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The influence of teacher characteristics on teachers' knowledge of language form, content, and use

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Research has demonstrated that poor readers may demonstrate a variety of language deficits (e.g., Adams, 1990), and children with language difficulties have difficulty reading later in life (e.g., Catts, Fey, Zhang, & Tomblin, 1999). Teachers are likely to be faced with the challenge of implementing programming to meet the needs of children with varying language needs. Therefore, teachers' knowledge of language is essential (e.g., Moats, 1994; Wilson, 1999). This study investigated which teacher variables significantly predicted teachers' knowledge of language form (phonology, morphology, syntax), content (semantics), and use (pragmatics). The Assessment of Oral Language Knowledge (AOLK; McIntyre, 2005) was administered to 236 preservice and inservice teachers. A simultaneous regression model was used to explore which teacher variables significantly predicted teachers' knowledge of language form, content, and use. Results indicated that years of teaching experience and gender accounted for 17.37% of the variance in teachers' knowledge of language form. Teachers' years of teaching experience and gender also accounted for 18.7% of the variance in teachers' knowledge of language content. None of the variables were statistically significant predictors of teachers' knowledge of language use. The importance of exploring teachers' knowledge of all three language domains, and the characteristics that influence this knowledge, to teacher training and inservicing are discussed.

Learning oral language is a primary developmental process for children. It is necessary for children to develop their receptive and expressive language skills to become effective communicators. Children need to actively use language across the curriculum to construct meaning for themselves (Lindfors, 1987). It is expected that classroom teachers facilitate oral language development since this primary process also lays the foundation for the learning of a secondary process — written language (Perfetti & Sandak, 2000).

In order to make sense of the complex system that is language, Owens (1992) stated that language "can best be understood by breaking it down into its functional elements or components" (p. 14). These three components are language form, content, and use. Syntax, morphology, and phonology, the aspects of language that comprise the component of language form, connect symbols or sounds with meaning (Owens, 1992). Semantics, or the component of language content, relates to the content or meaning of words or grammatical units (Owens, 1992). Pragmatics, or the component of language use, relates to language use in different communicative contexts (Owens, 1992). These aspects of language are important for children to understand in order to function in the regular classroom, and therefore, in turn, are important for teachers to understand.

Studies have provided a foundation of research demonstrating that poor readers may exhibit a variety of language deficits (e.g., Adams, 1990), and children with language difficulties may have difficulty reading later in life (e.g., Catts, Fey, Zhang, & Tomblin, 1999). Reviewing this research, one finds evidence that both children with reading difficulties and preschool children with language difficulties frequently have phonological processing deficits regardless of the design used in the study (i.e., deficits in phonological awareness, phonological retrieval, and/or phonological memory; Catts, 1996; Catts & Kamhi, 1999; Torgesen, Wagner, & Rashotte, 1994). These results were found across studies regardless of the study design. Research has also shown specifically targetted training approaches, as seen with phonological awareness training, can have a positive impact not only on its recipients' language skills but on their reading skills as well (e.g., Gillon, 2000).

Although phonological processing impairments have been strongly related to reading outcomes, impairments in other language areas, such as the content and function of language, have also been linked to individuals' poor reading outcomes (Swank, 1994). As Adams and Bishop (1989) stated:

> In recent years there has been increasing recognition that many children who are reasonably competent in these areas [grammar, vocabulary and phonology] may nevertheless have problems with semantics and pragmatics. Thus, although their speech may be fluent and grammatically well formed, the content of

> what they say has an odd quality and the way in which they use language in social interactions may be unusual. (pp. 211-212)

Competence in semantics is important, since this area has been described as "the aspect of language that is most closely linked to the processes of memory and concept formation" (Roth & Spekman, 1991, p. 164). Roth and Spekman (1991) go on to state that "memory processes are involved in the structural organization of semantic information and are essential for the efficient storage and retrieval of knowledge" (p. 164). Several semantic development studies have found individuals with reading difficulties to have deficits on measures of lexical processing, such as vocabulary, word associations, and figurative language (Roth & Spekman, 1991). Vocabulary knowledge has also been identified as a major correlate of comprehension ability (Roth, Speece, & Cooper, 2002; Snow & Burns, 1998).

