EXPERIENCES OF STUDENTS WITH LEARNING DISABILITIES IN ONTARIO UNIVERSITIES: A CASE STUDY

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This qualitative study examines the university experiences of four students with learning disabilities (LDs) in Ontario. The research focuses on individual and institutional barriers and facilitators, as well as social supports. Using a case study design, a series of three in-depth interviews were conducted with the participants. The findings showed that although the students' LDs could compromise their academic performance in university, they made use of the accommodations and services available to them and did well. In contrast to other research, these participants did not encounter any institutional barriers (i.e., professors' negative attitudes towards granting accommodations). Though they had all developed individual capacities that were important to their success, the students revealed that without a facilitating environment, they would not have achieved high grades. In this study, social supports were less important facilitators than individual capacities and institutional support. It is recommended that postsecondary institutions manage exam accommodations, thereby guaranteeing the opportunity for students with LDs to realize their academic potential.

Introduction

In recent years there has been a higher enrolment of students with disabilities in postsecondary institutions (Getzel, 2008). Leyser and Greenberger (2008) attribute this increased participation to civil rights legislation, technical innovations, and support services at universities. Likewise, enrolment rates of students with learning disabilities (LDs) have increased (Lindstrom, 2007; Orr & Goodman, 2010; Stage & Milne, 1996), but this sector of the population is still underrepresented (Mull & Sitlington, 2003; Ryan & Brown, 2005). Despite increased access and support, these students have longer completion times (Erten, 2011), often due to taking a reduced course load during their program (Duquette, 2000; Tsagris & Muirhead, 2012; Vogel & Adelman, 1992), and an overall lower graduation rate (Greenbaum, Graham, & Scales, 1995; Webb, Patterson, Syverud, Seabrooks-Blackmore, 2008). While challenges exist, students with disabilities are motivated to graduate from a postsecondary program to achieve a personal goal (Erten, 2011; Greenbaum, et al., 1995); prove their worth (Moola, 2015; Reis, Neu, & McGuire, 1997), and to meet family and peer expectations (Greenbaum, et al., 1995). One of the most important reasons for pursuing postsecondary studies is to enhance success in the workplace (Greenbaum, et al., 1995) and obtain the financial security employment can bring (Duquette, 2000; Moola, 2015; Webb et al., 2008). To realize the goal of graduation, the literature shows that students with LDs need specific individual capacities and personal characteristics (Reis et al., 1997; Greenbaum et al., 1995), social supports (Lombardi, Murray, Gerdes, 2012), and institutional assistance (Wagner, Newman, Cameto, Garza, & Levine, 2005; Orr & Goodman, 2010). However, there are also barriers to graduation that are related to individual characteristics (Erten, 2011; Tsagris & Muirhead, 2012) and institutional policies and practices (Hindes & Mather, 2007; Ryan, 2007). Within this literature, the voices of students with LDs are often not heard (Erten, 2011; Fuller, Bradley, Healey, 2004; Orr & Goodman, 2010) and there is a need to understand their challenges and perspectives to inform the development and implementation of support strategies. The purpose of this qualitative research was to understand the educational experiences of four Canadian university students with LDs so as to shed light on the interaction between individual capacities, social supports, and institutional supports.

Review of the Literature

In this section the barriers and facilitators that can affect the experiences of students with LDs in postsecondary programs are described.

Barriers

Individual barriers. The cognitive differences associated with learning disabilities constitute a barrier faced by students in postsecondary institutions. Slower processing and poor reading, writing, and spelling affect academic functioning (Erten, 2011; Harrison, Larochette, & Nichols, 2007; Ryan, 2007; Stage & Milne, 1996) and consequently some students with LDs experience problems meeting academic requirements (Lombardi et al., 2012). A second barrier is low self-confidence and feelings of embarrassment about having LDs (Harrison et al., 2007; Orr & Goodman, 2010; Tsagris & Muirhead, 2012). These feelings and the stigma of being labelled and fear of lower expectations by professors sometimes result in a reluctance to disclose their disabilities and request academic accommodations (Moola, 2015; Stage & Milne, 1996; Tsagris & Muirhead, 2012; Wilgosh, Scorgie, Sobsey, & Cey, 2010). However, refusing to take advantage of accommodations could limit the student's academic outcomes, as they serve to compensate for the problems associated with the disability (Mull & Sitlington, 2003).

Institutional barriers. The barrier most often cited in the literature is professor attitudes towards accommodations. Ryan (2007) suggests that a few professors believe that the difficulties experienced by students with LDs arise solely from impairments from within and not the university environment. Others posit that professors are concerned that providing accommodations, such as extended time on exams and alternate exam formats, to students with LDs gives them an unfair advantage and may lower the course standards (Leyser & Greenberger, 2008). As well, some professors suspect that students with LDs try to take advantage of the system by asking for accommodations (Denhart, 2008). Researchers contend that these negative attitudes are usually due to lack of awareness about the importance of accommodations and not out of maliciousness (Ryan, 2007; Stage & Milne, 1996). Students with LDs need accommodations (Banks, 2014) and denial of them negatively affects their experience at university (Ridley, 2011; Ryan, 2007), more specifically their academic achievement (Duquette, 2000; Erten, 2011) and sense of belonging (Ryan, 2007).

