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Mathematics teachers' support and retention: using Maslow's hierarchy to understand teachers' needs

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ABSTRACT

As part of a larger study, four mathematics teachers from diverse backgrounds and teaching situations report their ideas on teacher stress, mathematics teacher retention, and their feelings about the needs of mathematics teachers, as well as other information crucial to retaining quality teachers. The responses from the participants were used to develop a hierarchy of teachers' needs that resembles Maslow's hierarchy, which can be used to better support teachers in various stages of their careers. The interviews revealed both non content-specific and content-specific needs within the hierarchy. The responses show that teachers found different schools foster different stress levels and that as teachers they used a number of resources for reducing stress. Other mathematics-specific ideas are also discussed such as the amount of content and pedagogy courses required for certification.

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1. Introduction

It is well documented that the retention of teachers is a continuing problem in the public schools in the United States. This is more prevalent in the areas of mathematics and science and in urban settings.[1,2] The Teacher Follow-up Survey [3] indicated that special education teachers are the most likely to leave the profession with secondary level teachers of core subjects such as mathematics, English, and social sciences as the next most likely to leave the profession. Ingersoll [4] reported on the prior version of the Teacher Follow-up Survey in which secondary mathematics teachers held the highest percentage of departures.

In an attempt to find the reasons that teachers leave the profession, multiple studies have been conducted with contradictory results. For example, both Ferrini-Mundy and Floden [1] and Cwikla [5] suggest there is not enough preparation in mathematics content for college students who want to teach mathematics after graduation. Paul [6] reports that the current undergraduate mathematics courses required for a degree in mathematics can be a 'filter' that eliminates potential mathematics teachers. This may result in fewer mathematics education graduates to fill mathematics teacher vacancies. It has been noted that as many as a third of students in grades 7–12 do not have a teacher with a major or minor in mathematics.[7]

Stressful situations resulting in teacher departures occur in all areas of teaching. The Teacher Follow-up Survey revealed 32% of teachers who changed schools stated 'poor working conditions' as a reason for their move. Over 37% of teachers who left the profession stated they were going to 'pursue a job outside of teaching.' [3] The level of a teacher's stress may be elevated by poor student behaviour, [8] lack of administrative support, [9,10] and the excess of additional tasks required of teachers. These tasks often include extra duties like hall monitoring, bus duty, and bathroom patrols. [11] Additionally, teachers are feeling intense pressure from the amount of high-stakes tests being required; many are worried they will be removed from the classroom, lose financial resources, or leave the profession if their students do not perform well enough. [12]

In numerous research studies there are a myriad of solutions put forward to reduce teacher stress levels and ease the teacher retention problem in the United States. Three themes consistently arise in these education studies: stronger professional development, [13–17] more effective mentoring for new teachers, [4,5,11,13,16–22] and productive peer collaboration. [5,11,15,22]

These studies conducted on teacher stress and retention rarely focuses on one specific content area. Stress is generally studied with large groups of teachers from varying subject areas and grade levels. Since the science, technology, engineering, and mathematics (STEM) fields have received much attention with respect to teacher burnout, this paper focuses on mathematics teachers by studying four secondary mathematics teachers from diverse backgrounds about the stress placed on teachers of mathematics and how it affects their satisfaction with the teaching profession. With this small sample, we were able to take the data collected and develop hierarchical stages, similar to Maslow's hierarchy. These stages were then used to make connections between Maslow's original hierarchy and a new hierarchy developed to describe the needs of teachers. Better understanding of the needs of teachers can result in stronger mentoring, professional development, administration, and support of all teachers in their careers and not just the heavily studied group of novice teachers.

In order to categorize the current needs of mathematics teachers better and to organize them based on Maslow's hierarchy, the following research questions were explored from the viewpoint of teachers.

1. What are the needs of teachers in various stages of their careers?
2. How do teachers' needs compare with the needs in Maslow's hierarchy?

2. Maslow's hierarchy of physiological needs

In 1943, Maslow stated, 'Human needs arrange themselves into hierarchies of prepotency ... the appearance of one need usually rests on the prior satisfaction of another, more prepotent need.' [23,p.370] This idea of a hierarchy may never end because 'man is a perpetually wanting animal.' [23,p.370] He describes the items that drive the movement into the levels of needs but stated that listing the drives would get us nowhere for 'theoretical and practical reasons.' [23,p.370] Maslow organized his hierarchy from the basic 'survival skills' (physiological stage) to safety, love and belonging, esteem, and finally self-actualization. This hierarchy can be related to the change that teachers face when they begin their careers in a classroom. Listing specific items that force teachers into the various zones would seem pointless when the transition may be a much broader issue. Maslow's ideas evolved into the creation of his theory of the physiological needs that a person encounters when faced with