Teachers also need to be aware of another area of language to foster communication interactions in their classrooms, namely pragmatics or the use of language. As Pershey (1998) stated:

> Children learn language because they need it to function and interact with the world. A child experiments with his ability to express his intentions in functional or purposeful (real life) situations, refining over time what he says and how he says it. With this refinement, a speaker comes to know (although often unconsciously) that linguistic forms (involving syntax or morphology) must be selected which best serve the speaker's purpose. (p. 147)

However, not all children are successful in acquiring these skills. Children typically do not receive explicit instruction in how to use language in different social situations. There is an expectation that children's abilities will automatically develop when the children are immersed in the classroom environment. However, many children need teachers to assist in the acquisition and development of their use of language. As Smith (1977) stated, "Certainly children do not learn language as an abstract system, but as something they can use and understand in their interactions with the world around them" (p. 638). Language use lies at the centre of understanding language and learning, and therefore must "be a constant concern for language teachers" (Smith,

1977, p. 638). Teachers are more likely than not to be faced with the challenge of implementing programming to meet the needs of children with varying language abilities. Therefore, teachers' knowledge of language is essential.

Existing research on teachers' knowledge of language has focused on their knowledge of language form (Mather, Bos, & Babur, 2001; McCutchen et al., 2002; Moats, 1994). Moats (1994), for example, reported teachers' successful responses to items on an informal survey of linguistic knowledge ranged from 0% to 77%. Moats (1994) concluded teachers typically have an "insufficient grasp of spoken and written language structure and would be unable to teach it explicitly to either beginning readers or those with reading/spelling disabilities" (p. 93). Studies have not assessed teachers' knowledge of semantics and pragmatics. In addition, only a limited number of studies have considered the relationship of teachers' personal characteristics (i.e., gender, age, years of teaching, number of language arts courses taken in training, etc.) to their knowledge of language. For example, Spear-Swerling and Brucker (2003) found teacher education students' prior preparation to teach reading influenced their initial performance on two of the three word structure tasks utilized in their study. However, this study only looked at the relationship of teachers' personal characteristics to their knowledge of language form. Studies have not considered the influence of teachers' personal characteristics on their knowledge of language form, content, and use. There is clearly a need to investigate what teachers know about language form, content, and use, and whether this knowledge is influenced by their personal characteristics. In order to complete an investigation that looks at teachers' knowledge of language, it was necessary to first develop, and begin the process of collecting reliability and validity evidence for, an assessment tool that surveyed teachers' knowledge of different language domains.

Following the recommendations of Crocker and Algina (1986), the Assessment of Oral Language Knowledge (AOLK; McIntyre, 2005) was developed to investigate teachers' knowledge of language form, content, and use. The creation and validation of the instrument was completed in six stages: (1) a review of the literature was made to identify the areas of language form, content, and use essential for teachers to know; (2) four language arts experts were interviewed to assist the researcher in identifying the aspects of oral language important for teachers to know;

(3) an assessment of *The Common Curriculum Framework for English Language Arts, Kindergarten to Grade 12* (Manitoba Education and Training, 1998) was conducted to identify language tasks teachers were expected to utilize in their classrooms at the elementary level. Questions addressing these language tasks were directly taken from a variety of sources, modified from sources, and/or developed to incorporate into the initial draft of the instrument; (4) the resulting tool was reviewed and judged by a panel of language arts experts from across Canada to ensure content validity. Experts reviewed the instrument and rated the fit between each item and the domains of language being measured (language form, content, and use). The ratings and written feedback provided by this panel of judges were reviewed and used to make revisions; (5) subsequent drafts of the instrument were also revised based on the feedback from the participants in a pilot study; and (6) the item and domain analyses that were completed based on field-testing results. This resulted in a final draft of the AOLK (McIntyre, 2005), which was used in this preliminary study.

A thorough understanding of language is necessary for teachers to successfully address reading and writing differences and difficulties in their classrooms (Wilson, 1999). Studies have found teachers to demonstrate limited knowledge of language form (phonology, morphology, syntax) (e.g., McCutchen et al., 2002), but have not considered teachers' knowledge of language content (semantics) or use (pragmatics). In addition, only a limited number of studies have considered the influence of teachers' personal characteristics on their knowledge of language form (e.g., Spear-Swerling & Brucker, 2003), but have not considered the influence on teachers' knowledge of the other two domains of language (content, and use). Therefore, the purpose of this study was to investigate which teacher variables significantly predicted teachers' knowledge of language form, content, and use.

