Semantic Intervention Knowledge, Attitudes, and Practices Among School-Based Speech-Language Pathologists

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ABSTRACT: Purpose: The level of knowledge among speech-language pathologists (SLPs) regarding the characteristics of students with semantic delays and SLPs’ attitudes toward regular communication with classroom teachers to plan and implement interventions for these students were investigated. In addition, the extent to which SLPs communicated with classroom teachers to obtain information on the semantic demands of the curriculum, students’ semantic abilities and performance in the classroom, and strategies to facilitate generalization of semantic skills across multiple settings were examined.

Method: School-based SLPs (n = 101) in Illinois completed a survey containing demographic questions, multiple-choice items, and Likert scales so as to provide information regarding their knowledge, attitudes, and current practices pertaining to semantic interventions and working with teachers.

Results: Participants’ scores revealed adequate knowledge of semantic and metalinguistic skills. More than 90% of the participants indicated that topics relating to semantic interventions and communication with teachers were either moderately important or very important. At least 75% of the participants communicated with teachers regarding all topics addressed in the survey to some extent.

Conclusion: Participants had strong knowledge of semantic skills and recognized the importance of communication between disciplines in conducting semantic interventions. The majority of the participants communicated with classroom teachers on some level. The implications of these results and directions for future research are discussed.

KEY WORDS: vocabulary knowledge, semantic skills, semantic delays, vocabulary interventions
language skills beyond the intervention setting (Ellis, Schlaudecker, & Regimbal, 1995; O’Toole & Kirkpatrick, 2007; Throneburg, Calvert, Sturm, Paramboukas, & Paul, 2000). Although previous research has indicated that SLPs generally have positive attitudes toward using a variety of service delivery models and regularly collaborate with teachers to implement language-based interventions (Beck & Dennis, 1997; Shaughnessy & Sanger, 2005), little information is available regarding SLPs’ attitudes and practices pertaining specifically to semantics. Therefore, the aim of this study was to provide preliminary information regarding the knowledge, attitudes, and practices of SLPs in regard to semantic interventions.

**Characteristics of Students With Semantic Delays**

Many children begin school with significantly less vocabulary knowledge than their peers due to environmental factors or speech and language impairments that negatively impact their ability to learn and use new words (Beitchman et al., 2008; Eyer et al., 2002; Hart & Risley, 1995; Marulis & Neuman, 2010). These children learn words at a slower rate than typically developing (TD) children and often struggle to learn grade-level concepts presented in the general education curriculum (Eyer et al., 2002; Graves & Watts-Taffe, 2008; Kieffer & Lesaux, 2007; McGregor, Newman, Reilly, & Capone, 2002). These children have semantic delays, which are receptive or expressive delays in vocabulary. Semantic delays are also associated with poor reading comprehension skills and decoding difficulties, thus resulting in significant academic challenges (Beck, McKeown, & Kucan, 2002; Biemiller, 2001; Cain, Lemmon, & Oakhill, 2004; Cunningham & Stanovich, 1997; Nagy & Scott, 2000; Scarborough, 2001).

Children with semantic delays often lack metalinguistic awareness (Cain et al., 2004). Metalinguistic awareness refers to the understanding of and ability to analyze features of language and language use (Graves, 2006). Individuals with strong metalinguistic skills are aware of semantic attributes (e.g., function, physical characteristics, category, composition) and take an active interest in words and their characteristics. They are also able to describe words and their relationships or to infer word meanings using surrounding contexts or morphological features of words (e.g., root words, prefixes, suffixes; Cunningham, 2009; Graves, 2006). Children with semantic delays have less developed metalinguistic skills and are less aware of semantic features and subtle linguistic cues (e.g., surrounding contexts, morphological features) that allow for incidental word learning (Hirsch, 2003; McGregor et al., 2002).

Children with weak vocabularies and poor metalinguistic skills often struggle to succeed in general education classrooms because teachers may use implicit, rather than explicit, teaching techniques to increase the vocabulary knowledge of their students (Baumann, Ware, & Edwards, 2007; Beck & McKeown, 2007). Implicit methods are indirect techniques and may involve exposing children to unfamiliar words in the absence of direct explanations pertaining to word meanings (Boulware-Gooden, Carreker, Thornhill, & Joshi, 2007). This may involve exposing children to new vocabulary within the contexts of stories, oral discussions, or texts. Unfortunately, reading comprehension and incidental word learning difficulties in children with semantic delays make it difficult for these children to learn vocabulary given implicit instructional techniques (Cain et al., 2004; McGregor et al., 2002).

Children with semantic delays can increase their vocabulary knowledge through explicit instruction, which consists of specific explanations or examples to explain meanings or features of words (Beck & McKeown, 2007; Christ & Wang, 2011; Duff, Fieldsend, Bowyer-Crane, & Hulme, 2008; Vitale & Romance, 2008). Additionally, directly teaching these students to use metalinguistic strategies (e.g., inferring meanings through context or morphological features) can effectively increase their ability to use these strategies to learn new words (Baumann et al., 2007; Boulware-Gooden et al., 2007).