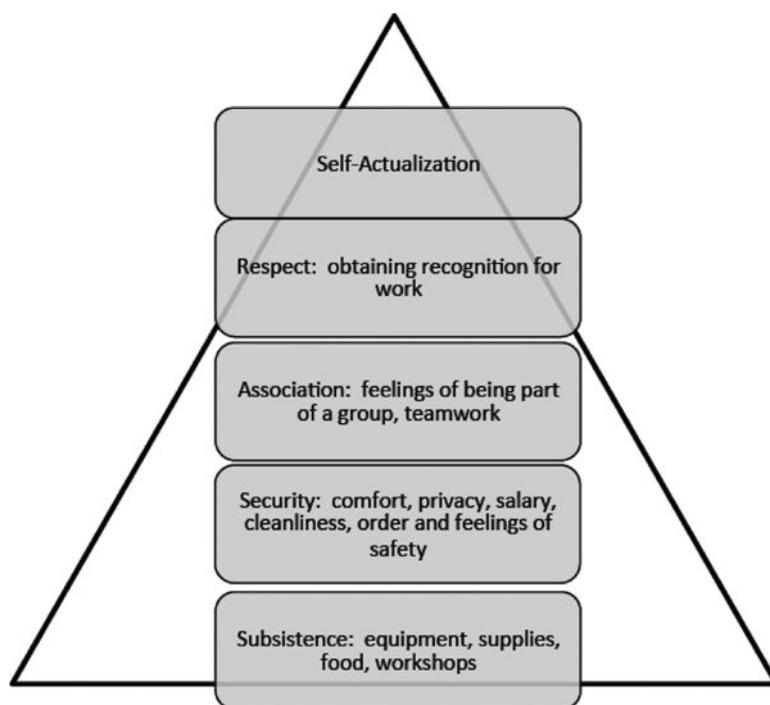


Figure 1. Visual representation of Maslow's hierarchy of physiological needs as they relate to the teaching profession.

a new stage in one's life. This theory can be applied directly to a teacher's career. According to Weller,[24] the issue that contributes the most to stress and discontent in the teaching profession is 'people-problems.' [24,p.32] This indicates why a behaviour-oriented approach like Maslow's is appropriate for school administrators to follow and works as a 'vehicle' for meeting the needs of all teachers.[24] This hierarchy can be used to describe many parts of a person's life, as in the study to evaluate student retention in higher education.[25] [Figure 1](#) below gives a visual representation of the hierarchy that is described in relation to teachers.

3. Methodology

The four teachers participating in this study were randomly chosen from a group of teachers used for a larger study on teacher stress and burnout.[26] This study follows the 'explanatory design' created by Creswell and Plano Clark.[27] The explanatory design is a two-part design in which the qualitative data is gathered to build upon the quantitative results. The teachers in the original study ($n = 385$) were secondary level teachers of various subject areas. The math teachers ($n = 73$) from that original study were stratified into four groups based on their stress level and preventive coping skills and one mathematics teacher was randomly selected from each group. The participant's stress levels were quantified by using a version of the Classroom Appraisal of Resources and Demands (CARD) [28] that had been altered for use with secondary level teachers. While this survey was originally designed for

preschool and elementary level teachers, it was redesigned and refocused for middle and secondary level teachers by Fisher, Lambert, and McCarthy [29] The CARD measures the teachers' perceived demands and resources of the profession and their difference results in a measureable stress level for the participants. This stress score was used to stratify the mathematics teachers in the study by placing them into categories based on whether their stress score was above or below the mean stress score of all teachers in the study.

The teachers were also given a score based on their preventive coping skills (also called 'coping'). Their preventive coping skills were measured using the Preventive Resources Inventory.[30] Preventive copings skills are the ability to prevent stressful situations from occurring rather than coping with stressful situations after they have occurred.[31] This measure was the second variable used to stratify the mathematics teachers and they were placed into two groups based on whether they were above or below the mean preventive coping score. The groups were defined as low stress with low coping ($n = 17$), low stress with high coping ($n = 24$), high stress with low coping ($n = 22$), and high stress with high coping ($n = 9$). This stratification was used to ensure further diversity among the participants being interviewed.

