resistance they may feel. For example, teachers can begin by gathering more information, both about the reasons for the re-assignment and about the scope of their new responsibilities. Their resistance might ease upon learning more about the rationale for the change and the nature of the assignment. Also, teachers who resist a new assignment because of negative prior experiences with change should consider that those experiences undoubtedly gave them new skills for meeting the challenges change can bring, so they now are in a better position to manage a difficult transition successfully.

There may be rare circumstances under which a special educator faced with an involuntary transfer should resist. Special educators are bound by the professional standards adopted by the Council for Exceptional Children. Standard 9, Professional and Ethical Practice, specifies that each special educator must "Practice within one's skill limits and obtain assistance as needed (ICC9S7)." (Council for Exceptional Children, 2009, p.36). Special educators who do not have the skills needed to carry out the responsibilities of the new assignment **and** cannot access the professional development needed to gain those skills have an ethical obligation to take steps to insure that students with disabilities are served by teachers who are fully qualified.

Understanding Change as a Process

Major changes like involuntary transfers have the potential to derail even the most confident teacher. As we try to master the logistics of a new setting, establish collaborative relationships with new colleagues, and learn to teach unfamiliar curricula to

new students, it is easy to feel overwhelmed. The first task in navigating change is learning what to expect.

Three Phases

Change is not an event but a process that unfolds over time. Though the actual transfer occurs on a fixed date, the change process develops gradually, beginning well before and lasting long after that point. Along the way, we can feel bewildered and overwhelmed because little if anything seems familiar. However, there is a degree of predictability to many aspects of change. Social psychologist Kurt Lewin outlined a three-stage model for understanding change that later researchers and writers have built on (Schein, 1996). Among these is William Bridges (2004), whose work focuses on how change feels to the person who is in the midst of it. Bridges describes change as a process of transition with three perceptible phases: an ending, a neutral zone, and a new beginning.

Endings. Typically we think of change beginning with our awareness of something new on the horizon. However, “Even though it sounds backwards, endings always come first. The first task is to let go” (Bridges, 2004, p.80). In order to teach our new students well, we first have to stop teaching our old students – that is, we have to let go of the habits we developed for one group and be ready to develop habits tailored to another group. This can be hard, as Elena’s experiences illustrate:

The families of Elena’s students pleaded with district administrators, and Elena lobbied hard on her own behalf, but the director of special education would not budge. Because circumstances in her personal life made it impractical for her to look for another job, Elena began her new assignment feeling powerless, resentful, and pessimistic about the future.

During the first few weeks, Elena missed her friends and students, but most of all she missed the self assurance she once enjoyed. Her carefully planned lessons flopped, and her low key approach to behavior management failed her. She was used to resolving routine problems quickly, using familiar procedures and strategies she knew would work; now she felt like she continually made on-the-spot decisions without enough information, and then questioned her judgment afterward.

Like Elena, teachers who are involuntarily transferred need to recognize that there may be a strong sentimental pull toward the past, toward a time when things were familiar and predictable. But parting with an allegiance to ourselves as we were is an essential phase in the change process.

Neutral zone. In order to make the move from the old to the new, Bridges suggests that we must go through a neutral zone, a fallow time when we are at best treading water: not drowning, but most certainly not making progress. We recognize that we face challenges that are intellectual, emotional, and practical, but our efforts to meet them seem unproductive. In the unfamiliar landscape we make our way by trial and error, advancing unevenly, even haphazardly. It is a most unsettling time.

As the end of the first marking period approached, Elena admitted that a report card evaluating her would have to state “unsatisfactory progress; needs improvement.” She was not sure how her program fit into the larger structure of the high school, and insecure about her role in the science class she had been assigned to co-teach. Her relationships with other teachers – including her co-teaching partner in science -were cordial but nothing more. She had, however, been won over by the resource center students, who were likeable and engaging. For their sakes she wanted to regain her old dynamism and effectiveness, to stop spinning her wheels and start moving forward, but she felt stalled.