Teachers may use direct instruction of words and metalinguistic strategies for all students in general education classrooms (Beck et al., 2002; Boulware-Gooden et al., 2007; Fukkink & de Glopper, 1998; Marulis & Neuman, 2010); however, this instruction may still be insufficient for students with semantic delays. Although most students learn new words given 10 to 12 exposures (Stahl, 2003), students with semantic delays need significantly more exposures to words than their TD peers (Eyer et al., 2002). Students with semantic delays may also require more practice than their peers to use metalinguistic strategies successfully across multiple settings and contexts (McGregor et al., 2002). Therefore, students with semantic delays need supplemental interventions that are not only explicit in nature but that also provide additional exposures to words and practice with word learning strategies.

**Collaborating With Teachers to Plan and Implement Semantic Interventions**

Although SLPS and classroom teachers have long shared the responsibility of facilitating the
vocabulary skills of students, each has separate roles in this process (ASHA, 2009; Snow, Burns, & Griffin, 1998; Ukrainetz & Fresquez, 2003). Teachers are responsible for providing instruction driven by specific curricular expectations that focus on students with a wide range of ability levels (Ehren, 2000). When general education instruction alone is insufficient to meet the needs of students with semantic delays, SLPs are responsible for planning and implementing supplemental interventions that are tailored to meet the needs of individual students and are driven by individualized education program (IEP) goals (Ehren, 2000; Snow et al., 1998; Ukrainetz & Fresquez, 2003). SLPs are also responsible for developing and implementing educationally relevant goals in the area of language and semantics in order to assist students in accessing the curriculum (ASHA, 2009).

A key responsibility of SLPs is providing semantic interventions that explicitly target specific words and metalinguistic strategies. Although a majority of these services may consist of direct treatment that is conducted outside of the classroom (Edgar & Rosa-Lugo, 2007), SLPs also have the responsibility of consulting with other professionals. Among SLPs, collaboration with other professions has been an encouraged and accepted practice for some time (Beck & Dennis, 1997; Shaughnessy & Sanger, 2005). Beck and Dennis (1997), for example, found that although SLPs reported that time constraints made it difficult to plan regular consultation time, both SLPs and teachers felt that collaboration was important. Specifically, the authors reported that SLPs can successfully help to modify and adapt the classroom curriculum and assist students in generalizing new skills. Beck and Dennis also reported that SLPs should communicate with classroom teachers because the teachers have expertise in the area of curricular content. In another study, Shaughnessy and Sanger (2005) found that kindergarten teachers and SLPs felt that services could be delivered effectively through a variety of models, including consultation. Both groups were enthusiastic and supportive of collaboration, with each group reporting the value of information gained from their interaction.

Although research suggests that SLPs have positive attitudes toward collaboration with teachers (Beck & Dennis, 1997; Shaughnessy & Sanger, 2005), little information is available regarding their attitudes toward collaborating with others specifically on semantic interventions. This consultation is particularly important in order for SLPs to align speech and language interventions with curricular expectations (Ehren, 2000; Longo & Curtis, 2008).

Communication between SLPs and classroom teachers may need to include discussions pertaining to the specific words and metalinguistic skills that are expected of students in the classroom as well as teaching methods that the teachers use in the general education curriculum. This information may help SLPs to better understand the expectations in the general education classroom so they can design semantic interventions that are aligned with these standards. Discussions might also include common problem areas for students with semantic delays, such as their retention of and performance with curricular concepts, ability to use metalinguistic strategies, or ability to learn words given the nature and frequency of exposure within general education instruction (Boulware-Goode et al., 2007; Cain et al., 2004).

Obtaining information from teachers regarding their students’ unique abilities and performance within the classroom can potentially help SLPs provide semantic interventions that are not only consistent with the curriculum but prescriptively tailored to meet the needs of individual students (Ehren, 2000).

Because children with vocabulary delays may struggle to apply skills across multiple tasks and settings, generalization of skills beyond the intervention setting is also an important consideration when planning semantic interventions (Cunningham, 2009; Neuman & Dwyer, 2009). Ellis et al. (1995) found that collaboration between teachers and SLPs was a key factor in effectively improving young children’s (kindergarten age) understanding and use of basic vocabulary concepts in the classroom. Additionally, when teachers and SLPs collaborate to implement language intervention strategies both inside and outside the general education classroom, they can successfully facilitate growth in the area of curricular vocabulary for students with language delays (kindergarten through third grade; Throneburg et al., 2000). This collaboration can allow SLPs the chance to train other professionals to foster generalization of language skills. O’Toole and Kirkpatrick (2007) found that professionals in education could successfully learn language facilitation strategies, indicating that collaboration with and training of teachers could result in improved student outcomes.