A second institutional barrier is the variation of policies on inclusion adopted by postsecondary institutions (Hindes & Mather, 2007). In Canada the Canadian Charter of Rights and Freedoms as set out in The Constitution Act of 1982, enacted in 1985, declares that *every individual is equal before and under the law and has the right to equal protection and equal benefit of the law without discrimination and, in particular, without discrimination based on …mental or physical disability* (Department of Justice Canada, 1982). Therefore, federal legislation combined with the provincial Human Rights Codes ensure that students cannot be denied admission to a postsecondary institution on the basis of their disabilities. Once admitted to a postsecondary institution, students with disabilities often require support (Wagner et al., 2005; Orr & Goodman, 2010). In Canada, policies that support students with LDs vary from province to province and the practices of special services departments are different in each college and university. In Ontario, the Ministry of Training and Colleges and Universities provides dedicated funds to cover the costs of supports, such as assistive technology (Harrison et al., 2007), so that postsecondary institutions can meet the needs of students with disabilities. While assistive technology can be a tremendous help for students with LDs (Draffan, Evans, & Blenkhorn, 2007), accommodations are crucial (Lombardi et al., 2012).

The issue of who grants accommodations, such as extra time to write examinations, is not well defined. In some universities, accommodations are negotiated by the students with their professors and it is up to the individual professors to decide whether or not to give them. Therefore, even if students are receiving support from the special services department, the actions of the professors can still have negative consequences for their learning and grades (Stage & Milne, 1996; Ryan, 2007). Some students with LDs eventually stop requesting accommodations because they are uncomfortable trying to convince their professors of their disabilities (Madaus, Scott, & McGuire, 2003; Tsagris & Muirhead, 2012). In some institutions if a professor denies a request for accommodations, the director of the special services department intervenes and has a discussion with the instructor about the importance of the accommodations to the particular student (Erten, 2011; Reis et al., 1997). While there is no consistent policy governing the management of accommodations for students with LDs, it is usually the responsibility of the student with LDs to negotiate them with the professors.

Facilitators

Individual capacities. Reis et al. (1997) describe the individual capacities that facilitate the outcomes of individuals with LDs as personal qualities developed from adversity. These capacities include self-awareness (Reis et al., 1997), self-determination (Brinckerfoff, McGuire, & Shaw, 2002; Erten, 2011; Getzel, 2008; Greenbaum, et al., 1995), self-advocacy (Erten, 2011; Harrison, et al., 2007; Wilgosh et al., 2010), a goal-oriented disposition (Duquette, 2000), self-discipline (Duquette, 2000; Stage & Milne, 1996; Wilgosh, et al., 2010), and determination (Duquette, 2000; Greenbaum, et al., 1995; Lindstrom, 2007; Reis et al., 1997). As well, during their elementary and secondary schooling, students with LDs must learn how they learn best (Lindstrom, 2007; Stage & Milne, 1996; Tsagris & Muirhead, 2012), and develop an ethic of hard work (Greenbaum, et al., 1995; Lindstrom, 2007; Reis et al., 1997; Wilgosh,, et al., 2010). While in high school, these students must also ensure they have the academic preparation to meet the requirements of their postsecondary programs (Duquette, 2000; Webb, et al., 2008). As accommodations are an important factor related to the academic success of students with LDs, they must register with the special services department at their college or university and make use of the accommodations that are available (Lindstrom, 2007; Lombardi et al., 2012; Reis et al., 1997; Tsagris & Muirhead, 2012).

Institutional. Accommodations have been identified by some researchers as important determinants of the academic performance of students with LDs (Lombardi et al., 2012; Mull & Siltington, 2003; Wagner, Newman, Cameto, Garza, & Levine, 2005). Some accommodations and services that are typically provided by the institution and have been shown to be useful are priority registration, note takers, counselling, self-advocacy assistance, and summer transition programs (Duquette, 2000; Reis et al., 1997; Tsagris & Muirhead, 2012; Webb, et al., 2008). Extra time for examinations, permission to record lectures, access to PowerPoints and lecture notes, and alternative forms of evaluation (e.g., a combination of oral and written) are also helpful, though not always available because students with LDs negotiate these accommodations with their professors (Duquette, 2000; Lindstrom, 2007; Tsagris & Muirhead, 2012; Webb et al., 2008). However, accommodations that are easy to implement, such as making PowerPoints available, are provided by some professors (Hindes & Mather, 2007; Leyser & Greenberger, 2008). Research shows that when professors accept that students with LDs have different learning needs and work with them on accommodations, they had positive experiences at university (Madaus, et al., 2012). As well, Vogel, et al. (1999) make the point that the more willing a professor is to grant accommodations, the more effective they are for the students.

