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Caseload/workload study of speech language pathologists in Missouri public schools

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Department:

CASELOAD/WORKLOAD STUDY OF SPEECH LANGUAGE PATHOLOGISTS IN MISSOURI PUBLIC SCHOOLS

by

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ABSTRACT

A survey was distributed to speech-language pathologists (SLPs) in Missouri public schools to obtain statewide information regarding caseload number, workload related activities and SLPs' level job satisfaction on various aspects of their job. Results indicated that 24% of the respondents had caseloads that exceeded the maximum state regulated caseload number for SLPs. Respondents were also largely unaware of the maximum caseload regulation within their school districts. Approximately 36% of the SLPs did not recognize themselves as having a specialty. Among SLPs who reported having a specialty, articulation and social language were most commonly reported, about 30% of the respondents had the perception that having a specialty tended to increase their overall caseload/workload. The caseload-related workload was not fully considered for caseload determination (e.g., the SLPs' specialty, experience, co-teaching, class planning, scheduling, meeting, and managerial responsibilities). Most of the respondents reported needing to work either before or after school for a varied number of hours (between 1 and 15). The survey results indicated that, overall, SLPs in Missouri were satisfied with their jobs, especially on aspects such as employee benefits, supervision/upper management, co-workers, nature of work and student cooperation with service and student outcomes. However, monthly workload, class scheduling complexity and stress level are factors that should be managed to improve the job satisfaction level of SLPs.

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TABLE OF CONTENTS

Page

LIST OF ILLUSTRATIONS

PAPER Page

LIST OF TABLES

PAPER Page

NOMENCLATURE

Caseload: Caseload refers to the number of students with Individualized Education Programs (IEPs), Individualized Family Service Plans (IFSPs), and 504 Plans served by school-based SLPs and other professionals through direct and/or indirect service delivery options. In some school districts, caseloads may also include students who receive intervention and other services within general education designed to help prevent future difficulties with speech, language learning, and literacy. Caseloads can also be quantified in terms of the number of intervention sessions in a given time frame.

Workload: Workload refers to all activities required and performed by school-based SLPs and other professionals. Workload includes the time for face-to-face direct services to students, as well as time spent performing other activities necessary to support students' education programs, implement best practices for school speech-language services, and ensure compliance with the Individuals with Disabilities Education Improvement Act of 2004 (IDEA, 2004) and other mandates.

1. INTRODUCTION

ASHA (American Speech-Language-Hearing Association) has been conducting School Surveys on professional issues related to school based speech-language services every other year since 2004 (ASHA, 2014a). Caseload and workload of SLPs (Speech-Language Pathologists) appeared to be a key issue in all SLP related services (ASHA, N.A.). The survey summary on SLP Caseload Characteristics indicated that in 2010, 74% of SLPs in Missouri used caseload approach, whereas 26% used workload approach. The average caseload size in MO was 45 (ASHA, 2010). In 2012 School Survey result, 90% of the respondent SLPs in Missouri used caseload approach, whereas 10% used workload approach (ASHA, 2012). The average caseload size in MO was 39. In 2014 School Survey result, the average caseload size in MO was 40 (ASHA, 2014b). It was our great interest to carry out research, using survey as a tool, to discover the statewide caseload situation of SLPs in Missouri as well as the factors that were taken into account for SLP caseload determination.

In survey research, reliability and validity of the survey instrument determines the quality of survey data collected (Litwin, 1995). A survey should be designed in a way that can truly answer the research questions. Ways to improve the reliability and validity of a survey include: using well- established survey, thorough literature review, researchers' experience on a certain subject, review by experts in the field, empirical studies – based other people's studies and publication, design survey questions with multiple-items that can be used for internal consistency testing using Cronbach's alphas,

split-half reliability. Content validity can be tested by content validity Ratio process. Statistical significance testing include Chi-Squared and student's t-test. Construct validity (Joreskog, 1969) is a special form of factor analysis. It is used to test whether measures of a construct are consistent with a researcher's understanding of the nature of that construct. The objective of confirmatory factor analysis is to test if the data fit a hypothesized measurement model. Concurrent validity requires a survey to have empirical association with some criterion or "gold standard". This requires an established and generally accepted test. A high correlation coefficient between the survey and the standard test suggests good concurrent validity.

For the research work done for this thesis, a survey was designed with thorough literature search and review, as well as input and improvement suggestions from veteran SLPs in Missouri to ensure the validity of survey questions. The survey was distributed to SLPs in Missouri public schools during a four-week period from February to March 2015. Responses were automatically collected by online survey software Qualtrics. Results were analyzed, discussed and published in Paper I listed in this thesis.

The survey methodology employed in this research has wide applicability in the Engineering Management field. For example, in the Quality Management and Quality Improvement field, survey can be used to investigate lean experts' opinions on the relationship between lean principles and practices (Mirdad, W. K., & Eseonu 2015). Survey questionnaire was also used to achieve consensus on a comprehensive and

onsistent set of key performance indicators (KPIs) (Chou, H. 2015). Beyond that, the breadth of the practicality of survey approach is immeasurable. Examples in case are the use of survey in social science, marketing research, and psychological study and national government surveys.

PAPER

I. CASELOAD/WORKLOAD STUDY OF SPEECH LANGUAGE PATHOLOGISTS IN MISSOURI PUBLIC SCHOOLS: IMPLICATIONS OF KEY FACTORS THAT CONTRIBUTE TO SLP JOB SATISFACTION

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ABSTRACT

A survey was distributed to speech-language pathologists (SLPs) in Missouri public schools to obtain statewide information regarding caseload number, workload related activities and SLPs' level job satisfaction on various aspects of their job. An online questionnaire was sent to school-based SLPs in Missouri to solicit factual information on average monthly caseload numbers, factors that impact caseload assignments and the percentage of time spent on various professional responsibilities and job satisfaction ratings. Results indicated that 24% of the respondents had caseloads that exceeded the maximum state regulated caseload number for SLPs. Respondents were also largely unaware of the maximum caseload regulation within their school districts. Approximately 36% of the SLPs did not recognize themselves as having a specialty. Among SLPs who reported having a specialty, articulation and social language were most commonly reported. About 30% of the respondents had the perception that having a specialty tended to increase their overall caseload/workload. The caseload-related workload was not fully considered for caseload determination (e.g., the SLPs' specialty, experience, co-teaching, class planning, scheduling, meeting, and managerial responsibilities). Most of the respondents reported needing to work either before or after school for a varied number of hours (between 1 and 15). The survey results indicated that, overall, SLPs in Missouri were satisfied with their jobs, especially on aspects such as employee benefits, supervision/upper management, co-workers, nature of work and student cooperation with service and student outcomes. However, monthly workload,

class scheduling complexity and stress level are factors that should be managed to improve the job satisfaction level of SLPs.