Although research has indicated that collaboration between professions results in increased student success (Ellis et al., 1995; O’Toole & Kirkpatrick, 2007; Throneburg et al., 2000), little information is available regarding the impact of collaboration specifically on semantics to improve student performance in this area. Therefore, more information is needed to determine the extent to which SLPs and teachers should discuss students’ abilities to use semantic skills across settings, techniques to be used by classroom teachers to facilitate generalization, and accommodations and modifications to be made to the curriculum to meet students’ semantic needs.
Purpose

Because general education instruction may be insufficient to meet the needs of students with semantic delays, it is critical that SLPs provide these students with interventions that will increase their performance in the classroom. In order to provide effective semantic interventions, SLPs must have adequate knowledge regarding semantic skills, their impact on academic performance, and characteristics of students with semantic delays. However, there is little research available on the knowledge and practices of SLPs who provide semantic interventions in the school systems. Therefore, this study was conducted to provide answers to the following questions:

- What is the level of knowledge among SLPs regarding the characteristics of students with semantic delays?
- What are SLPs’ attitudes toward regular communication with classroom teachers to plan and implement interventions for students with semantic delays?
- To what extent are SLPs communicating with classroom teachers to obtain information on the semantic demands of the curriculum?
- To what extent are SLPs communicating with classroom teachers to obtain information on students’ semantic abilities and performance in the classroom?
- To what extent are SLPs communicating with classroom teachers to determine strategies to facilitate generalization of children’s semantic skills across multiple settings?

METHOD

This survey was completed as a pilot study to obtain descriptive information on current knowledge, practices, and attitudes of school-based SLPs working in elementary schools.

Participants

Participants were selected using the online ASHA member database. The ASHA member directory allows members to access mail and e-mail addresses of all ASHA members nationwide who are registered with the online directory.

Because it was beyond the scope of this project to conduct a nationwide search of SLPs, this study included SLPs in the state of Illinois only. Participants were drawn from Illinois cities in the following regions of the state in order to get representation from multiple geographic areas: Southeast Illinois (Granite City, Belleville, Edwardsville), Southern Illinois (Carbondale, Marion, Murphysboro), Central Illinois (Springfield and Peoria and surrounding area including Morton, Dunlap, and Pekin), Northeast Illinois (Chicago and Kankakee), West Chicago suburbs (Wheaton, Aurora, and Naperville), Northern Chicago suburbs (Evanston, Crystal Lake, and Palatine), Southeast Chicago suburbs (Tinley Park and Orland Park), Southwest Chicago suburbs (Bolingbrook and Plainfield), Northern Illinois (Dekalb, Rockford, and Peru), Western Illinois (Moline, Rock Island, and Quincy), and Eastern Illinois (Champaign-Urbana, Danville, and Charleston).

E-mail addresses were obtained for all SLPs via the ASHA member directory. Thirty-two separate searches were conducted for members of each city within the database including the following additional search criteria: state of “Illinois,” certificate type of “speech-language pathology,” and employment facility of “elementary school.” Surveys were sent to a total of 533 SLPs in the Illinois area via an e-mail that contained a link to an online SurveySelect survey. Participants read a consent form that stated that their completion of the survey indicated their consent to participate in the study.

A total of 101 SLPs completed the survey, yielding a 19% return rate. The number of responses varied for each question, which is reported in the explanation of the results and corresponding tables. This variation in response rate for each question occurred partially due to participant choice and partially due to the fact that participants were instructed to skip the questions about collaborative practices (questions 18, 20, 22, and 24) if they indicated in the preceding questions (questions 17, 19, 21, and 23) that they did not engage in collaboration regarding that particular topic. Although a higher response rate would have been desirable, response rates falling <20% are common for web-based surveys, indicating that this return rate was typical for this research design (Shih & Fan, 2008).

Of the participants, 12% (12) had been working in the school system for 0–5 years, 24% (24) for 5–10 years, 21% (21) for 10–15 years, 12% (12) for 15–20 years, and 32% (32) for ≥20 years (question 1, n = 101). Thirty percent (30) reported having caseloads of <40 students, 61% (62) reported caseloads between 40–60 students, 8% (8) reported caseloads between 60–80 students, and 1% (1) reported caseloads of ≥80 students (question 3, n = 101).

The data for caseload composition are reported in Table 1 (question 2, n = 101). The two highest represented areas were early and late elementary
school, with 88% (89) of respondents indicating that they worked with early elementary school students and 82% (83) indicating that they worked with late elementary school students. Regarding service delivery models (see Table 2, question 4, \( n = 101 \)), the most commonly used model was pull-out therapy, as all participants reported using this model. For pull-out therapy, the most common reported frequency was 6 or more times a week, at 79% (80). For consultation, the highest reported frequency was 1–3 times per week, at 64% (64). The highest reported frequency for the one teach/one assist model was not at all, with 48% (46) of the participants indicating this frequency. This was also the case for station and team teaching, as 76% (70) of the participants did not use station teaching, and 63% (61) did not use team teaching.