Method

Participants

Participants in this study were 236 preservice and inservice teachers ranging in age from 21 to 62 years (M = 37.0; SD = 11.2). The majority (84.6%) of teachers were female with their total years of teaching experience ranging from 0 to 38 years (M = 11.3; SD = 10.5). Preservice

teachers were in the last month of their undergraduate program at the University of Saskatchewan. Inservice teachers were either attending graduate level university courses at the University of Saskatchewan and the University of Alberta, or working in one of the eight urban and rural school divisions in Alberta and Saskatchewan that gave consent for their teachers to be approached to act as participants.

Outcome Measures

The language knowledge of the teachers was assessed utilizing the Assessment of Oral Language Knowledge (AOLK; McIntyre, 2005). This 84 item scale was created to investigate teachers' knowledge of language form, content, and use. Six questions, encompassing 49 items, represented the domain of language form. Question topics included identifying morphemes (free and bound), the number of syllables and morphemes, consonant blends, and phonemes in provided words (Moats, 1994, 2000). All items in the domain of language form were dichotomously scored. Possible subscale scores ranged from 0 to 49. The domain of language content was represented by four questions encompassing 25 items. Question topics included categorizing related words, and explaining multiple meaning words, the literal and figurative interpretations for idioms, and multiple meaning sentences (Fromkin, Rodman, Hultin, & Logan, 1997; Moats, 2000; Parker, 1986). Seventeen of the 25 items were dichotomously scored and eight were polytomously scored. Possible scores on this subscale ranged from 0 to 33.

Two questions, containing ten items, represented the domain of language use. Questions included examining knowledge of language registers and language functions (Bainbridge & Malicky, 2000; Halliday, 1973, 1975). All ten items were dichotomously scored. Possible scores on this subscale ranged from 0 to 10. Internal consistency values were found to be higher for the domains of language form ($\hat{\alpha}$= 0.91) and content ($\hat{\alpha}$= 0.78) than for the domain of language use ($\hat{\alpha}$= 0.59). The lower reliability in the language use subscale could be due to the lower number of items in this subscale (10) as compared to the subscales of form (49) and content (33), and/or the relative ease with which participants completed the items in this subscale (limited variability). Therefore, caution should be used when interpreting the findings from the language use subscale.

Predictor Variables

Information was also collected on teacher characteristics that were hypothesized to influence their knowledge of language. These variables included: (a) gender; (b) age; (c) years of teaching experience; (d) number of Language Arts (LA) courses taken in training; (e) grade level currently taught; and (f) number of languages other than English in which participants reported being proficient. This variable was further reduced to four separate variables: (a) number of languages other than English understood (languages understood); (b) number of languages other than English spoken (languages spoken); (c) number of languages other than English participants could read (languages read) and; (d) number of languages other than English participants could write (languages written).

Analyses

Descriptive and correlational analyses were conducted to examine the characteristics of the teacher sample. Simultaneous multiple regression was then utilized to determine which teacher characteristics significantly predicted, individually or in combination, teachers' knowledge of language. The dependent variables were teachers' knowledge of language form, content, and use. Simultaneous multiple regression was selected due to the exploratory nature of the study and available sample size (for a medium effect size and 9 independent variables, at least 113 cases are required for simultaneous regression as compared to 360 for stepwise regression; Green, 1991).

Results

Descriptive Analyses

Descriptive statistics are presented in Table 1. Teacher scores ranged from 3 to 48 (M = 25.7; SD = 8.3) on the Form subscale, from 6 to 33 (M = 25.7; SD = 4.7) on the Content subscale, and from 4 to 10 (M = 8.6; SD = 1.5) on the Use subscale. Approximately three-quarters (73.4%) of the teachers had taken between one and five LA courses (courses emphasizing speaking and listening, reading and writing, and/or viewing and representing). Almost half of the sample were preservice teachers (45.4%) and 6.9% of the sample identified themselves as special

education teachers or music teachers. Of the 118 participants who taught a specific grade level, 52.5% were primary (K-3), 37.3% were middle/upper elementary, and 10.2% were secondary teachers. Less than half (41.9%) of the teachers reported understanding at least one additional language, while one third reported being able to speak (34.7%), read (34.7%), or write (30.9%) languages other than English proficiently.