New beginnings. The good news is that the neutral zone does not last forever. Internal signals, faint but persistent, indicate that we are preparing to make a transition to a new beginning. As special educators we know better than to simply wait for readiness; instead, we act. Often in the beginning, we use the time-honored trick of acting “as if.” In approaching a new colleague, or meeting a student’s family, or launching a new unit of instruction, we act with the self-assurance that we are confident will come in time. In this way we make a mental commitment to the new status quo and achieve the “internal re-identification” that tells us we have made our new beginning (Bridges, 2004, p.172).

Elena couldn’t put her finger on when, or why, but she noticed that her outlook on her new position had improved. Maybe the turning point came when she actually started co-teaching, instead of just assisting in the science class; certainly it was evident when she began to look forward to sixth period, her most challenging group of students.

Elena wondered if the catalyst was an almost offhand remark made by an old friend from the elementary school. When they met unexpectedly, Elena spent several minutes venting, then finished with a plaintive “I just want to be an effective teacher!” Her friend laughed and said, “Well, there’s your problem. Who can hit that moving target? But if your goal is to BECOME an effective teacher, you can achieve it every day.”

Bridges would endorse the advice Elena’s colleague gave her; he recommends that people in difficult transitions shift their focus from the goal to the process of achieving the goal.

Strategies for Navigating Change

Once we understand that change is a process with predictable phases, we can look for ways to navigate the phases more easily. There are strategies to orient our thinking about change, to guide us as we begin to navigate in a new environment, and to support us as we build relationships with new colleagues.

Prepare Mentally

Shape the direction of the transfer process. Although you may not have had a role in the decision that led to your transfer, you can take ownership of the transfer process.

Before you begin your new assignment, take a professional development day to visit the school. Ask the teachers you meet what they wish they had known when they were just starting out. Make plans to visit other schools with similar programs once your new assignment is underway.

Leverage your experiences. Stivers and Cramer's research (2009) documents the many ways teachers adapt to changes at school by using what they have learned through significant changes at home. For example, one teacher said "My husband's illness forced me to learn how to manage my time better and not worry about little things" (p. 20). Changes that are welcome, such as marriage and the birth of children, as well as those that are not, such as illness or the end of a relationship, give teachers new skills and new perspectives to draw on.

Cultivate optimism. Noting that the stress some special educators experience in their jobs contributes to the high turn-over rate in special education, Cancio and Conderman (2008) recommend that special educators develop "a positive and adaptive frame of mind (by) ... setting realistic expectations, maintaining hope, looking at the positives, reflecting on one's work, and making work as enjoyable as possible" (p. 31). They provide details for these and other recommendations for developing a mind-set that is open to optimism.

Acclimate Gradually

Prioritize. You can't do everything in the first month or the first year. Make student learning your top priority, and let all other decisions flow from that.

Discover the unwritten rules. Take time to watch and listen. Identify the teacher leaders whose values are similar to yours, and after you have settled in a little, ask them to help you understand the school culture. "More experienced teachers know how the school system really works and how to get around potential roadblocks" (Rosenberg, O'Shea, & O'Shea, 2006, p. 328). These teacher leaders may also alert you to possible hidden agendas and political alignments within the school.

Accept that you are going to make some mistakes, and that at times you may feel inadequate. Resist the urge to explain that you didn't have problems like this in your previous position. Instead, look around for someone who accomplishes with ease the tasks that are vexing you, and ask for help.

Use positive self-talk. Self talk is "the strategy [that] involves a person telling himself or herself silently or aloud what she or he needs to hear or think to respond appropriately in a given situation" (Boutot, 2009, p. 278). Neck & Barnard (1996) encourage teachers to use self talk to "recognize and reverse self-defeating thought patterns" (p. 24). Positive self-talk helps teachers reorient their thinking to emphasize the opportunities that lie within the challenging situations they face. Special educators who learn this strategy to help them adjust to a new teaching assignment can then teach it to their students with disabilities who face challenges every day (Boutot, 2009).