### Survey Instrument

The survey consisted of questions that were designed to obtain participants’ demographic information, measure their knowledge in the area of semantic skills and intervention, investigate their attitudes toward semantic interventions, and obtain information on their practices relating to semantic interventions (see the Appendix). Four demographic questions were included to obtain information on the participants’ years of experience, caseload numbers, percentage of caseloads represented by different age groups, and service delivery models used (questions 1–4). Eleven multiple-choice questions measured the participants’ knowledge in the area of semantic skills (questions 5–15). Nine of these questions (questions 5, 8–15) required the participants to choose whether a statement was true or false, and two (questions 6 and 7) required the participants to choose appropriate answers from lists of choices. Participants’ attitudes toward communication classroom teachers were measured using a 4-point Likert scale (question 16). The final portion of the survey included a combination of multiple-choice questions (questions 17, 19, 21, and 23) and 5-point Likert scales (questions 18, 20, 22, and 24) in order to collect information on the current practices of SLPs when conducting semantic interventions relating specifically to intervention planning, communication, and implementation.

### Content Validity

Content validity was established for the survey instrument by obtaining feedback from three expert reviewers. One was an SLP who worked with students in early elementary school through junior high and who had expertise in the area of phonological awareness. She had a bachelor’s degree in deaf and hard of hearing and a master’s degree in speech-language pathology, with 4 years of experience as a deaf education teacher and 5 years of experience as an SLP in the school system. The second reviewer was an SLP who worked with students ranging from preschool through early elementary school and who had expertise in phonological awareness. She had both a bachelor’s degree in speech-language pathology and audiology.

### Table 1. Caseload composition (question 2, \( n = 101 \)).

<table>
<thead>
<tr>
<th>Student level</th>
<th>0%</th>
<th>1%–25%</th>
<th>25%–50%</th>
<th>50%–75%</th>
<th>75%–100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool (( n = 70 ))</td>
<td>34.29</td>
<td>51.43</td>
<td>5.71</td>
<td>2.86</td>
<td>5.71</td>
</tr>
<tr>
<td>Early elementary (( n = 89 ))</td>
<td>4.49</td>
<td>17.98</td>
<td>46.07</td>
<td>25.84</td>
<td>5.62</td>
</tr>
<tr>
<td>Late elementary (( n = 83 ))</td>
<td>4.82</td>
<td>28.92</td>
<td>48.19</td>
<td>12.05</td>
<td>6.02</td>
</tr>
<tr>
<td>Middle school/Jr. high (( n = 57 ))</td>
<td>29.82</td>
<td>47.37</td>
<td>7.02</td>
<td>3.51</td>
<td>12.28</td>
</tr>
<tr>
<td>High school (( n = 49 ))</td>
<td>83.67</td>
<td>14.29</td>
<td>0.00</td>
<td>2.04</td>
<td>0.00</td>
</tr>
</tbody>
</table>

### Table 2. Service delivery models (question 4, \( n = 101 \)).

<table>
<thead>
<tr>
<th>Treatment type</th>
<th>Not at all</th>
<th>1–3 times per week</th>
<th>4–6 times per week</th>
<th>6 or more times per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>Pull-out therapy (( n = 101 ))</td>
<td>2.97</td>
<td>3</td>
<td>12.87</td>
<td>13</td>
</tr>
<tr>
<td>Consultation (( n = 100 ))</td>
<td>4.00</td>
<td>4</td>
<td>64.00</td>
<td>64</td>
</tr>
<tr>
<td>One teach/One assist (( n = 95 ))</td>
<td>48.62</td>
<td>46</td>
<td>31.58</td>
<td>30</td>
</tr>
<tr>
<td>Station teaching (( n = 96 ))</td>
<td>72.92</td>
<td>70</td>
<td>18.75</td>
<td>18</td>
</tr>
<tr>
<td>Team teaching (( n = 97 ))</td>
<td>62.89</td>
<td>61</td>
<td>27.84</td>
<td>27</td>
</tr>
</tbody>
</table>
and a master’s degree in speech-language pathology. She had been working as an SLP in the school system for 23 years. The third reviewer had a bachelor’s degree in psychology, a master’s degree in speech and hearing sciences, and a doctoral degree in special education. She had 9 years of experience as a school-based SLP and had expertise in the areas of research methods and survey development.

Data Analysis

Participants’ responses to the survey are reported based on the percentages obtained in the summary from SurveySelect. The one exception is the item for which the participants were asked to identify examples of metalinguistic tasks; for this item, the average point total for all respondents was reported in order to determine if their knowledge of metalinguistic tasks was adequate. A perfect score for this question was a 4, which would indicate that participants correctly discriminated correct items from foils. The preset goal criterion was 3.5 because this would indicate an average point total >85% accuracy (3.5/4.0 = 87.0% accuracy).