Key words: survey, SLPs, caseload, workload, specialty, job satisfaction

INTRODUCTION

Caseloads and workloads in speech-language pathology have increased over the years. P.L. 94-142, the Education for All Handicapped Act (EHA) of 1975 and 1986, state regulations that followed, P.L. 99-457, and corresponding state regulations, the Individuals with Disabilities Education Act (IDEA) of 1990, 1991, and 1997 resulted in new responsibilities for public school speech-language pathologists. Additionally, IEP requirements, benchmarks, and progress reporting added to workload (Komes, 2000).

The number of children needing services from SLPs, mandated by the Individuals with Disabilities Education Act (IDEA) has continued to grow. No Child Left Behind, medical advances, demographic shifts, and knowledge of best practices expanded the roles and responsibilities of SLPs (Whitmire, 2004). Moreover, SLPs needed to spend more time on notification and consent forms, evaluation and reevaluation reports, progress updates, IEP meetings, consultation with teachers and other paperwork. A shortage of qualified speech-language pathologists has exacerbated this situation, and many SLPs must take on high caseloads to meet students' needs (Caesar & Nelson, 2008). The caseloads have become unmanageable.

Challenging caseload issues plague SLPs across the country (Block & Frances, 2000). The American Speech-Language-Hearing Association (ASHA)'s national surveys conducted since 1995 indicate an average caseload size of 50 among school SLPs despite a recommended caseload size of 40 (Brook, 2008). Caseload has a tremendous impact on a school-based SLP's stress level. Wisniewski (1997) noted that "SLPs were experiencing high levels of occupational stress, tension and negative attitudes" (p. 338). Komes (2000) stated that "I am struggling a bit to find the time to remain organized, feeling somewhat overwhelmed and unsure of myself" (p. 6) when caseload was large. Heavy caseload also impacts the effectiveness and efficiency of speech-language therapy. Russ and Chiang (2001) found that larger caseloads negatively impact a student's achievement; a student's attendance behaviors and engagement increase when the group size decreases. High SLP attrition and high caseloads appear to be correlated (Russ, Chiang, Rylance, & Bongers, 2001).

Recommending a maximum caseload number doesn't reflect the workload needed to support each student. Focusing on caseload numbers limits the ability of SLPs to meet the needs of students (Estomin, 2003). In 2002, ASHA established the Ad Hoc Committee on caseload size. This committee published a technical report that suggested a workload analysis approach for establishing caseload standards for speech-language pathologists in schools (ASHA, 2002). Dowden (2006) studied the caseloads in Washington State Schools in 2001. They found no systematic evidence of caseloads management strategies across the state. Armstrong and White (2008) studied the

workload status of school-based SLPs in Texas. They found that a workload approach was being used to some extent. It was suggested that efforts should continue to optimize the quality of treatment for schoolchildren and retention of school SLPs (Armstrong, 2012). The Ohio Department of Education (2012) conducted a caseload ratio study in collaboration with 21 local educational agencies (LEAs) in Ohio from 2010 to 2013. Time study (collect information about how much time was spent on each task during a work week) and workload calculator was introduced for effective determination of workloads and caseloads. No previous study on the caseloads of SLPs and workload related issues was found in Missouri.

Job satisfaction is a critical topic in the SLP profession. It refers to the employee's attitude toward various aspects of his/her job. It is also related to job performance, employment motivation, mental and physical health, turnover, and attrition. SLP job satisfaction is closely related to caseload and workload related activities. Pezzei and Oratio (1991) conducted a multivariate analysis of the job satisfaction of public school SLPs. Factor analysis revealed that three dimensions: supervision, workload, and co-workers, correlated most with an SLP's overall level of job satisfaction. Other investigators found that an SLP's age, years at his/her current job, and caseload size were also predictors of job satisfaction (Blood, 2002). Caesar and Nelson (2008) utilized a survey designed to determine the factors that affected SLPs' perceptions of job stress and job satisfaction. They noted both caseload size and paperwork were related to job stress and satisfaction.

PURPOSE OF THE STUDY

Caseload and workload are two of the major factors influencing the effectiveness of speech-language therapy, SLPs' stress level, job satisfaction and turnover. This study was conducted to gather information regarding school-based SLP caseloads, workloads and job satisfaction-related factors across Missouri. No prior research has been done on similar issues in Missouri. This research was designed to answer the following questions:

1. What is the actual average monthly caseload of school-based SLPs in Missouri?
2. To what extent are school-based SLPs aware of the regulated maximum caseload in their school districts?
3. Is caseload related to SLP demographic information, such as age, employment setting, and SLPs' academic degree level?
4. What are the most popular specialties of SLPs and how do these specialties influence their caseload?
5. What factors have been considered for caseload assignment?
6. How do SLPs assign time to workload related responsibilities in a typical week?
7. Is a service-providing model being used? Do SLPs prefer one model over another?
8. How satisfied are school-SLPs with various aspects of their job, including caseload/workload, student outcomes, salary, stress level, nature of work and relationship with co-workers?
9. Does an SLP shortage exist in Missouri public schools?

METHOD

Instrument

The survey (see Appendix for the survey) was reviewed and approved by the Institutional Review Board (IRB) at Missouri University of Science and Technology (Missouri S&T). The content was based on a thorough literature search and input from experienced school-SLPs. One set of questions was designed to gauge the internal reliability of the survey responses. The survey was constructed and distributed in Qualtrics, an online survey software. The user friendly format allowed respondents to answer the questions quickly and easily. Each SLP was only allowed to take the survey once (This was realized by setting Qualitrics in a certain way). Qualtrics also collected the responses accurately online. MSHA facilitated the survey distribution by sending the survey link to its members and eWeekly users.