The four selected teachers were interviewed using a semi-structured interview protocol. Conversations, ranging from 45 to 90 minutes each, were recorded and later transcribed for analysis. In order to determine the major commonalities and differences between the four participants, 'category construction' was used.[32] Outlying categories were determined through literature and the interview protocol was designed based on these categories. The outlying categories chosen for the interview protocol were the following: stress and coping, retention, mathematics, and other miscellaneous questions. Some of the more specific topics addressed throughout the interviews included what they perceived as needs of mathematics teachers, mathematics teachers' college preparatory courses and how it influenced their preparation for teaching mathematics, professional development, collaboration with other teachers at their schools, high-stakes testing, salary, and the 'benefits' and 'disadvantages' of the profession. Merriam [32] describes the process of category construction by stating 'I see the category the same as a theme, a pattern, a finding, or an answer to a research question.' [32,p.178] The four participants' responses were entered into a data analysis table created to compare and to contrast the results from each category, from which more specific themes emerged from their combined responses. Each of the participant's responses were entered into a column in the spreadsheet so replies to the same questions could be compared across rows. As themes emerged, responses were rearranged into groups of similar questions and responses for reporting and analysis.

4. Participants

4.1. *Group 1 (low stress, low coping) representative: Candace*

Candace was chosen as the participant from Group 1. She was a public school teacher who had been teaching for 30 years at the same school in a state in the south-east United States. Her school, which was the same school from which she graduated, used a traditional schedule. Candace held a master's degree and stated she was very satisfied with the teaching profession.

4.2. Group 2 (low stress, high coping) representative: Maggie

Maggie had been teaching only for four years and had taught only at one school. She taught at a public fine arts magnet school in the south-east United States. She held a master's degree in mathematics education. At the time of the interview she was working towards an educational specialist degree and was contemplating entrance into a doctorate program in the future. Maggie's school also used a traditional schedule. She stated she was only somewhat satisfied with the teaching profession.

4.3. Group 3 (high stress, low coping) representative: Becky

Becky had been a teacher for 19 years and had taught at five different schools. At the time of the interview she taught at a public school in the south-central United States. Her school operated on a 4×4 block schedule. In addition to teaching, Becky had worked in other professions for seven years. She held a bachelor's degree in mathematics. Becky also stated to be only somewhat satisfied with the teaching profession.

4.4. Group 4 (high stress, high coping) representative: Janel

Janel worked at a private school in the north-east that used a hybrid block schedule. She had been a teacher only for three years, but had taught at two different schools in two different states. She worked at another profession for one year between her two teaching assignments. Janel held a bachelor's degree in statistics and mathematics education. She indicated she was very satisfied with the teaching profession.

5. Results and discussion

5.1. Stress and coping

The teachers were questioned about the stress levels at the different schools in which they had taught. With the exception of Candace, who has taught at the same school for 31 years, the teachers all felt that the stress levels varied at the different schools at which they taught. Becky spent some time teaching at two middle schools before she settled into teaching high school. She described her time while teaching middle school as 'doing time' because it was her first four years of teaching and she felt she was being suppressed because she did not have enough experience to find a job for which she was truly qualified. This comment implies Becky did not reach the respect stage in her first four years of teaching as she always felt her time teaching middle school was suppressing her skills. It may also indicate that she had not progressed very far into the association stage, feeling that her colleagues were not helpful or supportive:

Middle school to me was just a far more stressful period. That is not my first love, that's not what my training was for, but it was where I could find a job. You know I always joke about that, I refer to those first four years of teaching as 'doing time.'

5.1.1. Stress relief: subsistence, security, and association stages

The teachers were asked what methods they use to relieve stress. The overwhelming response centred on the support of other teachers and that of their family. Becky, Janel,

and Maggie all felt that being around other teachers with whom they could decompress was the best form of stress relief for each of them (association).

Janel stated that a stressed teacher is detrimental to their students. So, she felt it was most important to take care of herself and calm herself down so she can be more supportive of her students (security). When asked about how they managed the most stressful days at work, both she and Maggie stated they went home and took naps to help them feel refreshed (subsistence).

Becky was perhaps the most candid of all of the teachers about her methods of relieving stress. She passionately described how her husband, grandson, her dog, as well as her religion got her through difficult days:

I go home and I have a wonderful husband who will let me rant and rag, let me blow it out, and I know this will probably sound crazy to a lot of people, but there is nothing more relaxing than curling up with my dog ...and just petting her and talking to her and stroking her. She's always happy to see me, animals are wonderful you know, and I go to see my grandson a lot, if I've had a really, really bad day I go to see my grandson on the way home and sit ...and if he's sleeping I can just sit and look at him sleep and all is right with the world you know? And ...I am very active in church, I prayed a lot this year and that's no lie, I have probably prayed more this year.