RESULTS

Knowledge

Of the 11 questions measuring participants’ knowledge of semantic skills, nine (questions 5, 8–15) were in the form of true or false statements. These statements all related to characteristics of semantic delays and metalinguistic skills. For these questions, at least 98% of the participants who answered did so correctly (see Table 3). One hundred percent (n = 97) of the participants correctly identified the definition of metalinguistic skills when answering question 6. For question 7 (n = 97), in which the participants were asked to identify examples of metalinguistic tasks, a total score of 4 was the highest score possible, indicating that a person would have chosen all correct examples. SurveySelect subtracted points from the participants’ scores if they chose incorrect foils. The average score among participants for this item was 3.57, indicating that the average met the preset criterion for adequate knowledge of metalinguistic tasks (criterion score = 3.5).

Attitudes

Attitudes of the participants toward different practices relating to semantic skills were measured using a 4-point Likert scale with six items (question 16, n = 90) (see Table 4). For all items on the Likert scale, >90% of the participants indicated that the practice was either moderately important or very important. The item with the largest percentage of participants indicating that it was very important was “communicating with classroom teachers to obtain information on vocabulary knowledge needed for success in the curriculum” (88%, 79). “Obtaining information from classroom teachers regarding metalinguistic strategies expected of students in the classroom setting” had the lowest percentage of participants indicating that it was very important (69%, 62). Although this was the lowest ranking item, its percentage was still fairly high, as more than half of the participants felt that it was important.

Semantic Intervention Practices

Results for question 17 (n = 91) showed that the most commonly reported frequency of communication relating to semantic interventions was 1–2 times per month, with 31% (28) of the sample reporting this frequency (see Table 5). The results regarding specific topics discussed during interactions between teachers and SLPs are displayed in Table 6 (question 18). Six respondents (7%) chose the open-ended “other” category for this item. Of these six, two indicated that they talked to classroom teachers about classroom content and specific vocabulary targeted in the classroom, two indicated that they talked about specific plans or themes to be targeted in therapy, one mentioned students’ behavior, and the last mentioned home support. A final participant commented that he or she would talk about all of the options listed if time permitted, but that time rarely permitted discussion of all items.

Collaborative Practices Relating to Semantic Demands

The participants were asked in question 19 (n = 90) to indicate the frequency with which they

<table>
<thead>
<tr>
<th>Question #</th>
<th>Correct response</th>
<th>Incorrect response</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 (n = 99)</td>
<td>100 99</td>
<td>0 0</td>
</tr>
<tr>
<td>8 (n = 98)</td>
<td>99 97</td>
<td>1 1</td>
</tr>
<tr>
<td>9 (n = 89)</td>
<td>98 87</td>
<td>2 2</td>
</tr>
<tr>
<td>10 (n = 91)</td>
<td>100 91</td>
<td>0 0</td>
</tr>
<tr>
<td>11 (n = 91)</td>
<td>98 89</td>
<td>2 2</td>
</tr>
<tr>
<td>12 (n = 90)</td>
<td>98 88</td>
<td>2 2</td>
</tr>
<tr>
<td>13 (n = 90)</td>
<td>100 90</td>
<td>0 0</td>
</tr>
<tr>
<td>14 (n = 90)</td>
<td>100 90</td>
<td>0 0</td>
</tr>
<tr>
<td>15 (n = 90)</td>
<td>98 88</td>
<td>2 2</td>
</tr>
</tbody>
</table>
communicated with classroom teachers about the semantic demands of the curriculum. The largest number of participants indicated that they communicated with classroom teachers about semantic demands 1–2 times per month (39%, 35). The rest of the results for this question have been reported in Table 5 (n = 90). In question 20 (n = 81), the participants were asked to indicate their frequency of communication on specific curricular topics (relating to semantics).

Participants were to indicate the extent to which they discussed each topic with classroom teachers (see Table 7). “Vocabulary students must understand to succeed in the general education curriculum” had the highest percentage of participants choosing the two highest frequencies, which were 1–2 times per week (33%, 27) and 1–2 times per month (28%, 23). “Strategies used in the general education curriculum to teach vocabulary skills” was also a topic discussed.
frequently, with 44% (36) of participants discussing it 1–2 times per month and 10% (8) discussing it 1–2 times per week.

Student Performance
For question 21 (n = 87), more than half (51%, 44) of the participants reported that they discussed general student performance with classroom teachers 1–2 times per month (see Table 5). For question 22 (n = 84), the participants were asked to indicate the extent to which they communicated with classroom teachers about student performance on specific semantic skills using a 5-point Likert scale (see Table 8). The highest rated topic was “students’ ability to use age-appropriate vocabulary in both oral and written language,” with 48% (40) discussing this 1–2 times per month and 17% (14) discussing it 1–2 times per week.

Fostering Generalization
Results for question 23 showed that the highest percentage (42%, 88) of participants indicated that they communicate with teachers about fostering generalization 1–2 times per month (see Table 5). The participants were then asked which topics they discussed with classroom teachers in order to facilitate generalization of semantic skills using three 5-point Likert scale items (question 24, n = 69) (see Table 9). The largest percentage of participants regularly communicated with teachers on the topic of “accommodations and modifications within the curriculum to meet students’ needs,” with 43% (30) doing this 1–2 times per month and 12% (8) doing so 1–2 times per week. An additional topic discussed frequently was “strategies for facilitating use of words in oral and written form,” with 43% (30) of participants discussing this 1–2 times per month and 7% (5) discussing this 1–2 times per week.