The survey contained three primary sections. The first section had seven demographic questions about work setting, gender, age, and years of experience, certification, academic level and full-time equivalent (FTE). The second section contained 10 questions on caseload-related issues. The third section contained seven questions on SLP workload and job satisfaction. Question seven in the third section was designed to test the internal reliability of the survey. Participants could withdraw anytime during the survey. They were also allowed to resume the survey to complete it at a later time.

Participants and Survey Distribution

An anonymous survey link, along with an invitation letter, was initially posted on the MSHA listserve on February 11, 2015.The invitation letter explained the purpose of the survey, the anonymity and confidentiality of the survey responses, and the estimated time (20 to 30 minutes) needed to finish the survey, and the voluntary nature and importance of participating in the survey. The survey link was posted a second time on February 27, 2015 via MSHA eWeekly news. Then it was posted a third time via MSHA eWeekly news along with a follow-up reminder on March 6, 2015 to request SLPs to complete the survey if they had not done so. The survey link was closed on March 13, 2015.

The number of participants who received a request to take this survey is difficult to assess. The designed survey was posted on the MSHA listserve and the MSHA eWeekly news. Although 540 MSHA members list "Worksetting-Schools" on their membership form, the survey was distributed on the MSHA listserve and the MSHA eWeekly news, both of which require a special subscription.

Fifty one complete responses were collected from school SLPs. The online survey was distributed in a way that each SLP could only take the survey once. It is difficult to calculate the response rate in a percentage, because the listserve and eWeekly news each require voluntary subscriptions, in addition to membership. Not all 540 school-based SLPs subscribe to either or both email sites. The numbers of school-based SLP

subscribers and overlapping school-based SLP subscribers are not available. In any case, the response rate was not high (the minimum response rate was 9.4%), although valuable information was obtained.

Data Analysis

All survey responses were automatically collected by Qualtrics. This process not only saved time but also helped with avoiding potential errors in the data collection process. The responses were downloaded as an SPSS data file for further analysis. Qualtrics filtered out responses from those respondents who identified themselves as working for either a school or a school district. The Statistical Package for the Social Sciences (IBM SPSS Statistics 22) was used to analyze responses from a total of 51 participants. Free online software R (a statistical computing and graphical software) was also used to make the plots.

RESULTS

The respondents' demographic information

Most of the survey respondents (n = 51, 98%) were female. The age group distribution of the respondents (n = 51) was 17.6%, 25.5%, 29.4%, 17.6% and 9.8% for the age groups 20-29, 30-39, 40-49, 50-59, and 60 and above, respectively.

Most respondents reported that they worked at an elementary school (74.5%). The second primary employment setting was middle school (31.4%), followed by early childhood (29.4%) and then high school (23.5%). Approximately 41% of the respondents

reported working in multiple work settings. Only 2% of the respondents reported they were SLP supervisors, supervising other SLPs in the current fiscal year.

About 78% of the respondents provided the number of years of experience they had worked in school settings. A third of them had less than 10 years of experience. Another one third had 10 to 19 years of experience. Another 28% had 20 to 29 years of experience, and the rest, 8% had more than 30 years of experience.

All of the respondents reported holding a Master's degree; all but one the respondents were ASHA certified SLPs. Most of the respondents (86.3%) reported working full-time. The rest reported working either part-time or flexible hours, depending on the school districts' needs.

Approximately 76.2% of the SLPs reported an average monthly caseload equal to or below 50. Roughly 4% of the respondents did not provide a monthly number due to their job function (SLP supervisor or working part-time). The remaining respondents (19.8%) reported a caseload over 50 per month. Most of the SLPs (85%) did not know their school district's regulated maximum caseload number. About 15% of the SLPs reported the maximum regulated caseload number in their districts. The range of the number varied from 25 to 65. The above data is presented in more detail in Table 1.

Table 1. Characteristics of Respondent School SLPs in the Study

Characteristic	Percentages of Respondents
Age group of SLPs as of 2015	
20 - 29	17.6%
30 - 39	25.5%
40 - 49	29.4%
50 - 59	17.6%
60 or older	9.8%
ASHA certified SLP	
Yes	98.0%
No	2.0%
Current primary employment settings	
Birth to Three Children	2.0%
Early Childhood	29.4%
Elementary School	74.5%
Middle School	31.4%
High School	23.5%
Years as an school SLP	
1 - 9 years	32.5%
10 - 19 years	32.5%
20 - 29 years	27.5%
30 - 39 years	5.0%
40 years or more	2.5%
Typical monthly caseload number	
Below 30	13.8%
30 - 39	15.7%
40 - 49	43.3%
50 - 59	15.8%
60 - 69	4.0%
Above 70	4.0%

Note: The above percentages are based on a total of 51 responses.

A scatter plot of SLP caseloads versus SLP age was made to determine whether there was a correlation between the two. Figure 1 shows the plot. It shows that SLPs between the ages of 30 – 59 are more likely to have a monthly caseload of more than 50 when compared to SLPs below the age of 30 and above the age of 60. There is no obvious trend between caseloads and age. Figure 2 shows the scatter plot of SLP

caseloads in different work settings. It shows that SLPs working in elementary schools and SLPs that have three or more work settings tend to be more likely to have a caseload greater than 50. There is no obvious pattern between caseload size and work setting. Table 2 represents the key for the work settings in Figure 2.