5.2. Mathematics teacher retention

5.2.1. Needs of mathematics teachers: subsistence and security stages

The teachers interviewed did not seem to feel that mathematics teachers had *more* needs than other teachers, but they have *different* needs. The most prevalent need mentioned by these teachers for mathematics teachers was the need for specialized professional development (subsistence). Becky and Maggie both noted that mathematics courses undergo more curriculum changes than courses in other disciplines. Therefore, they stated, there is a greater need for professional development when these changes occur. Maggie also stated that mathematics teachers have to participate in after-school tutoring and remediation sessions more often than teachers in other disciplines. Teachers of other disciplines often used this extra time for their lesson planning and grading (security).

5.2.2. Mathematics teacher shortage: security and respect stages

Although most of the teachers felt teachers do not have a high enough salary, only one teacher interviewed felt the need to increase the salary only for teachers of mathematics (security and respect). Others felt a differentiated salary increase was not fair to teachers in other disciplines who may work just as hard as a mathematics teacher (association); however, Maslow's original hierarchy includes comfort and stability in this stage, which can be directly related to a teacher's salary. Janel proposed an interesting concept for retaining mathematics teachers. She suggested letting mathematics teachers specialize in a specific area of mathematics. Many teachers of history and science specialize in one aspect of that discipline and she felt that mathematics teachers could benefit from the same process. She stated that if mathematics teachers teach only in one area such as algebra, geometry, calculus, or technical math, then they would not feel they are 'spread too thin' among their courses. This could result in a stronger ownership of courses and more successful teachers (respect and self-actualization).

Candace discussed the need for more respect in the teaching profession by stating the following: ‘If your doctor says something, you would never think to refute them, but if a teacher does, a lot of time parents don’t even think twice about saying “I don’t think that’s right.”’ This lack of respect from parents was a common issue among all of the interviewees. All teachers interviewed agreed that communication with parents is not a desirable part of the job. Becky and Janel both recounted instances within the last year where parents were excessively rude with them to the point at which they could not continue the conversation. In Becky’s case, the parent wanted a conference with her, but she refused the conference unless an administrator was present. Maggie believed her personality causes her to dread this portion of her job as she does not like confrontation and admitted that communicating with parents usually involved some sort of confrontation. She dismissed this issue; however, and stated that ‘no job is perfect.’

5.2.3. College preparation: subsistence stage

In this stage, Maslow originally included items needed for survival, such as food, air, and sleep. Riley and Mort [33] interpreted this stage for teachers to also include equipment, supplies, and professional development. The participants in the study were asked about their college preparatory classes for becoming teachers. They were asked if they felt the mathematics courses they were required to take as undergraduate students were too difficult for potential teachers. They all agreed those courses were very difficult for them at the time, but none seemed to think they were not necessary. Candace and Maggie both stated that they felt the courses were relevant to them later in their careers because they helped to build logical connections between mathematical topics and the courses prepared them to be better problem solvers. Maggie joked that she felt they ‘made us take those advanced mathematics courses in college in order to feel what it’s like to not understand something so we can sympathize with our students.’

Janel was the only participant who intimated that her higher-level mathematics courses were not necessary. She never specifically stated she felt the advanced mathematics courses were not needed. Instead, she expressed her disappointment in the lack of pedagogical courses that trained her how to *teach* mathematical concepts. She felt an exchange would have been optimal where they reduced the number of mathematics content courses and replaced them with mathematics pedagogical courses:

I feel like the downside to the math education programs in colleges, as much as I think they do a great job on the education side, we take all these advanced math classes and then we go teach like algebra one and no one’s told us how to teach factoring. We did all these advanced things and then we go back and teach the most basic, and so I think that sometimes it is hard to remember how to go back and teach the way we can do it.

5.2.4. Salary: security and respect stages

None of the teachers felt the salary was sufficient to support a family and have financial security (security). Maggie was the only teacher who stated that she felt that the salary was adequate. She did admit that she was a single female who did not have a family to support and she felt that if she did have a family then she did not feel it would be sufficient. When asked if they could place a number on what they felt their salary should be based on their specific years of experience, none could do so. However, they felt they just should be comparable and competitive with other professions external to education (respect). Janel

felt that there were too many teachers of mathematics attracted to other professions because education could not compete with outside industries and their compensation packages. Candace also commented about the lack of value on education:

We have to put more value on education. I mean when you have people that enter the sports field and they make more money in a few years that a teacher would make in a lifetime, then we are saying that that is a more valuable profession; That our country thinks ...that some type of extracurricular thing is more important ...so I think it has to begin in the lower grades, with parents and children and our society really.