DISCUSSION
Because children with semantic delays experience significant academic challenges (Beck et al., 2002;
Cunningham & Stanovich, 1997; Keiffer & Lesaux, 2007), it is critical for SLPs to be familiar with the typical speech and language profiles of these students so they can provide effective evaluation and intervention services. The participants in this study answered 98% of the questions on this topic correctly, indicating that they had strong knowledge of students with semantic delays. Knowledge of metalinguistic skills is also important for providing effective intervention due to their significant impact on academic performance (Cain et al., 2004; Scarborough, 2001). All of the participants in this study correctly identified the definition of metalinguistic skills, and they met the preset criterion score (3.5) for the identification of metalinguistic tasks, suggesting that the majority of participants had strong knowledge in this area as well. The results therefore indicated that the majority of the participants possessed the basic knowledge required to provide effective intervention for students with semantic delays.

In addition to having an adequate knowledge base, it is essential that SLPs recognize the importance of communicating with classroom teachers regarding students’ semantic skills. SLPs should be aware that they share the role of enhancing their students’ language skills and adopt the mindset that they and teachers possess expertise to share between disciplines in order to deliver effective interventions (Ehren, 2000; Ukrainetz & Fresquez, 2003). Results indicated that more than half of the participants felt that all collaborative practices mentioned in question 16 were important in conducting semantic interventions, suggesting that the participants recognized the need for regular communication with teachers. No participants chose not at all for any of these items, indicating that all of the participants felt that each practice had some level of significance in the planning and implementation of effective semantic interventions.

Universal agreement regarding collaboration is consistent with previous studies that indicated that...
SLPs see the value in collaboration between disciplines (Beck & Dennis, 1997; Ellis et al., 1995; Shaugnessy & Sanger, 2005). The topics deemed most important in our study were vocabulary needed for success in the curriculum and vocabulary to target during semantic interventions, suggesting that the participants were aware of the importance of familiarizing themselves with aspects of the scope and sequence of the curriculum (Ehren, 2000; Ukrainetz & Fresquez, 2003). This finding indicated that many of the participants are aware of their responsibility to provide services that are academically relevant and aligned with curricular standards, which are factors that have been emphasized in previous literature (ASHA, 2009; Ehren, 2000; Ellis et al., 1995; Throneburg et al., 2000).

In addition to attitudes toward collaboration between disciplines, this study also investigated collaborative practices relating specifically to semantic interventions. I found that for all items on the Likert scales (questions 20, 22, and 24), at least 75% of the respondents indicated that they discussed semantic demands, student skills, and fostering generalization at least some of the time when talking to classroom teachers. Although further research is needed to determine the amount of attention that SLPs should devote to each topic when working with teachers, it is encouraging that a large percentage of the participants addressed all of the topics at some level.

A topic discussed frequently with teachers as indicated by the answers to question 20 was curricular vocabulary. This is encouraging because choosing appropriate words to address during intervention is a key step to designing academically relevant goals and enhancing students’ knowledge of curricular vocabulary (Ellis et al., 1995; Throneburg et al., 2000). Additional highly rated topics included strategies used to facilitate both semantic skills and metalinguistic skills in the classroom, extent to which students can define and describe words in the classroom, and accommodations and modifications utilized in the classroom (questions 22 and 24). Discussing these three topics can not only assist SLPs to develop appropriate intervention goals but can also allow them to educate teachers on the characteristics of students with semantic delays and methods that can be used to facilitate language growth in the classroom. Again, this is a positive finding in that the participants were engaging in a variety of collaborative practices that are important for developing semantic interventions.

In summary, the participants in our study had strong knowledge of semantic skills and saw the importance of collaborating with classroom teachers in implementing semantic interventions. Although further investigation is needed regarding the optimal frequency at which to discuss each topic addressed in this survey, it is encouraging that a large number of participants addressed each topic at some level. It would be desirable for SLPs to discuss each topic presented as much as possible; however, given common barriers such as time constraints, collaboration time may vary depending on factors such as SLPs’ level of experience or caseload composition and numbers. Although it is beyond the scope of this study to determine the amount that SLPs should be addressing specific semantically related topics during collaboration, I can conclude that it was a positive finding that many participants were addressing several important variables to delivering effective semantic interventions.

Limitations and Future Research Directions

Although this study provides useful information regarding the knowledge, attitudes, and practices of SLPs regarding students’ semantic skills, I obtained this data from a relatively small participant sample solely from the state of Illinois. Due to the fact that practices may vary from state to state as a result of differences in laws regarding caseload or eligibility guidelines, responses from SLPs in other states may vary from those in this study. SLPs’ knowledge and attitudes may also vary across states, thus warranting further research investigating the knowledge of SLPs in other geographic regions.