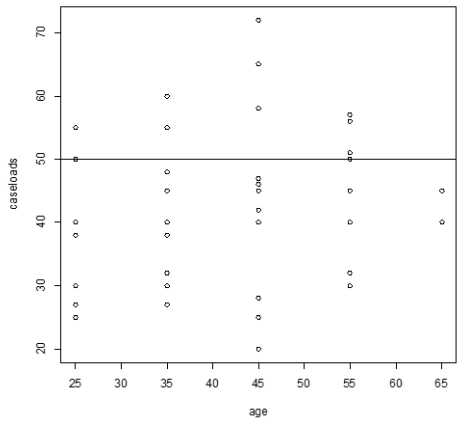

Figure 1. Plot of SLP Caseloads vs. SLP Age Group

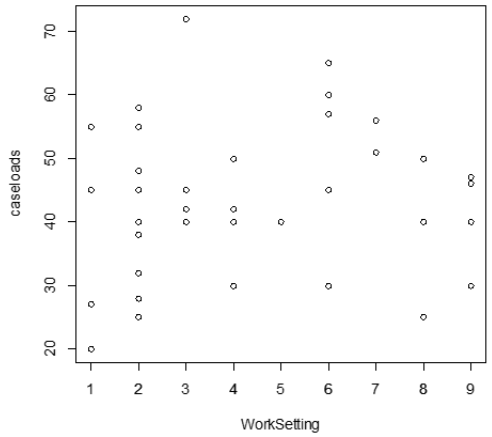

Figure 2. Plot of SLP Caseloads vs. Work Settings

Table 2. Corresponding Work Settings for Figure 2

1	EarlyChildhood (3-5)
2	ElementarySchool
3	BirthToThree& ElementarySchool
4	EarlyChildhood (3-5)&ElementarySchool
5	EarlyChildhood (3-5)&MiddleSchool
6	EarlyChildhood (3-5)&Elementary&Middle&HighSchool
7	Elementary&MiddleSchool
8	Elementary &HighSchool
9	Elementary&Middle&HighSchool

Caseload Related Issues

SLPs were asked to report their specialty. Figure 3 summaries the responses. The three main specialty areas among respondent SLPs were social language, articulation and phonology. Approximately 36% of the SLPs did not think they have a specialty.

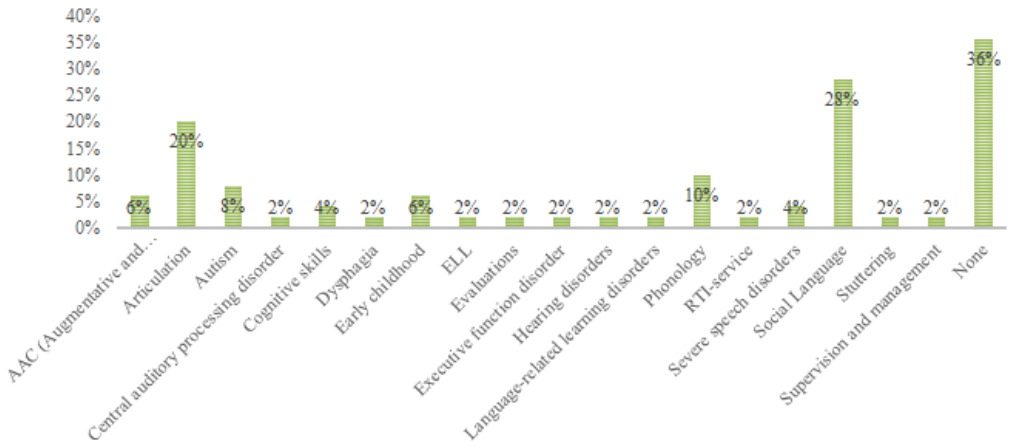

Figure 3. Specialty of Respondent SLPs

In response to the question "How does specialty influence caseload?", the majority of the respondents (31/51 or 61%) reported that having a specialty had no influence on over-all caseload and workload, as well as the workload and caseload of children with impairments that fell within their specialty. Approximately 30% of the respondents reported that specialty would increase their caseload and workload.

In response to the composition of caseload with different levels of impairments, SLPs reported that the average percentage of students with mild, moderate, and severe impairments in typical caseloads was 32%, 34%, and 20%, respectively. Most of the respondents (86%) reported that no students on their caseload required bilingual speech-language services. Approximately 14% of the respondents reported that an average of 8%

of the students in their caseloads required bilingual services. Only 5% of the respondents reported that an average of 3% of their total caseloads required interpreters.

Participants were asked what factors were taken into account for their caseload size determination. These responses are charted in Figure 4. The number one factor is the number of students that need speech language service. State regulations, opinions of the IEP team, severity of impairment level, direction intervention time and assignment from supervisors are important factors as well.

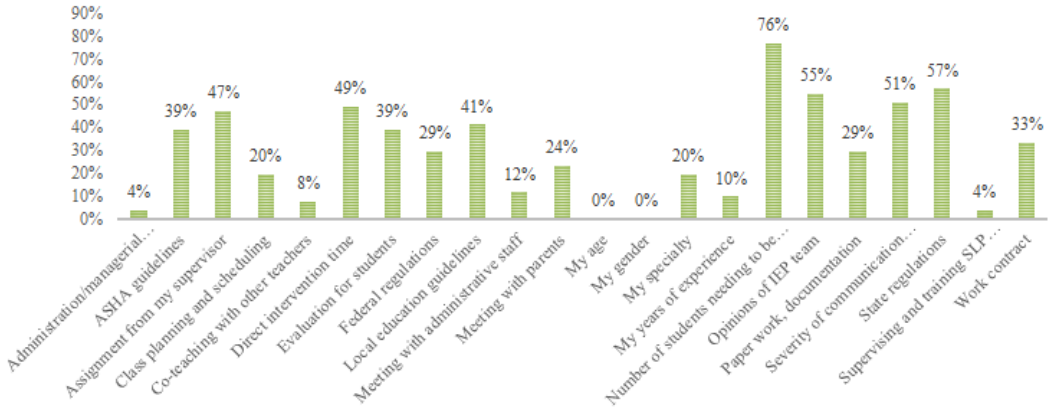

Figure 4. Percentage of Responses on Factors That Impact Caseload Determination

In response to the question "What model do you use to deliver therapy to students?", SLPs reported that an collective average of 22% of caseloads received individual therapy by traditional pull out-model. Approximately 55% of an SLP's

caseload received group therapy by a traditional pull out-model. The percentage of caseloads receiving individual and group intervention in an integrated classroom-based setting was 4% and 3%, respectively. Only 2% of the students on a typical caseload received therapy by collaborative service delivery; no therapy was delivered by indirect therapy (intensive parent training only). Approximately 4% of the therapies were delivered by Response to Intervention (RTI), which is a multi-tier approach to the early identification and support of students with learning and behavior needs.

Workload Related Issues

Caseload typically refers to the number of students served, whereas workload refers to all activities required to be performed by SLPs. Workload includes direct therapy services as well as activities necessary to support students' needs/education to ensure best practices and better outcome. Thus, workload should not be treated as the same as caseload because different students can bring significantly different amount of workload to a SLP.