Candace and Janel both commented that teaching is not a profession that you enter for the salary. They said that teachers are aware of the salary before going into the profession and there are other reasons why a person could become a teacher. Candace states 'I think the most important thing when you do try to go into a career, is to go into something that you really, really, care about ...then you won't worry about not having the money.' Janel's response was 'anyone I believe who really wants to be a teacher because they want to be a teacher doesn't really do it for the money because you know going in that there's not going to be a lot.'

5.3. Benefits of the profession

When asked to describe the 'worst' attributes of the teaching profession, the teachers had a very difficult time verbalizing their answers. But, when asked about the benefits of the profession, they were quite honest, candid, and vivid in their responses. Overwhelmingly, all teachers agreed that they teach 'for the students.' Maggie commented that the health benefits and retirement plans were very helpful (security). Janel liked the fact that teaching was more casual and less formal than other professions (security). Becky loved the longer holidays and extra days off (subsistence), even though she took work home with her over the breaks. She also commented that even if the profession was not convenient if one had an emergency, such as a sick child that, overall, the profession is very 'family-friendly' (association).

Even though a number of tangible results were discussed, they all expressed their love for teaching and the students (respect). Becky stated that she could go home frustrated, aggravated, and ready to quit and her husband would ask 'Tell me again why you teach?' She would respond:

I love the kids, they're not students to me, they're my children and ever since I've gotten back into high school they are my children ...I go back the next day because I don't believe that anybody else will take as good of care of my children as I will.

She also stated when asked about the benefits that 'I get to spend my day with kids every day and I love it.' She went on further to say:

I don't know, I think the perks of teaching is that if you love kids it's a way to spend time with kids and hopefully feel that you can make some kind of difference in their lives ...I mean we spend a lot more time with them than their parents do at this high school age, a lot of them, not every one of them, but a lot of them, so it's the opportunity to give them a positive influence.

Candace described the feelings she had when her students come back to the school to visit after they have graduated:

When they come back and talk to you, that's when you actually know that effect, that you have touched somebody's life, and then that gets passed on to the next generation, so even if I, if I do die, I know that a little part of me is all these people. That's how I think about it.

Janel saw as a reward when students made good grades in her class. This reward, to her, outweighed the less desirable parts of the profession:

I just feel like the reward is greater ...when that kid gets an A on the test or I just love being around the kids so ...I can deal with all the rest of it because I feel like there's a reward there you know. I feel satisfied at the end of the school year ...when I see the kids graduate ...I feel like I accomplished something.

When asked why she remains in the teaching profession, Maggie jokingly responds 'because I signed a contract.' She then describes the reason as:

When it comes down to it, it's not about the test scores and when I really think about it, it's more about the students and I still enjoy interactions with students and making those interactions every day ...that's what I always get down to, that's why I stay, because that's why I got into teaching. It's not because I have this great love for math, like I am still trying to decide if I even like math. It's just that I got into teaching for the students and so that's why I continue to stay.

5.4. Thoughts of departure

Kate Walsh, president of the National Council on Teacher Quality,[37] states that the time period of the third through the fifth year of a teacher's career is 'an opportunity lost for the health of the teaching profession' because of the high rates of teacher attrition within that valuable time of a teacher's career. Becky specifically stated that she seriously considered leaving the profession after her fifth year of teaching:

I had all of the bottom barrel weakest classes, had no bright spot in my day. That was the year I had three students that went to prison, you know, and it was just emotionally, it just tore me apart and I was frustrated, I felt like I was working myself to death and they weren't getting any better, like I was working really hard but the kids weren't working very hard ...and no matter what I tried, I would try games, I would try you know different approaches ...oh it was crazy and it was ...just in a very difficult situation where I just thought, I do not know if I want to do this the rest of my life.

Maggie also discussed thoughts of leaving the profession. She seriously considered leaving at the end of her fourth year due to pressure from her administrators to produce high test scores. Other studies, such as the 'Teacher Follow-up Survey,' also note that the fifth year exists as a significant cut-off for years of experience.[3] The significance of using the fifth year as turning point is an interesting concept that should warrant future research.

6. Maslow's hierarchy revisited

6.1. Comparing teachers' needs to Maslow's original hierarchy

The responses of the teachers in this study were compared to the themes in Maslow's original hierarchy of human motivation. Figure 2 below shows the similarities between his original classification and the teachers in this study.