Build New Relationships

Connect with your new colleagues. You will be tempted to work through your lunch period and eat at your desk. Don't. Informal social interactions lead to good working relationships in schools (Jarzabkowski, 2002) and in turn to the collaboration that is essential in special education today (Cramer, 2006).

Find a mentor. A good mentor has strong professional knowledge, standing within the school, and an interest in contributing to the field by helping other teachers (Jackson et al., 2003). Because "effective mentoring necessitates a certain chemistry for an appropriate interpersonal match ...finding a suitable mentor requires effort and persistence" (Jackson et al., 2003, p. 328). Making that effort is a wise investment because according to South Carolina's Center for Educator Recruitment, Retention and Advancement (CERRA) "high quality mentoring is especially important for special education teachers because they, more so than other teachers, feel isolated" (para. 3) and that sense of isolation is a prime cause of attrition among special educators (Coleman, 2000).

Reframe supervision. In an era of heightened accountability, the teacher evaluation process can be anxiety-inducing, especially for experienced teachers who feel like novices again because of their reassignment. Try to view the supervisory process as a professional service provided by your employer, and to view yourself as an educated consumer of that service. Let those providing the supervisory service know what kind of help you need to grow in your new position, and what kinds of feedback you find most useful (Rosenberg et al., 2006).

Making the Most of Change

Try to recognize this experience for what it is: an opportunity to invest in yourself. Your administrators undoubtedly want you to succeed in your new position, so don't be shy about asking for support to attend professional development conferences. Use the transition to grow personally as well as professionally. "Grace and self-knowledge are scarce commodities. Transitions provide a great opportunity to add to the supply" (Collins, 2010, para. 5).

Finally, consider the research findings of Huberman and his colleagues: teachers who had encountered significant change in their careers, including major changes in teaching assignments, were the ones who were best able to remain energetic and productive in their careers, even after more than 30 years of teaching (Huberman, Grounauer & Marti, 1993). You can prepare for a long, satisfying career in teaching by being willing to accept the challenges that change brings.

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How One Teacher, Two Students with Visual Impairments, and a Three-year R & D Project Could Change How All Students Learn Science

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Abstract

You probably recognize this standard definition of a comet: “a relatively small extraterrestrial body consisting of a frozen mass that travels around the sun in a highly elliptical orbit.” Add an accompanying photograph or diagram, and students “get” what a comet is, right? Science textbook publishers expect students to understand science concepts by describing them using content-specific vocabulary, but for some students, that’s a huge roadblock. A student who is blind or who has a visual impairment likely has never seen a comet, either in a night sky or in a photograph, and even when a teacher provides an additional colorful description about “fire balls” and “tails,” it doesn’t always help. How, then, do students with visual impairments learn scientific concepts? And, what can a science teacher do to ensure all students, including those with visual impairments, are learning? Seeking answers to these questions, two entities—McREL, an education research and development organization, and Edinboro University of Pennsylvania—partnered on a three-year collaboration to design, develop, and test resources for general education science teachers and teachers of students with visual impairments in grades 6–12. The result was a 3-part framework, *Visualizing Science with Adapted Curriculum Enhancements (ACE)*. With a direction set, the developers recruited science teachers of students with visual impairments to participate in the study. Most teacher participants had no prior knowledge of how to address the needs of their students with visual impairments, but during the process, everyone learned. What follows is the story of a high school chemistry teacher who jumped into this project blindfolded, literally.

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description about “fire balls” and “tails,” it doesn’t always help. How, then, do students with visual impairments learn scientific concepts? And, what can a science teacher do to ensure all students, including those with visual impairments, are learning?

Seeking answers to these questions, two entities—McREL, an education research and development organization, and Edinboro University of Pennsylvania—partnered on a three-year collaboration to design, develop, and test resources for general education science teachers and teachers of students with visual impairments in grades 6–12. The result was a 3-part framework, *Visualizing Science with Adapted Curriculum Enhancements* (ACE). By creating tools to help these students, they believed they could help all students. Thus, the framework components focused on these three aspects:

1. Understanding the Spectrum of Visual Impairment and Universal Design for Learning (UDL)
2. Assessing the Needs of Your Student with Visual Impairment
3. Enhancing Your Students Understanding of a Specific Science Concept

With a direction set, the developers recruited science teachers of students with visual impairments to participate in the study. Most teacher participants had no prior knowledge of how to address the needs of their students with visual impairments, but during the process, everyone learned. What follows is the story of a high school chemistry teacher who jumped into this project blindfolded, literally.