It is our interest of this study to find out what are the main workload activities of SLPs in MO. The survey results showed that the major workload related activities included direct intervention for individual and group pull-out services. Additional workload-related activities included student evaluations, paperwork, class planning and scheduling, co-teaching, meeting with parents, and meeting with administrative staff. Only 6% of the SLPs reported spending an average of one hour each week on training

SLP assistants and aids. Approximately 81% of the SLPs had neither administrative nor managerial responsibilities. The remaining respondents (19%) spent an average of 2.5 hours each week on administrative responsibilities.

The majority of the SLPs (77%) reported there was no recommended service delivery model in their district; however, 67% of the respondents thought a service delivery model would be beneficial. Only 57% of the respondents answered the open ended question "What kind of service delivery model would be most helpful for you in providing therapy?" Approximately 26% noted that a 4:1 model would be beneficial. With 4:1 model, four days of a work week are used for direct service, and one day is used for meetings, paperwork, scheduling, reports writing, etc. The remaining 2% respondents recommended a 3:1 model. With 3:1 model, a child will be seen 3 weeks in a row and then for 1 week, his/her teachers and SLP will collaborate to discuss each child's progress and future goals and action plan. Approximately 2% of the SLPs reported that their districts were already using the 3:1 model. The remaining respondents did not specify a model. They did, however, indicate that a flexible model would be beneficial with regard to scheduling, paperwork, and meeting, testing, and arranging missed therapies.

Approximately 6% of the SLPs reported that they did not have to work before or after school. The distribution of time spent on working either before or after school is listed in Table 3.

Table 3. Statistics of SLPs Working Either Before or After School.

SLPs worked before or after school	Percentage of responses from SLPs
0 hours per week	5.9%
1 -5 hours per week	51.0%
6-10 hours per week	35.3%
More than 10 hours per week	7.8%

SLP Job Satisfaction

The SLPs' job satisfaction rating as applied to different aspects of the SLP profession is illustrated in Figure 5. The most prominent satisfaction factors included nature of work, coworkers, students' cooperation with therapy, and student outcomes. The factors contributing to job dissatisfaction reported most frequently included: class scheduling complexity, monthly workload, monthly caseload, and stress level.

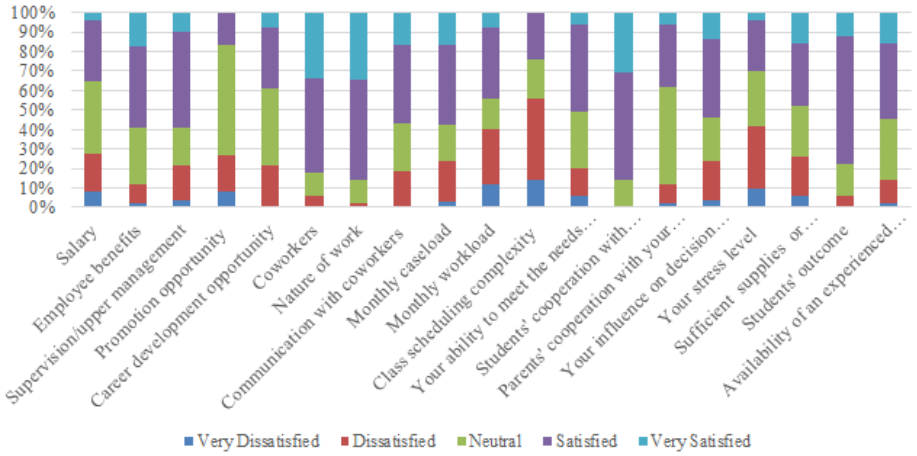

Figure 5. Job Satisfaction Rating

Finally, a series of statements were provided for a five-point Likert scale rating (See Table 4). The statements were used to test the internal consistency of the survey responses. The Cronbach's Alpha was calculated for five statements on the same concept of "There is a severe shortage of qualified SLP personnel in my school district(s)." The Cronbach's Alpha (See Table 5) was 0.809, indicating the survey responses are very reliable. (In social science, Cronbach's Alpha equal to or greater than 0.7 is considered to be good.(Tavakol & Dennick, 2011)) The mean responses to the question indicate that the SLPs disagree with the statement "There is a severe shortage of qualified SLP personnel in my school district(s)."

Table 4. Five Statements Used for Internal Reliability Testing

1	There is a severe shortage of qualified SLP personnel in my school district(s).
2	My school district(s) need(s) additional qualified SLP personnel very much.
3	My school district(s) can provide the needed services for every students with disabilities that need service from SLPs.
4	My school district(s) failed to meet the needs of some students with disabilities who needed service from SLPs.
5	My school district(s) often use(s) temporary credentialed SLP personnel as staff.

Table 5. Cronbach's Alpha - Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
0.809	0.808	5

DISCUSSION AND IMPLICATIONS

The caseload, workload, and job satisfaction-related issues are summarized and discussed in the following sections.

Caseload and Its Management

School districts in Missouri assign caseloads according to factors such as ASHA guidelines, state regulations, impairment severity, directing intervention time, and meeting time. The greatest factor, however, was the number of students needing to be served. Students are often gathered into larger groups when SLPs have high caseloads. Unfortunately, large groups threaten the quality of therapy. Komes (2000) suggested that caseload based on severity rather than number of students could be managed with increased effectiveness and efficiency. Missouri currently has a caseload formula (MDESE, N.A.) This formula, however, cannot reflect an SLP's expanded responsibilities. Moreover, the formula is not based on the students' needs (e.g., type of disability and severity of impairments.)

Speech-language pathologists could unite to advocate for state-level initiatives that would support the regulatory change of caseload rules. Union negotiations can be utilized to manage caseloads (Bellini, 2000). School SLPs who are also union members can use their membership to encourage the union to advocate for change. Bellini (2000) reported a successful case in Rhode Island in which SLPs worked with tenacity to propose and negotiate a final caseload cap of 40. Documented service information, the

cost analysis of large caseloads, and therapy effectiveness evaluations can also be used to communicate with school committees, officials, and special education directors to advocate for change.

Alternative service delivery models can be used to magnify the service effectiveness. Innovative approaches include working with students in their natural classroom environment, training kindergarten teachers to deliver phonological awareness activities to students, and incorporating a workload approach in planning, testing, and delivering services (Bellini, 2007). Speech-language assistant models can help SLPs provide quality programs to students. A 3-year study in Broward County, Florida demonstrated "the use of SLP assistants (SLPAs) increased dismissal rates, allowed for better caseload management and improved the students/SLP ratio" (p. 19) (Keane & Rogers, 2009). Kelly (2014) confirmed that a partnership between SLPAs and SLPs could help balance limited resources with increasing service delivery demands.