Table 1.
Descriptive Statistics

	Range	Mean	SD
Outcome Variables			
Form	3 – 48	25.7	8.3
Content	6 – 33	25.7	4.7
Use	4 – 10	8.6	1.5
Predictor Variables			
Gender			
Age	21 – 62	37	11.2
Exp	0 – 38	11.3	10.5
Grade level taught	K - 12	3.8	2.9
LA	0 – 5	1.1	0.67
Understand	0 – 3	0.55	0.72
Speak	0 – 3	0.44	0.66
Read	0 - 3	0.40	0.59
Write	0 – 2	0.35	0.54

Intercorrelations

Table 2 presents the intercorrelations among outcome and predictor variables. Although many of the correlations were flagged as statistically significant at the 0.05 level of significance, some were low in absolute value, indicating only small proportions of variance accounted for and minimal practical value. The intercorrelations between the four variables associated with the number of languages in which participants reported being proficient (other than English) were all highly related and ranged from 0.76 to 0.89, but were not significantly related to any other predictor variables. As expected, the relationship between age and total years of teaching experience was statistically and practically significant (r = 0.86). In addition, age was also significantly related to number of LA courses taken (r = 0.16).

Teachers' knowledge of language form was significantly related to teachers' knowledge of language content (r = 0.42) and language use (r =

0.26). Language content was also significantly related to teachers' knowledge of language use (r = 0.26). Teachers' years of teaching experience was shown to be statistically related to teachers' knowledge of language form (r = 0.30), content (r = 0.41), and use (r = 0.16). Age was significantly related to teachers' knowledge of language form (r = 0.33), content (r = 0.41), but not use (r = 0.09). As age appeared to be a pseudo-measure of teaching experience, years of teaching experience was selected for use in the regression analysis. Statistically significant correlations were also found between teachers' knowledge of language form and gender (r = -0.27), age (r = 0.33), years of teaching experience (r = 0.30), languages spoken (r = -0.17), languages read (r = -0.14), and languages written (r = -0.14). Statistically significant correlations were found between teachers' knowledge of language content and gender (r = -0.16), age (r = 0.41), years of teaching experience (r = 0.41), and grade level taught (r = 0.17). Lastly, significant correlations were found between teachers' knowledge of language use and years of teaching experience (r = 0.16), and languages spoken (r = -0.17) or read (r = -0.18).

Table 2
Intercorrelations Among Outcome and Predictor Variables

	Form	Content	Use	Gender	Exp	Age
Form	1.000					
Content	.415*	1.000				
Use	.255*	.263*	1.000			
Gender	-.265*	-.156*	-.045	1.000		
Exp	.297*	.405*	.158*	-.033	1.000	
Age	.326*	.411*	.094	-.005	.858*	1.000
Grade	-.145	-.174	-.079	.319*	-.022	-.101
LA	.137*	.069	.048	-.073	.119	.159*
Und	-.109	-.012	-.107	.037	.002	.024
Speak	-.170*	-.026	-.169*	.083	-.071	-.044
Read	-.142*	-.043	-.181*	.058	-.075	-.074
Write	-.141*	-.040	-.112	.070	-.071	-.062

Table 2 (cont'd)

	Grade	LA	Und	Speak	Read	Write
Grade	1.000					
LA	-.054	1.000				
Und	.048	.115	1.000			
Speak	.042	.119	.891*	1.000		
Read	.062	.085	.831*	.831*	1.000	
Write	.085	.095	.759*	.809*	.896*	1.000

Note. * indicates statistically significant correlations; Exp indicates years of teaching Experience; Grade indicates grade level currently taught;

Simultaneous Regression

Three separate regression analyses were conducted for each subscale (i.e., form, content, and use) and the results are presented in Table 3. Many respondents (i.e., n = 86) were assigned a missing value for the variable "grade currently taught" due to the nature of how the participants responded to the item (i.e., preservice teachers reporting grades they had taught in practicum experiences). In order to maintain sample size, the variable was removed from the regression analysis.

The regression analysis predicting teachers' knowledge of language form was statistically significant ($F_{(7, 198)}$ = 5.932; p < .0005) with two predictor variables accounting for 17.3% of the variance. The statistically significant predictor variables were respondents' gender (t = -3.640; p < .0005) and years of teaching experience (t = 3.973; p < .0005). None of the other predictor variables were statistically significant. The regression analysis predicting teachers' knowledge of language content was also statistically significant ($F_{(7, 218)}$ = 7.178; p < .0005) with two predictor variables accounting for 18.7% of the variance. Once again, the statistically significant predictor variables were respondents' gender (t = -2.279; p < .05) and years of teaching experience (t = 6.431; p < .0005). None of the other predictor variables were statistically significant. The regression analysis predicting teachers' knowledge of language use was not statistically significant ($F_{(7, 221)}$ = 1.651; p = .123). However, the predictor variable, years of teaching experience, was statistically significant (t = 2.284; p < .05) and accounted for 5.0% of the variance. None of the other predictor variables were statistically significant.