Journeying into the center of an R & D project

Pam Liccardi describes her excitement about participating in the ACE Project: “I had two students who are visually impaired—one who was totally blind; another who had low vision, and I knew nothing about visual impairments. Except for a general familiarity with the concepts behind Universal Design, everything related to the ACE project was brand new to me.”

To determine students’ prior knowledge, progress, and mastery, she first had to become familiar with the spectrum of visual impairments. In the science classroom, most learners use observation and visual perceptions of models as their primary learning conduit but students who are visually impaired primarily explore models tactilely. Here are some questions that Pam had to answer and that you can use before beginning to work with a student who is visually impaired:

- Is your student classified as blind or as low vision (see sidebar for definitions)
- What *specific* visual impairment does your student have?
- How does your student cope with the visual impairment?
- Which optical aids have helped your student in the classroom in the past?
- What physical and educational environments are best for your student? (Bogner et al., 2009)

Sidebar 1:

Determining the kind of visual impairment your student has

Students who are visually impaired are more frequently being assigned to traditional classrooms. Rather than focus on perceived limitations, it is more important to **determine your student's capabilities**. Once you have identified them, you can provide appropriate assistive technologies, those devices or processes that assist a person with a disability to do something that otherwise would be difficult or impossible to accomplish. There are many kinds of visual impairment which are generally classified as follows:

"Partially sighted" indicates some type of visual problem has resulted in a need for special education.

"Low vision" generally refers to a severe visual impairment, not necessarily limited to distance vision. Low vision applies to all individuals with sight who are unable to read the newspaper at a normal viewing distance, even with the aid of eyeglasses or contact lenses.

"Legally blind" indicates that a person has less than 20/200 vision in the better eye or a very limited field of vision (20 degrees at its widest point)

Source: Retrieved from <http://www.ace-education.org/learning/index.asp>

Seeing through my students' eyes

"The single most important thing I learned was to find out where my students were along the spectrum of visual impairment," says Pam. "To help us do this, the developers immersed us in the experience of being visually impaired by having us enter an unfamiliar room, blindfolded, and with a cane. Later, to give us a sense of the different types of impairments, we wore goggles that hindered our vision in ways appropriate to the impairment being illustrated. Finally, we had to conduct a science experiment while wearing the goggles. These experiences were simultaneously frustrating and interesting."



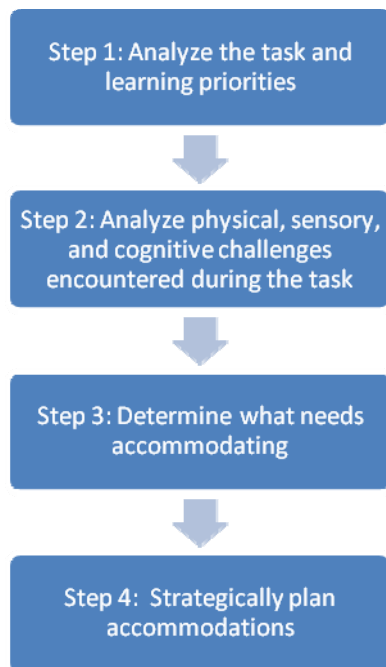
Pam describes her feelings about being blindfolded and the new learning she took away from the experience: “The first time I was blindfolded and had a task to accomplish, I seemed to lose track of time. When I thought I had only been engaged at a task for one or two minutes, I’d later learned that I had been at it for 10 minutes or more. This realization was something I could immediately take into the classroom. When I was wearing the goggles, my ability was completely changed; some things I just could not do; some things I could do with modifications. Having experienced how much more difficult a seemingly simple task is for someone with a visual impairment gave me real insight into something I could immediately change once back in the classroom.”