Shift from Caseload to Workload

In this study, 92% of the respondents reported needing to work either before or after school during a typical week to finish caseload-related work. These additional hours cause job stress that can lead to burnout. No researchers in Missouri had done study to establish a scientific workload analysis approach for SLP caseload determination. Selected school districts can be selected as testing sites for changing from caseload to workload to improve school-based speech-language therapy service. Beasley (2007)

reported on the continuous effort of several pilot school districts in Kansas that have been collaborating since 2002 to implement a workload model. Progress had been made on making the shift from caseload to workload, and SLPs had opportunities to individualize services to students. A caseload ratio study in Ohio resulted in the development of a workload analysis approach and specific strategies to help produce more reasonable caseload ratios for service providers" (Carlin, 2013). Their newly developed approaches produced better student outcomes by meeting the needs of students better. However, their research methods were not rigorous enough and limited its wide application.

Job Satisfaction

Survey respondents reported that overall, they were satisfied with their jobs. Several aspects, such as class scheduling complexity, monthly workload, stress level, and monthly caseload could, however, be improved to increase job satisfaction. These findings confirm and complement the results of the job stress and satisfaction study conducted by Caesar & Nelson (2008) as well as the study by Blood (2002) in which caseload size was found to have a significant correlation with job satisfaction. Kalkhoff (2012) found that SLPs in medical settings had higher job satisfaction scores than did SLPs in schools. The job satisfaction of SLPs in different work settings (in Missouri) could be investigated in future studies.

CONCLUSION

Overall, only a relatively small fraction (20%) of the SLPs surveyed experienced heavier caseloads than MDESE regulation. School SLPs in Missouri were not well informed on maximum caseload regulation in their school district. The workload approach is neither well-defined nor widely used in Missouri. Survey responses indicated that the respondent school SLPs were, in general, satisfied with their jobs. SLPs reported that their satisfaction with their job was most closely related to the nature of their work, their coworkers, student cooperation with therapy, and student outcomes. School SLPs were less satisfied with class scheduling complexity, monthly caseload, monthly workload and stress level.

LIMITATIONS OF THIS STUDY

Although this survey was relatively comprehensive, the response rate was low. Future research should investigate SLP workload-related issues to establish a reasonable formula for SLPs' caseloads, class scheduling and other constraining factors. Further surveys are needed. Focus-group interviews could be helpful to pilot test survey questions, solicit constructive suggestions to improve survey design, and obtain a higher response rate.

SECTION

2. CONCLUSIONS

Caseload among school SLPs in Missouri was not a significantly heavier than that regulated by MDESE. The research raised some concerns about whether school SLPs were well informed or educated on the maximum caseload regulation in their school districts. No formal workload approaches have been established for caseload number determination for school SLPs. This may be a good area for future research.

Another finding is that school SLPs in MO were generally satisfied with their jobs, especially with the nature of their work, student outcomes from therapy. However, SLPs struggled with complex class scheduling problems, due to the interaction between therapy sessions and students' normal course work. This can be another interesting area for further research. Optimization models using genetic algorithm can be built to tackle the class scheduling problem.

REFERENCES

Armstrong. (2012). Workload Status of School-Based Speech-Language Pathologists in Texas. *SIG 16 Perspectives on School-Based Issues, 13*(4), 136-149. doi: 10.1044/sbi13.4.136.

ASHA. (2002). A Workload Analysis Approach for Establishing Speech-Language Caseload Standards in the Schools: Technical Report. *ASHA 2002 Desk Reference Speech-Language Pathology, 3*, 203-224.

ASHA. (2010). SLP Caseload Characteristics. American Speech-Language-Hearing Association: American Speech-Language-Hearing Association.

ASHA. (2012). SLP Caseload Characteristics. American Speech-Language-Hearing Association: American Speech-Language-Hearing Association.

ASHA. (2014a). Schools Survey. from http://www.asha.org/research/memberdata/schoolssurvey/.

ASHA. (2014b). SLP Caseload Characteristics American Speech-Language-Hearing Association: American Speech-Language-Hearing Association.

ASHA. (N.A.). Caseload and Workload. from http://www.asha.org/practice-portal/professional-issues/Caseload-and-Workload/.

Beasley, M. J. (2007). Making the Shift From Caseload to Workload: Kansas Revisited. *SIG 16 Perspectives on School-Based Issues, 8*(2), 6-8. doi: 10.1044/sbi8.2.6.

Bellini, P. I. (2000). Sometimes One Voice Does Make A Difference: Utilizing Union Negotiations To Manage Caseload. *SIG 16 Perspectives on School-Based Issues, 1*(1), 2-4. doi: 10.1044/sbi1.1.2.

Bellini, P. I. (2007). Drawing Outside the Lines: Innovative Solutions to Caseload Issues. *SIG 16 Perspectives on School-Based Issues, 8*(2), 9-11. doi: 10.1044/sbi8.2.9.

Block, K., & Frances. (2000). Caseload Management Strategies. *SIG 16 Perspectives on School-Based Issues, 1*(1), 14-15. doi: 10.1044/sbi1.1.14.

Blood. (2002). Predicting Job Satisfaction Among Speech-Language Pathologists Working in Public Schools. *Language, Speech, and Hearing Services in Schools, 33*(4), 282-290. doi: 10.1044/0161-1461(2002/023).

Brook, G. (2008). Survey Report: Caseload Characteristics Trends 1995–2008. *American Speech-Language-Hearing Association-School Surveys*.

Caesar, L. G., & Nelson, N. W. (2008). Perceptions of Job Stress and Satisfaction Among School-Based SLPs: Challenges Versus Rewards. *SIG 16 Perspectives on School-Based Issues, 9*(4), 126-134. doi: 10.1044/sbi9.4.126.

Carlin. (2013). Caseload Ratio Study: Final Report to the Ohio Department of Education.

Chou, H. (2015). Multiple-technique approach for improving a performance measurement and management system: Action research in a mining company. Engineering Management Journal, 27(4), 203-217. Retrieved from http://libproxy.mst.edu:2048/login?url=http://search.proquest.com/docview/1761611070?accountid=14594.