The response rate was also a limitation to this study. Although a 19% response rate is typical for web-based survey research (Shih & Fan, 2008), it would be desirable to obtain a more representative sample for future analysis. Additionally, due to the format of this survey, participants had limited opportunities to provide open-ended comments, which may have inhibited their ability to provide detailed opinions and descriptions of their opinions or practices. In future studies, it would be useful to incorporate qualitative methods of data collection in order to provide more elaborate information regarding SLPs’ attitudes and current practices regarding semantic interventions.

Although many participants indicated that they communicated with classroom teachers to some extent regarding semantic skills or intervention, responses were fairly scattered across the frequencies of interaction for a number of items. For example, some SLPs reported communicating with teachers 1–2 times over several months for certain items, whereas others reported communicating with teachers 1–2 times per week, suggesting that there were inconsistencies regarding collaboration practices. More detailed information regarding the frequency of communication between disciplines relating to semantic skills is
needed. The possibility exists that such variance may be related to factors such as SLPs' years of experience, caseload size, and service delivery models.

Due to the fact that this was a descriptive study, I did not conduct statistical analyses of these factors. Further comparative research with a larger participant sample could investigate the impact of SLPs' experience, caseload size, and service delivery models on their knowledge, attitudes, and practices pertaining to semantic skills. Additionally, more information is needed regarding the desired frequency at which SLPs should be discussing specific semantically related topics with other professionals. Therefore, future research could focus on developing frameworks and protocols for collaboration, including the amount of time SLPs and other professionals should devote to certain topics and how to use collaboration time to plan interventions effectively.

**REFERENCES**


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reading comprehension in the urban classroom. *The Reading Teacher, 61*, 134–144. doi:10.1598/RT.61.2.3


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APPENDIX (p. 1 of 4). SURVEY INSTRUMENT

1. Please indicate your years of experience as a school-based speech-language pathologist:
   a. 0–5
   b. 5–10
   c. 10–15
   d. 15–20
   e. 20 or more

2. Please indicate the percentage of your caseload represented by each grade level listed below:
   a. Preschool
      0% 1%–25% 25%–50% 50%–75% 75%–100%
   b. Early elementary (Kindergarten through 2nd grade)
      0% 1%–25% 25%–50% 50%–75% 75%–100%
   c. Late elementary (3rd through 5th grade)
      0% 1%–25% 25%–50% 50%–75% 75%–100%
   d. Middle school/Junior High (6th through 8th grade)
      0% 1%–25% 25%–50% 50%–75% 75%–100%
   e. High school (9th through 12th grade)
      0% 1%–25% 25%–50% 50%–75% 75%–100%

3. What is your current caseload?
   a. Less than 40
   b. 40–60
   c. 60–80
   d. 80 or more

4. Please indicate the extent to which you use the following service delivery models:
   a. Pull-out therapy (conducted by an SLP only in a room separate from the students’ classroom)
      – Not at all
      – 1–3 times per week
      – 4–6 times per week
      – 6 or more times per week
   b. Consultation (SLP communicates regularly with the classroom teacher to monitor student progress and make recommendations to classroom teacher for instructional strategies or curricular accommodations and modifications)
      – Not at all
      – 1–3 times per week
      – 4–6 times per week
      – 6 or more times per week
   c. One teach/one assist (one person teaches while the other simultaneously moves throughout the room providing support to select students)
      – Not at all
      – 1–3 times per week
      – 4–6 times per week
      – 6 or more times per week
   d. Station teaching (Two or more professionals simultaneously teach portions of lessons while students progressively move through different “stations”)
      – Not at all
      – 1–3 times per week
      – 4–6 times per week
      – 6 or more times per week
   e. Team teaching (Teacher and SLP both present the lesson)
      – Not at all
      – 1–3 times per week
      – 4–6 times per week
      – 6 or more times per week

5. Some children begin their school experiences with significantly less vocabulary knowledge than their same-aged peers.
   T or F
APPENDIX (p. 2 of 4). SURVEY INSTRUMENT

6. Metalinguistic skills refer to the ability to (choose one):
   a. Rote count with one to one correspondence
   b. Visually track words when reading
   c. Analyze language and its features

7. Children with strong metalinguistic skills (check all that apply):
   a. Struggle to retain meanings of new words
   b. Can often analyze morphological features of words to infer meanings of unfamiliar words
   c. Can often analyze the context of written texts to infer meanings of unfamiliar words
   a. Have weaker vocabulary skills than their peers
   b. Are typically aware of relationships between words
   c. Often have the ability to describe semantic features of words

8. Children with semantic delays learn new vocabulary at the same rate as their peers.
   T or F

9. Children with semantic delays often struggle to infer meanings of new words through contexts of written texts.
   T or F

10. Children with semantic delays typically have strong metalinguistic awareness skills.
    T or F

11. Direct explanations of unfamiliar vocabulary are not typically needed for students with semantic delays to learn meanings of new words.
    T or F

12. A child’s metalinguistic skills have little impact on their ability to learn new words.
    T or F

13. Children with semantic delays typically need more exposures to unfamiliar words in order to retain knowledge of their meanings.
    T or F

14. Semantic knowledge is correlated to reading comprehension skills.
    T or F

15. Children with semantic delays are more likely to struggle academically than their same-aged peers.
    T or F

16. For the following items, please rate the importance of the following: 1 = not important at all, 2 = minimally important, 3 = moderately important, 4 = very important.