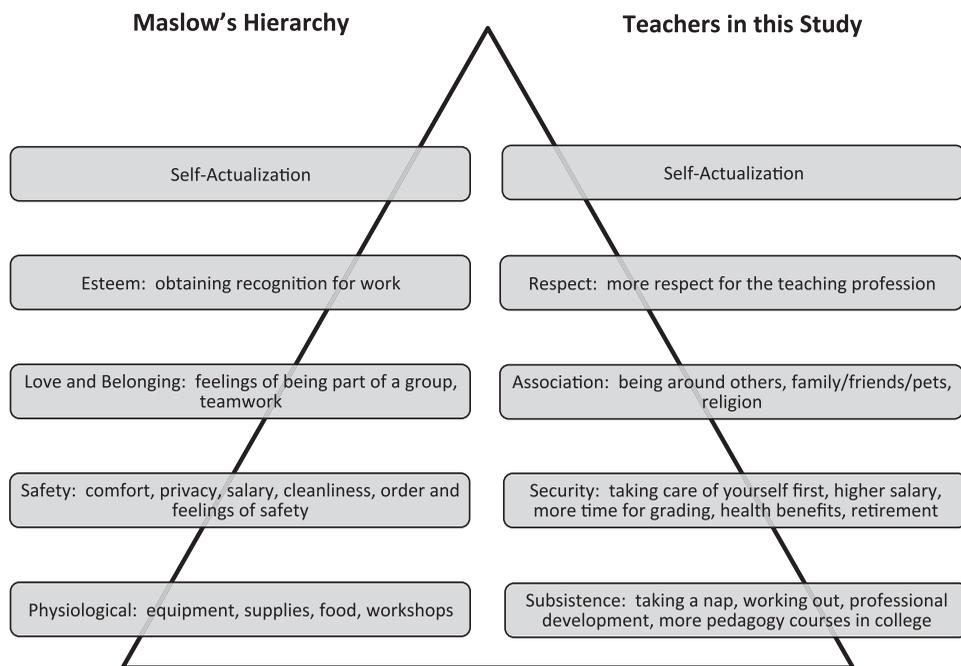


Figure 2. Comparison of Maslow's original hierarchy to the teachers in this study.

In the subsistence, security, association, and respect stages, the similarities between Maslow's original hierarchy and the teachers of this study are investigated in the following sections. Teachers yearn for more respect in the teaching profession (respect) and combat stressful situations by being around others, whether that is colleagues, family, friends, or pets (association). Additionally, the teachers feel the need to take care of themselves first such as the need higher salaries (respect), more time for tasks such as grading or planning (association), and the health and retirement benefits received as teachers (security and respect). Finally, the most basic needs they noted for teachers are sleep, exercise, professional development, and additional pedagogy courses in college (subsistence). These responses closely match those found by Maslow.

6.1.1. Subsistence

Maslow's first stage is the *physiological* or 'survival stage.' This is the stage a person enters when beginning a new phase in life and consists of the most basic needs. For a teacher the need can easily be described as survival or, better yet, the subsistence stage of the career. According to Riley and Mort [33] the most important needs for early career teachers are workshops, equipment, displays (supplies), and food. In order to reduce the stress that teachers may incur at this level, Quinn and Andrews [36] suggest a school-specific handbook for first year teachers that can assist them with many of the survival essentials. Since this stage is the bottom rung of the hierarchy, Maslow [23] claims the 'major motivation' in life begins at this physiological (subsistence) level:

A person who is lacking food, safety, love, and esteem would most probably hunger for food more strongly than for anything else ... For a chronically and extremely hungry man, Utopia can be defined very simply as a place where there is plenty of food. [23,p.373]

Maslow states that as physiological emergencies subside, this signals a move by the person to the next phase of the hierarchy. For teachers in this study, this would include the basic 'survival skills' of sleep, extra days off, lower level professional development, and additional pedagogy content prior to teaching. As Janel and Maggie stated, on the most stressful days, they would take naps to feel refreshed and all teachers noted the need for specialized professional development that is unique to mathematics teachers.

6.1.2. Security

Maslow refers to the second stage as the *safety* stage. Certainly teachers deserve a safe place to work that is free of hazards, clean, appropriately heated or cooled, has sufficient light, and offers privacy to a certain degree.[24] For a teacher new to the profession, the term security better describes this stage of the hierarchy of teacher needs. Teachers should also be able to work in a place that Maslow [23] describes as 'predictable' and 'orderly':[23,p.377] Although the teaching profession is rarely predictable, it should be orderly. Many schools are lacking in this aspect of the hierarchy, which, in turn, affects how students learn.[34] Feelings such as 'injustice, unfairness, or inconsistency' can make the teacher feel anxious and insecure.[23,p.377] Those feelings increase the stress levels of teachers and produce dissatisfactory feelings about their school, colleagues, and, ultimately, the profession. More tangible aspects can be included at this level, such as job security, salary, and insurance benefits.[23] Once all of these feelings have dissipated, teachers no longer see the immediate need for security, and they then long for a stronger bond with the profession. For the teachers in this study, the security level includes financial security in term of higher salary as well as security of their time to allow for important tasks such as grading and planning. The teachers overwhelmingly agreed that the salaries for teachers are not sufficient for this career, even though none of them could place a numeric value on the salary. Additionally, security in health and retirement resources was noted as important features of the hierarchy and Janel even noted the appeal to the comfort level of the position in that teaching is less formal than other careers.