Dowden, P., Vollan, T., Cumley, G. D., & Kuehn, C. M. (2006). Survey of SLP Caseloads in Washington State Schools: Implications and Strategies for Action. *Language, Speech, and Hearing Services in Schools, 37*(2), 104-117. doi: 10.1044/0161-1461(2006/013).

Estomin, E. (2003). Implementing a Speech-Language Workload Approach in School-Based Settings: Why the Caseload Approach Isn't Working. *SIG 16 Perspectives on School-Based Issues, 4*(2), 30-32. doi: 10.1044/sbi4.2.30.

Joreskog, K. G. (1969). A General Approach to Confirmatory Maximum Likelihood Factor Analysis. *ETS Research Bulletin Series, 1967*(2), 183-202. doi: DOI: 10.1002/j.2333-8504.1967.tb00991.x.

Kalkhoff, N. L., & Collins, D. R. (2012). Speech-Language Pathologist Job Satisfaction in School Versus Medical Settings. *Language, Speech, and Hearing Services in Schools, 43*(2), 164-175. doi: 10.1044/0161-1461(2011/11-0007).

Keane, L., & Rogers, L. (2009). Using What You Have: Training Teacher Assistants as Speech-Language Assistants. *SIG 16 Perspectives on School-Based Issues, 10*(1), 19-22. doi: 10.1044/sbi10.1.19.

Kelly. (2014). Unleashing Your SUPERvision powers. *SIG 16 Perspectives on School-Based Issues, 15*(3), 107-114. doi: 10.1044/sbi15.3.107.

Komes, L. W. (2000). Lower the Caseload! One State's Journey. *SIG 16 Perspectives on School-Based Issues, 1*(1), 5-6. doi: 10.1044/sbi1.1.5.

Litwin, M. S. (1995). *How to Measure Survey Reliability and Validity* (1 edition ed.): AGE Publications, Inc; (August 3, 1995).

MDESE. (N.A.). Desirable Caseload Guidance. *Missouri Department of Elementary and Secondary Education.*

Mirdad, W. K., & Eseonu, C. I. (2015). A conceptual map of the lean nomenclature: Comparing expert classification to the lean literature. Engineering Management Journal, 27(4), 188-202. Retrieved from http://libproxy.mst.edu:2048/login?url=http://search.proquest.com/docview/1761611150?accountid=14594.

ODE. (2012). Ohio's Caseload Ratio Study 2010 - 2013. *Ohio Department of Education*.

Pezzei, C., & Oratio, A. R. (1991). A Multivariate Analysis of the Job Satisfaction of Public School Speech-Language Pathologists. *Language, Speech, and Hearing Services in Schools, 22*(3), 139-146. doi: 10.1044/0161-1461.2203.139.

Russ, S., Chiang, B., Rylance, B. J., & Bongers, J. (2001). Caseload in special education: An integration of research findings. *Exceptional Children, 67*(2), 161-172.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53-55. doi: 10.5116/ijme.4dfb.8dfd .

Whitmire, K. (2004). Workload/Caseload: An Update on ASHA Activities. *SIG 16 Perspectives on School-Based Issues, 5*(1), 23-24. doi: 10.1044/sbi5.1.23.

APPENDIX

SLP Caseload Study in Missouri - Survey of 2015

QA0 Are you a Speech Language Pathologist (SLP) working for a school or school district?

- ❍ Yes (9)
- ❍ No (10)

If No Is Selected, Then Skip To End of Survey

QA1 What is your gender?

- ❍ Male (1)
- ❍ Female (2)

QA2 Which age group do you belong to as of 2015?

- ❍ 20 - 29 (1)
- ❍ 30 - 39 (2)
- ❍ 40 - 49 (3)
- ❍ 50 - 59 (4)
- ❍ 60 and above (5)

QA3 What is your current primary employment setting(s)? Please select all that apply.

- ❑ Birth to Three (1)
- ❑ Early Childhood (3-5) (2)
- ❑ Elementary school (3)
- ❑ Middle school (4)
- ❑ High school (5)
- ❑ Other, please specify. (Please type your answer in the following box) (6)

_____

QA4 How many years of experience do you have working in schools as a SLP? Please specify the years in Arabic numbers.

QA5 Are you an ASHA certified SLP?

- ❍ Yes (1)
- ❍ No (2)

QA6 What is the highest academic degree you currently hold?

- ❍ Bachelor's degree (1)
- ❍ Master's degree (2)
- ❍ PhD (3)
- ❍ Other, please specify. (4) _____

QA7 What is your FTE (full-time equivalent) as a school SLP? (1.0 FTE = 40 hours of work each week)

- ❍ 1.00 (1)
- ❍ 0.75 (2)
- ❍ 0.50 (3)
- ❍ 0.25 (4)
- ❍ Other. Please specify. (5) _____

QB1 What is the average number of students for whom you provide speech language services each month, i.e. monthly caseload number?

QB2 What is the regulated maximum caseload number in your school district?

QB3 What is your specialty as a school SLP?

QB4 How does your specialty influence your caseload? My specialty tends to

	greatly increase (1)	slightly increase (2)	have no influence on (3)	slightly decrease (4)	greatly decrease (5)
my overall caseload. (1)	❍	❍	❍	❍	❍
my overall	❍	❍	❍	❍	❍

workload. (2) my caseload of students with disabilities/needs in my specialty. (3) my workload of students with disabilities/needs in my specialty. (4)	❍ ❍ ❍	❍ ❍ ❍	❍ ❍ ❍	❍ ❍ ❍	❍ ❍ ❍

QB5 What are the percentages of students with mild, moderate and severe-to-profound impairment on your typical caseload? Please specify the number in percentages.

_____ Mild (1)

_____ Moderate (2)

_____ Severe-to-profound (3)

QB6 What percentage of students on your caseload require bilingual speech-language services?

QB7 What percentage of your caseload includes clients who require interpreters?