   Communicating with classroom teachers to obtain information on vocabulary knowledge needed for success in the curriculum. 1 2 3 4

   Obtaining information from classroom teachers regarding metalinguistic strategies expected of students in the classroom setting. 1 2 3 4

   Targeting vocabulary words used in the classroom during semantic interventions. 1 2 3 4

   Targeting metalinguistic skills used in the classroom during semantic interventions. 1 2 3 4
Communicating with classroom teachers regarding individual student performance on semantic tasks in the classroom.  

Talking with teachers to identify ways to facilitate independent use of semantic skills within the classroom.

17. How often would you typically communicate with a classroom teacher for one individual student with language delays?  
   a. Not at all  
   b. 1–2 times per month  
   c. 2–3 times per month  
   d. 3–5 times per month  
   e. 5 or more times per month

(IF you answered “Not at all,” please skip to question 19. Otherwise, continue to question 18.)

18. When communicating with classroom teachers, what topics do you discuss? (Please choose all that apply:)  
   a. Scheduling  
   b. Student goals and objectives  
   c. Strategies, accommodations, or modifications utilized during speech and language therapy  
   d. Strategies accommodations, or modifications utilized in the general education classroom  
   e. Content of speech and language therapy  
   f. Curricular expectations  
   g. Student performance during speech and language therapy  
   h. Student performance in the classroom  
   i. Other (please list):___________

19. How often do you communicate with classroom teachers to determine the semantic demands of the curriculum?  
   a. Not at all  
   b. 1–2 times per month  
   c. 2–3 times per month  
   d. 3–5 times per month  
   e. 5 or more times per month

(IF you answered “ Not at all,” please skip to question 21. Otherwise, continue to question 20.)

20. When communicating with classroom teachers about semantic demands of the curriculum, how often do you discuss the following? (0 = not at all, 1 = 1–2 times during the school year, 2 = 1–2 times over several months, 3 = 1–2 times a month, 4 = 1–2 times a week):  

   Vocabulary students must understand to succeed in the general education curriculum.  
   Metalinguistic skills needed for success in the general education curriculum.  
   Number of exposures to new words provided by classroom teachers in the general education curriculum.  
   Strategies used in the general education curriculum to teach vocabulary skills.  
   Strategies for independent word-learning that are taught in the general education curriculum.
### APPENDIX (p. 4 of 4). SURVEY INSTRUMENT

21. How often do you communicate with classroom teachers to determine individual students’ performance on semantic tasks within the curriculum?
   a. Not at all
   b. 1–2 times per month
   c. 2–3 times per month
   d. 3–5 times per month
   e. 5 or more times per month

(If you answered “Not at all,” please skip to question 23. Otherwise, continue to question 22.)

22. When communicating with classroom teachers about individual students’ performance on semantic tasks within the curriculum, how often do you discuss the following? (0 = not at all, 1 = 1–2 times during the school year, 2 = 1–2 times over several months, 3 = 1–2 times a month, 4 = 1–2 times a week):

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>Extent to which students can define and describe curricular vocabulary.</td>
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<tr>
<td>Students’ ability to use age-appropriate vocabulary in both oral and written language.</td>
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<tr>
<td>Number of exposures students need to retain knowledge of new words.</td>
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<tr>
<td>Extent to which students can utilize metalinguistic strategies to learn new words.</td>
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</tbody>
</table>

23. How often do you communicate with classroom teachers to identify ways to foster generalization of semantic skills?
   a. Not at all
   b. 1–2 times per month
   c. 2–3 times per month
   d. 3–5 times per month
   e. 5 or more times per month

(If you answered “Not at all,” please hit “submit” to complete the survey. Otherwise, continue to question 24.)

24. When communicating with classroom teachers to collaboratively determine ways to facilitate generalization of semantic skills across multiple settings, how often do you do the following? (0 = not at all, 1 = 1–2 times during the school year, 2 = 1–2 times over several months, 3 = 1–2 times a month, 4 = 1–2 times a week):

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategies for facilitating use of newly learned words in oral and written form.</td>
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<tr>
<td>Accommodations and modifications within the curriculum to meet students’ needs</td>
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</tr>
<tr>
<td>Strategies for facilitating use of metalinguistic strategies in the classroom</td>
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</tbody>
</table>

Please hit “submit” to complete the survey.

Thank you for your time and input. This information will contribute to research that will serve to benefit speech-language pathologists and the students they serve.