The amount of time a teacher allows for a task in the classroom may feel very different for someone with a visual impairment or other learning disability. Any teacher who can put his or herself in a student’s shoes is going to be better at adapting the learning task and the learning environment for that student. Figure 1 depicts four steps for accommodating students with disabilities, but all science teachers should ask these questions before teaching a science unit or lesson:

- What does the task require and what are the most important concepts the student should learn?

- What might challenge a student's physical, cognitive, or sensory abilities, whether or not the student has an identified disability?
- What specific portion(s) of the lab or activity will need to be adjusted so all learners, including those with disabilities, can meet the learning outcomes?
- What accommodations should I make?

Figure 1. The four-step accommodation model for science activities and labs



Reprinted from Bogner et al., *Visualizing Science with Adapted Curriculum Enhancements (ACE) Resource Manual* (2009).

Surveys and questionnaires: Tools of discovery

The second part of the project focused on helping teachers learn about their students in order to assess their needs. For example, how a student pictures what a comet might look like depends on his or her visual history (e.g., blind from birth, blind later in life, partial vision). Knowing the visual history, adaptations that have worked in the past, and student and parent goals helps a teacher determine the best support to provide. The ACE developers created several tools for communicating with parents, teachers, and support personnel (e.g., a parent survey, former teacher survey, and student questionnaire) to help teachers learn about relevant aspects of students' backgrounds and come prepared to work with their student.

Pam shares which tools she found most helpful: "I used the parent survey (see Figure 2) during the summer. It helped me to hear what the parents thought about their child's learning background, what they thought they already knew, and what they thought their

child's goals were. Equally helpful, if not more so, was the student questionnaire. By sitting down with the student, I learned the student's preferences, such as Braille instead of audio. Quite honestly, going in, I didn't imagine some of the things I ultimately discovered."

Figure 2: Sample questions for use in parent survey

I. Background and Mobility
1. Explain your child's visual impairment; include an explanation of his/her functional vision, if any. 2. When was your child's visual impairment diagnosed? Child's Age _____ Year _____ 3. What are you child's general interests, and what does your child really like to do? 4. How long has your child been in general education classrooms? _____ years 5. Is there a teacher or aide who comes to your mind who you believe has sound insight into working with your child? If possible, could I contact him/her for more information?
II. Independence and Support
1. What tasks does your child do at home? (e.g., making the bed, taking out trash) 2. Does your child travel in the neighborhood or community by himself or herself? 3. When your child enters a new room, how does he or she learn about the room?

4. Has your child participated in any specialized science camps or programs outside of the school system? Give dates and details, if possible.
5. How much experience has your child had in the kitchen? (lab science skills and kitchen skills are similar)

III. Learning Preferences

1. Did your child enjoy audio or tactile toys?
2. Does your child have difficulties with social interactions and making friends?
3. Given a choice, would your child choose to work *in a group* or *alone*?
4. What type of setting does your child prefer to study in?
5. How much opportunity has your child had to create things (e.g., art projects)?

Source: Bogner, D., et al. (2009). *Visualizing Science with Adapted Curriculum Enhancements (ACE) Resource Manual*. Denver, CO: McREL and Edinboro, PA: Edinboro University.

Ken Quinn, a social studies teacher and ACE reviewer who has been blind from birth, emphasizes that teachers not only must get to know their student with visual impairment, but they also must learn about parents' permissiveness: "My parents treated me as if I had sight. I rode a two-wheel bike; participated in creating meals (i.e., measuring, cooking, dealing with the stove), and I was more independent in the classroom setting as a result," says Quinn. "But other students might experience the 'fairy godmother syndrome,' where they say, 'I want a sandwich,' and it magically appears."

Sidebar 2: For step-by-step instructions on creating Braille Graphics and for other resources to use with students who are visually impaired, visit the "Educators Resources" page of the ACE website—Adapted Curriculum Enhancement NASA Science Inquiry Materials for the Visually Impaired—at <http://www.ace-education.org/index.asp>.