QB8 My caseload take the following factors into account: (select all that apply)

- ❑ Work contract (1)
- ❑ ASHA guidelines (2)
- ❑ Federal regulations (3)
- ❑ State regulations (4)
- ❑ Local education guidelines (5)
- ❑ Opinions of IEP team (6)
- ❑ My specialty (7)
- ❑ My gender (8)
- ❑ My age (9)
- ❑ My years of experience (10)

- ❑ Assignment from my supervisor (11)
- ❑ Number of students needing to be served (12)
- ❑ Severity of communication impairments (13)
- ❑ Direct intervention time (14)
- ❑ Evaluation for students (15)
- ❑ Co-teaching with other teachers (16)
- ❑ Paper work, documentation (17)
- ❑ Class planning and scheduling (18)
- ❑ Meeting with parents (19)
- ❑ Meeting with administrative staff (20)
- ❑ Supervising and training SLP assistants and aids (21)
- ❑ Administration/managerial responsibility (22)
- ❑ Other. Please specify. (23) _____

QB9 Which model(s) do you use for service-delivery to your students in your school? Please provide the estimated percentage of time spent on each service in a typical week.Please put in zero if a particular service type does not apply to your case.

_____ Traditional pull-out model for individual therapy (1)

_____ Traditional pull-out model for group therapy (2)

_____ Classroom-based (integrated) individual intervention (3)

_____ Classroom-based (integrated) group intervention (4)

_____ Collaborative service delivery (with classroom teachers, special education teachers, and other graduate student externs) (5)

_____ Indirect therapy (intensive parent training only) (6)

_____ Response to intervention (7)

_____ Other. Please specify. (8)

QB10 How many clients do you typically serve with a diagnosis in the following areas? Please specify the number of clients on your typical caseload.

_____ Total number of children on your caseload in a typical month (1)

_____ Number of clients on your caseload with articulation/phonology impairment (2)

_____ Number of clients on your caseload with autism and related disorders (3)

_____ Number of clients on your caseload with apraxia of speech (4)

_____ Number of clients on your caseload with cognitive impairments (5)

_____ Number of clients on your caseload with dysphagia (6)

_____ Number of clients on your caseload with fluency disorders (7)

_____ Number of clients on your caseload with hearing disorders (8)

_____ Number of clients on your caseload with language disorders (9)

_____ Number of clients on your caseload with literacy issues (10)

_____ Number of clients on your caseload with complex communication needs (e.g., Augmentative and Alternative Communication) (11)

_____ Number of clients on your caseload with traumatic brain injury (12)

_____ Number of clients on your caseload with voice/resonance disorders (13)

_____ Other areas. Please specify the areas in the following text box. (14)

QC1 Please provide the hours you spend on each of the following activities each week (Please type in the number of hours in the text box):

❑ Direct intervention for individual pull out service (1) _____

- ❑ Direct intervention for group service (2) _____
- ❑ Co-teaching (3) _____
- ❑ Student evaluation (4) _____
- ❑ Paper work, documentation (5) _____
- ❑ Class planning and scheduling (6) _____
- ❑ Meeting with parents (7) _____
- ❑ Meeting with administrative staff (8) _____
- ❑ Supervising and training SLP assistants and aids (9) _____
- ❑ Administration/managerial responsibility (10) _____
- ❑ Other, please specify the job activities and hours spent. (11) _____

QC2 I work before or after school

- ❍ 0 hours per week (1)
- ❍ 1 - 5 hours per week (2)
- ❍ 6 - 10 hours per week (3)
- ❍ More than 10 hours per week (4)

QC3 Does your district recommend or require a service delivery model? For example, 4:1 model, in which four days of a week are used for direct service, and one day is used for meetings, paperwork, scheduling, reports writing, etc.?

- ❍ Yes (1)
- ❍ No (2)

QC4 If your district does not have a specific service delivery model, do you think having one would be beneficial?

❍ Yes (1)

❍ No (2)

QC5 What kind of service delivery model do you think would be most helpful for you in providing therapy?

QC6 Job satisfaction rating. How satisfied are you with the following aspects of your job? Please select the scale points that best describe your opinion.

	Very Dissatisfied (1)	Dissatisfied (2)	Neutral (3)	Satisfied (4)	Very Satisfied (5)
Salary (1)	❍	❍	❍	❍	❍
Employee benefits (2)	❍	❍	❍	❍	❍
Supervision/upper management (3)	❍	❍	❍	❍	❍
Promotion opportunity (4)	❍	❍	❍	❍	❍

Career development opportunity (5)	❍	❍	❍	❍	❍
Coworkers (6)	❍	❍	❍	❍	❍
Nature of work (7)	❍	❍	❍	❍	❍
Communication with coworkers (8)	❍	❍	❍	❍	❍
Monthly caseload (9)	❍	❍	❍	❍	❍
Monthly workload (10)	❍	❍	❍	❍	❍
Class scheduling complexity (11)	❍	❍	❍	❍	❍
Your ability to meet the needs of students (12)	❍	❍	❍	❍	❍
Students'	❍	❍	❍	❍	❍

cooperation with your therapy (13)					
Parents' cooperation with your therapy for their children (14)	❍	❍	❍	❍	❍
Your influence on decision making that guide your work (15)	❍	❍	❍	❍	❍
Your stress level (16)	❍	❍	❍	❍	❍
Sufficient supplies or resources to do your job (17)	❍	❍	❍	❍	❍
Students' outcome (18)	❍	❍	❍	❍	❍
Availability of an	❍	❍	❍	❍	❍

experienced mentor in working environment (19)					

QC7 Please rate your level of agreement or disagreement with the following statements:

	Strongly disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
There is a severe shortage of qualified SLP personnel in my school district(s). (1)	❍	❍	❍	❍	❍
My school district(s) need(s) additional qualified SLP personnel	❍	❍	❍	❍	❍

very much. (2) My school district(s) can provide the needed services for every students with disabilities that need service from SLPs. (3)	❍	❍	❍	❍	❍
My school district(s) failed to meet the needs of some	❍	❍	❍	❍	❍

students with disabilities who needed service from SLPs. (4)					
My school district(s) often use(s) temporary credentialed SLP personnel as staff. (5)	❍	❍	❍	❍	❍
My school district(s) lack(s) funds to hire qualified SLPs. (6)	❍	❍	❍	❍	❍

Use of SLP assistants or aids makes my caseload much more manageable. (7)	❍	❍	❍	❍	❍
Use of SLP assistants or aids needs too much time for supervision and does not make caseload management easier. (8)	❍	❍	❍	❍	❍

End 1 Thank you very much for taking the survey! Your input is greatly appreciated!

Have a great day!

VITA

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