6.1.3. Association

Maslow named this stage in the hierarchy the *love and belonging* stage. Most people relate the word 'love' with a family member or significant other for whom they would have strong feelings. In the sense of a teacher, however, we may translate 'love' simply to mean belonging to a team or group [35] or an association with a specific group of teachers or a team, depending on the structure of the curriculum in the school. Weller [24] suggests that principals allow teachers, students, and administrators to participate in joint reviews of particular school codes and events to allow for all points of view to be shared, thus promoting the association with a group. This can give a teacher a sense of belonging with their teaching and the profession and can help new teachers feel less isolated in their careers. For the four teachers of this study, this stage involves the love of family, friends, and pets, as well as religion. Each of them enthusiastically praised their family and friends as the greatest support system for them as teachers. Maslow [23] warns not to overlook the fact that in order to transcend this stage, humans must be conferring as well as receiving the feelings of association and the notion of teamwork. Without this stage and with the inability to discuss their feelings with another person, teachers can become emotionally exhausted with teaching. Becky candidly spoke of her lack of association when teaching middle school as it was not

her 'first love' and once she was able to secure a secondary teaching position, she felt as if she belonged to the profession.

6.1.4. *Respect*

Maslow named this stage the *esteem* stage, and teachers with high self-esteem generate a strong feeling of pride in their school and their profession.[24] Self-esteem is defined as that which is 'soundly based upon real capacity, achievement and respect from others.'[23,p.381] This means one's self-esteem must be generated by opinions of others and not just estimations of one's own ability. Self-esteem is only one aspect of the concept of respect. Teachers also want to know that they have the respect of their peers, their administrators, their students, and others associated with the school to begin to develop this aspect of respect. Teachers who have reached this level have a solid reputation in the profession and have earned respect from others. Many teachers who have reached this level are rewarded with exchange programs and master teacher awards.[33] Many people may think there is no higher stage than this respect stage, but even if every need is satisfied, humans always long for something greater.[23] The teachers from this study do not disagree with the prior research findings as they yearn for teachers to gain more respect in society. This level of respect can be through higher salary (security), but it involves much more. A higher salary is only one step in teachers achieving respect as a profession. Janel suggested one way to achieve respect is through a specialization area for mathematics teachers. This could result in stronger ownership in their courses and this specialization could better respect the desired content areas for mathematics teachers.

6.1.5. *Self-actualization*

This stage of the hierarchy is the most ambiguous, yet the most intriguing. Even Maslow admits that not much is known about this stage, so it remains an area to be researched. Maslow [23] attempts to define self-actualization as 'the desire to become more and more what one is, to become everything that one is capable of becoming,'[23,p.382] thus is appropriate for educators as well as the state of 'self-actualization' by some teachers may be manifested in their career by writing articles, developing curricula, writing grant proposals and receiving grant funds, presenting ideas at conferences, and conducting research.[33] Maslow [23] describes this stage more articulately by stating, 'A musician must make music, an artist must paint, a poet must write, if he is to be ultimately happy. What a man *can* be, he *must* be.'[23,p.382] Note that this stage is more than the 'respect' stage. A teacher must have reached the 'respect' stage to enter this self-actualization stage. It is not enough to just publish an article or present at a conference. The teacher must feel that what they offer the vocation is important and must be discussed in a wider venue than just one-on-one. At this point, a teacher knows s/he has reached the pinnacle of his/her career in the stage of self-actualization.

7. Implications and final remarks

This study suggests ways in which teachers might identify more support while being less stressed in the profession. However, teachers cannot initiate many of these suggestions without support from administrators that have the resources. These administrators may be at their school, within their district, or even at the state or national level. While the

teachers in the study admitted that their administration has a tendency to increase their stress levels with added pressure on test scores, the teachers interviewed in this study were able to supply some additional specific items their administrators were currently doing to help to alleviate their stress. Support with disciplining students, a decrease in requirements for teachers to attend every after-school meeting and event, and reduction of paperwork and extra duties were all mentioned as techniques that help teachers do their job with ease. Previous studies have found student discipline problems and time management are problems for teachers and this support seems to parallel those findings.[8,11] The lack of more significant responses could reveal that the efforts to retain teachers are not advertised sufficiently to truly be effective, but it could also mean that there are no specific strategies in these school systems for retaining teachers and reducing stress. Further investigations that pose the same question to administrators would be an interesting perspective on this problem of teacher retention.