Creating materials and mastering instructional techniques

The second component of the ACE Framework focused on two critical strategies for making science more accessible to all students: (1) tactile graphics (TG) and (2) visualization techniques. Pam was familiar with visualization and had used it effectively with all of her students, but she had not created TGs.

“The developers asked us to create tactile graphics with written descriptions, and sometimes with 3-D models, that we thought would enhance students’ learning. This turned out to be challenging, but I learned to keep three things in mind when creating them: (1) simplify, (2) focus on the most important aspect of the graphic to portray the essential content, and (3) describe every single step. The beauty of paying attention to these three things is that it helps all students because you’re really focused on creating the most useful resource you can possibly create,” says Pam.

Pam designed a TG at the beginning of the intervention and again at the end so that the developers could assess changes in her capacity to design effective TGs. She observes, “One of my fellow teachers in the project remarked on her tendency to try to replicate the textbook picture. We all learned that our idea of a great looking TG wasn’t quite right; to be effective, a TG has to be about the science concept behind it. The developers reminded us not to try to recreate the little parts of the picture or make it pretty because that is where many TGs fail—they look good to the visual eye, but they don’t mean anything when they are felt by the student.”

Once students work with a TG, you know whether it’s effective. Quinn, who has worked on tactile graphics usability since 1999, confirms the divide between good and poor TGs: “One of our participants made a plate tectonics diagram, and as reviewer, I thought it really conveyed the concept of the plates moving apart.” The TG had several layers and the more layers you folded out, the further the plates moved away from each other. Although not identical to a tactile graphic, a model is a great way for all of your students to learn. Consider making an ice cream comet model in class following the guidance in Figure 3.

Figure 3: Teacher's guide for creating ice cream comet models

Teacher Preparation

What does it mean to describe a comet as a dirty snowball? It means that scientist think comets are a mixture of frozen water, dry ice, and other sandy/rocky materials left over from the early formation of our solar system. In this activity, students develop a comet model that they can eat. Students also trade "comets" and pretend to be an instrument on the Deep Impact Spacecraft called a spectrometer. It analyzes the structure and composition of comets by using nine different filters. Students will use their five senses as spectrometers to decide what is in the ice cream.

Materials needed per group (2–4 students):

Note: Since students will be eating their snowballs, plan this activity for a location other than the lab, and survey your class ahead of time for any food allergies (milk, peanuts) students might have. Remember to choose foods that will not dissolve while the ice cream sets.

Gather the following:

- One sandwich size resealable plastic bag
- One 1-gallon size resealable plastic
- Small cups for eating ice cream (one for each person and one extra cup for feeling the ice cream)
- Plastic spoons (one per person)
- Pairs of kitchen mitts (comet gets cold!)
- Ice (enough to fill a gallon size bag $\frac{1}{2}$ full per team)
- Chunky black/brown cookies, crushed candies, gummy bears, coconut flakes, and peanuts
- 80mL whole milk
- Sugar
- Vanilla extract
- 40mL evaporated milk
- Salt
- Can opener
- Something to crush cookies and other additives
- Food preparation gloves

Student Procedures

*Note: Before mixing their comets, students should **wash their hands** or put on food gloves.*

Step 1:

One student holds a sandwich size bag while the other places the following ingredients in the bag:

- 40 mL evaporated milk (or cream)
- 80 mL whole milk
- 5 level teaspoons of sugar
- Less than 1 mL vanilla

Step 2:

Think of ingredients you might add to the ice cream to represent dust (e.g., black/brown cookies in fine and large chunks), rocks (peanuts), or carbon dioxide (coconut flakes). **Be sure to keep a list of what you put into your comet.** Place all the elements into the bag, gently squeeze any extra air out of the bag, and seal it. **Check to make sure it does not leak** (Turn it upside down).

Step 3:

Place the sandwich bag into the bottom of the gallon bag. Put in about 10 heaping spoonfuls of salt.