Table 3
Predictors of Teachers' Knowledge (Simultaneous Multiple Regression Results)

Outcome Variable: Language Form						
Statistically Significant Predictors		**R^2**	**B**	**Standard Error**	**t value**	**p**
Gender			-5.678	1.560	-3.640	0.000
Years of Teaching Experience		0.173	0.215	0.054	3.973	0.000
Outcome Variable: Language Content						
Statistically Significant Predictors		**R^2**	**B**	**Standard Error**	**t value**	**p**
Gender			-1.847	0.811	-2.279	0.024
Years of Teaching Experience		0.187	0.178	0.028	6.431	0.000

Table 3 (cont'd)

Outcome Variable: Language Use						
Statistically Significant Predictors	**R^2**	**B**	**Standard Error**	**t value**	**p**	
Years of Teaching Experience	0.500	0.022	0.009	2.284	.023	

Discussion

Findings supported the hypothesized relationship between teachers' years of teaching experience and teachers' knowledge of language form and content, but not for language use. The lack of a statistically significant regression equation for the outcome variable of teachers' knowledge of language use was not surprising due to the lack of internal consistency and the associated measurement error found in this scale. Furthermore, there was little variability in the scores on this scale, with a range of only 6 points (R = 4 – 10). Even if a statistically significant regression equation was shown, results would have to be interpreted with care. However, it is interesting to note that the pattern of results seen across the domains of teachers' knowledge of language form and content was partially supported in the domain of language use.

In our sample, female teachers who had more years of teaching experience had a higher level of knowledge of language form and content. The relationship between teachers' years of teaching experience and their knowledge of language form and content was expected, given that one typically expects a person's knowledge base to expand as more work experience is gained. Gender was also a statistically significant predictor variable for teachers' knowledge of both language form and content. Females were found to have higher levels of knowledge of language form and content than males. However, there were a limited number of males in the sample. In a predominantly female profession, such as education, it is often difficult to obtain equal size samples of males and females. Future studies should make a concerted effort to obtain a larger male sample.

The variable of number of languages other than English in which participants reported being proficient was not statistically significant to any of the regression equations. Although teachers were asked to report the number of languages in which they were proficient, a definition of what "proficient" meant was not provided to participants (i.e., ability to

fluently understand, speak, read, and/or write a language). Therefore, teachers may have reported being able to understand, speak, read, or write languages in which they were not truly proficient.

Although the teacher variables included in this study accounted for more than 15% of the variance in teachers' knowledge of language form and content, there are other teacher characteristics that may be good predictors. Future research should examine other teacher variables such as the type of teacher education program in which teachers were trained (e.g., elementary versus secondary focus, areas of specialization), and/or the type of LA programs teachers utilize in their classrooms.

Learning more about the level of oral language knowledge of teachers, and the teacher characteristics that influence this knowledge, would be beneficial in a number of ways. First, understanding the level of teachers' oral language knowledge would provide professionals responsible for designing and implementing courses in teacher training programs with information supporting the inclusion of content relating to oral language in required coursework. Bolstering teacher education courses in the areas of special education and language arts would increase the opportunities for preservice teachers entering the field to improve their knowledge of oral language and literacy. Second, knowing the factors influencing teacher knowledge could focus topics of continuing education programs designed to enhance teachers' understanding of these aspects of language. For example, upon completion of the assessment tool aspects of language found to be deficient in junior high and secondary teachers could be directly addressed in continuing education opportunities provided to this group. Increasing preservice and inservice teachers opportunities to learn more about oral language could only benefit students experiencing language and/or literacy difficulties in our classrooms. Finally, specific teacher characteristics found to influence oral language knowledge can have implications for preservice-inservice teacher and new teacher-inservice teacher interactions. For example, preservice teachers or teachers early in their career may demonstrate deficits in their oral language knowledge. Therefore, it may be beneficial for teachers with more years of teaching experience to act as mentors in their development of oral language knowledge and its connection to children's literacy development.

Information on teachers' level of oral language knowledge (knowledge of form, content, and use) and the characteristics that influence this knowledge can be utilized in the design and implementation of university coursework and continuing education programs. Teachers who are well informed on aspects of oral language knowledge, and its links to children's literacy development, can only be better prepared to meet the diverse learning needs of their students.

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