When questioned about how their schools retain mathematic teachers, none of the teachers could give specific, current, or pertinent answers. Becky mentioned that a neighbouring school system was offering signing bonuses for teachers of mathematics. More drastically, Maggie noted that her state was contemplating a rule that new teachers hired in 'high needs areas', such as mathematics and science, would be hired and begin their pay scale at the salary as those teachers with five years of experience in order to entice more teachers in those areas. Maggie did not condone this idea as she felt that was unfair to teachers in other disciplines who work just as hard as mathematics teachers (association). Once again, a study where this question was posed to school administrators may result in radically different responses. Perhaps the participants' lack of specific responses about their current school system's tactics show that they are not enticed to stay in the profession by gratuitous resources. They are more attracted to feeling 'worthwhile' (Becky), having 'great students' (Maggie), the reduction of menial tasks (Candace), and fewer meetings (Janel).

None of the teachers felt mathematics teachers were more privileged than teachers in other disciplines, but they did feel that some of the needs were different. The most common response was the need for specialized professional development. Becky and Maggie both stated that mathematics curriculum undergoes more changes in the standards more often than other disciplines. They were in agreement that mathematics teachers need to be better trained when these changes occur. On the contrary, Becky felt that all disciplines have varying needs, indicating that mathematics teachers were not more in need of items than teachers in other disciplines. Candace, being a science and mathematics teacher, felt that science teachers had more needs than teachers in other disciplines due to the 'rather subjective' nature of the material and the time required to prepare for lessons. Surprisingly, none of the teachers mentioned specific tangible items that could be acquired with additional funding. An occasional mention of technology did occur, but only when the teachers were at a loss for a more descriptive answer. None of them seemed overly passionate that they were lacking in technological resources that they needed in order to do their job effectively.

The lack of specific unfavourable attributes compared to the more specific attributes that the teachers were able to provide as perks of the profession warrants further research. The General Social Survey conducted by Tom W. Smith [38] at the University of Chicago found that only 69% of teachers are satisfied with their profession. Additionally, from the original sample of 385 teachers, Fisher [26] found only 54% of teachers to be 'very satisfied' with the profession. This seems to indicate that the unfavourable aspects of the profession are much

more complex than creating a simple list of obstacles they face as an educator. Additional research with administrators and teachers of other content areas should be conducted as well to determine if others feel the same way.

This study only focused on the thoughts of four secondary mathematics teachers; however, they were teachers of diverse backgrounds and experiences. The purpose of this study was not to create results that could be generalizable across all disciplines and teachers, but to make use of Maslow's theory on human needs and apply it to the profession of teaching in order to understand teacher needs. The study was constructed to begin to make sense of how to combine the needs of current teachers with previous literature and organize those thoughts into the framework of Maslow's hierarchy of needs. With a clearer picture of these levels as described in the teacher's hierarchy of needs, administrators and policy makers can better understand the needs of teachers at different points in their careers. Despite the work and efforts of educational leaders, there is no panacea to the issue of support for teachers. Different teachers need different types of support and by using this analogue of Maslow's levels of needs, administrators can better design support that is useful to all teachers and not just a few teachers.

Research in teacher stress, burnout, and retention is not new. Using Maslow's hierarchy of human motivation does provide a new approach to this complex issue. Teachers will progress through these stages of need as they gain experience in the profession and discover new ways to combat stress. Additional research must be conducted to determine more specific strategies for teachers from each of these levels of need in order to better inform future professional development of teachers. With further analysis of the specific stages in which teachers are posited, professional development can be better tailored to meet the needs of those attending.

Studies maintain that teaching is a stressful career. Few will refute the significance of the amount of stress involved in the career. When Freudenberger [39] initially began his research on 'burnout,' he started by researching burnout on all professions, not specifically education. This led to discussions about the teaching profession. When discussing who is prone to burnout, Freudenberger claims that those most at risk are 'the dedicated and the committed' who are 'seeking to respond to the recognized needs of people.' When even more pressure is added from administrators, teachers' stress levels increase and burnout worsens resulting in more weary teachers who would rather find other professions than teaching children.

Disclosure statement

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