Step 4:

Fill the gallon bag (containing sandwich bag with comet ingredients) 1/2 full of ice.

Step 5:

Note: Students should start this part of the experiment with bare hands so they can feel the temperature change. Make sure rubber gloves, mitts, cloth towels or some thick fabric is available to hold the bag because it will get extremely cold.

Close the larger bag tightly to remove as much air as possible. **Check for leaks.** Observe what takes place as the ice cream comet forms. Record what you discover as you watch this change take place.

Gently shake and roll the bag while keeping it in constant motion for approximately 6 – 10 minutes or until half the ice has turned to water. Gently feel the sandwich bag through the ice-water mixture. When the milk/sugar mixture in the sandwich bag has hardened into soft ice cream, open the gallon bag and remove the sandwich bag containing the ice cream.

Step 6:

Trade your comet with another team so the ingredients are a mystery to them.

Step 7:

When your team receives a mystery comet, be sure to rinse the outside of the sandwich bag with **very cold, fresh water** before opening it so that no salt flavor is transferred to the ice cream. Divide the ice cream comet by spooning some into the cups provided.

Make one extra cup and put it aside. Don't eat this one!

Pretend your eyes, hands, nose, ears, and taste buds are spectrometers taking data from the "comet." Gather and record the following "data" on your data sheet. *Note: If no one on the team has eyesight, ask a classmate with vision to obtain your data.*

- Take the extra cup you laid aside and feel the contents with your fingers. Describe what you feel on the data sheet.
- Smell the ice cream for additional information. Record your “odor observations” on the data sheet.
- Listen for any sounds that might be coming from the comet material. Record your findings on the data sheet.
- Taste the ice cream and record any final information about its ingredients on the data sheet.

Step 8:

Compare your results with the team who made the ice cream you tasted and record the following on your data sheet:

- List the elements you identified correctly.
- List the elements you missed and explain why you think your “spectrometers” missed them.
- Compare what you observed in Step 5 with other teams. List anything that was different from what you observed on your data sheet.

Source: http://www.ace-education.org/educ_resource/activ_overview/tg_ice_cream.pdf

Learning lessons along the way

Here are some things the developers learned along the way that all teachers, regardless of their discipline, should know and apply in their classrooms:

- **It is important for educators to know where a student is on a spectrum (e.g., visual, learning).** Like all teachers, those participating in the ACE project simply needed to know where to begin. In this case, that meant increasing their understanding about the spectrum of visual impairments, and the project provided manuals with terms and background information for them to use.
- **One size does not fit all.** Again, as with all teachers who have students with unique challenges, participants in the study needed to learn how to alleviate barriers to learning.
- **When it comes to tactile graphics, in particular, there is a difference between “feeling good” and “looking good.”** Teachers in the study needed to learn how to construct specialized resources as well as learning about more general resources that are available.

Reflecting on his experience as a reviewer, Ken Quinn wished something like ACE was available for him when he was growing up but is glad it is helping others now. “The benefit can just expand from here—science, mathematics, or history teachers can take what we did and put it into their field,” he says. And that’s really the point. Many students are tactile learners, not just a few who have a visual impairment. All the developers, researchers, and participants began this project committed to the idea that whatever tools they developed for one student would help all students.

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About the Author

At Mid-continent Research for Education and Learning (McREL), Vicki Urquhart fulfills a variety of roles in writing, editing, and producing research-based publications and new products. Also an experienced presenter, she conducts workshops around the country. Vicki has more than 20 years of experience as an educator, having taught at the secondary and postsecondary levels and is coauthor of *Teaching Writing in the Content Areas* and *Remove Limits to Learning With Systematic Vocabulary Instruction*. She also is author of *Using Writing in Mathematics to Deepen Student Learning* and several articles on education issues for magazines and journals such as *Phi Delta Kappan*, *Principal Leadership*, and the *Journal of Staff Development*, among others. In 2007, Vicki served on the planning committee that developed the 2011 NAEP Writing Framework. Her newest book, *Teaching Reading in the Content Areas*, 3rd ed., was released in May.

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