While accommodations are critical for many postsecondary students with LDs, having access to assistive technology can also be important. Mull and Sitlington (2003) contend that assistive technology is a way for students with LDs to compensate for their academic difficulties which are related to their disabilities (e.g., reading and writing). Technology, such as voice recognition software, recording devices, text-to-speech software, and concept mapping tools make a positive difference for some students with LDs (Draffan, et al., 2007; Li & Hamil, 2003). and Draffan, et al.,(2007) make the point that the use of assistive technology can increase academic self-confidence among students with dyslexia. Tsagris and Muirhead (2012) have also reported that the use of assistive technology and self-advocating with professors were related to higher grades, and Lindstrom (2007) found that assistive technology and personal qualities, such as an ethic of hard work, increased motivation among students with LDs. The literature therefore has shown that assistive technology on its own and in combination with specific individual capacities can have positive outcomes for postsecondary students with LDs.

Social supports. Families have been identified as the most important source of social support for students with LDs (Lombardi et al., 2012; Lindstrom, 2007; Orr & Goodman, 2010; Reis et al., 1997). They provide the financial and emotional support that are related to persistence and help maintain a sense of personal worth (Greenbaum, et al., 1995). While family support is beneficial, lack of support does not always result in decreased functioning (Litner, Mann-Feder, Guérard, 2005; Wilgosh, et al., 2010). Peers, tutors, and professors can also provide emotional and academic support (Greenbaum, et al., 1995; Lombardi, et al., 2012; Stage & Milne, 1996).

As shown above, barriers such as professor attitudes and institutional policies can also be facilitators. While much is known about the barriers and facilitators that affect the experiences of students with LDs in postsecondary institutions, less is known about those experiences from the perspectives of the students themselves (Erten, 2010; Fuller, Bradley, & Healey, 2004; Orr & Goodman, 2010). This information can inform our understanding, as well as policy and practice. It was the purpose of this qualitative research to examine the experiences of postsecondary students with LDs studying in Ontario and to understand the interaction between the barriers and facilitators.

Methodology

This qualitative research used a multiple case design to gain an in-depth understanding of the university educational experiences for four students with LDs (Stake, 1995). Each participant's experiences were described and a cross-case analysis was conducted from which themes about the facilitators and barriers and their interaction emerged. The participants, data collection, data analysis, and trustworthiness are described in this section.

Participants

The participants in this study were recruited through advertisements placed at the special services departments at two universities and one college in Ontario and on the website of the Learning Disabilities Association of Ontario. The selection criteria were enrolment or completion of a postsecondary program in Ontario, diagnosis and identification of LDs in elementary school, and having received accommodations or special programs while in elementary and secondary school. Eight potential participants responded by e-mail, but two did not meet the requirements of this study and two did not follow through with the scheduling of interviews. The remaining four respondents (one male and three females) met the above criteria and were the participants in this research (see Table 1). Jack, Lauren, Elizabeth, and Ashley ranged from 21 to 25 years. Elizabeth had recently completed two baccalaureate degrees and the others were nearing completion of their respective undergraduate programs. Three participants with LDs had a GPA in the *A* range and one individual's GPA was in the *B* range. Pseudonyms were assigned to the participants to protect their identities.

Table 1.The Participants

Participants	Age	Diagnosis	Accommodations
Jack	22	Short-term memory, visual-motor integration, visual processing, Asperger's Syndrome	Write exams in a quiet location, up to 50% more time, access to a computer, note-taker, copy of lecture notes
Lauren	23	Dyslexia	Write exams in a quiet location, up to 50% more time, access to a computer, text-to-speech software, speech synthesis software, tutor for statistics
Elizabeth	23	Poor eye-hand coordination, processing problems	Write exams in a quiet location, up to 50% more time
Ashley	21	Working memory, processing delays, problems with reading comprehension	Write exams at the special services department, up to 50% more time, one exam per day, access to a computer

Data Collection

Individual interviews were conducted with each participant using Seidman's (2006) three interview series. The first interview focused on the diagnosis and past educational experiences in elementary and secondary school. In the second interview the questions were directed at obtaining information on the participants' university experiences, including facilitators and barriers. During the third interview the participants reflected on the meaning of their experiences. The interview questions represented a synthesis of the literature on barriers and facilitators in relation to the postsecondary education of students with disabilities and LDs in particular. Some of the questions were *Do you use the services available to students with disabilities on your university campus? What services have you used? Have they been helpful? Why? Why not? ; What personality traits helped you or will help you reach your*

goals?; and What have you learned from this experience? Each interview lasted about 90 minutes and they were conducted about five to seven days apart. The participants received the transcripts of their interviews so that they could be assured that their ideas were expressed to their satisfaction (Mertens, 2014). Only one participant revised a transcript by adding more information about a particular experience.

Data Analysis

The transcripts were read repeatedly, important sections were highlighted, and notes were made in the margins. The data were coded and categorized according to the various barriers and facilitators described in the literature. The individual cases were created from the data and the researchers conducted a cross-case analysis separately and agreement was reached on the themes that emerged. Two measures of trustworthiness were used in this study: credibility and transferability. Having the participants approve their transcripts (member checks) ensured that the data were authentic and served to increase the credibility or the fit between the participants' intended meaning and the researcher's interpretation of it (Mertens, 2014). Transferability refers to the readers' ability to transfer the findings to other situations, cases, or populations (Creswell, 2012). Transferability was enhanced by the rich, in-depth data on the participants' experiences and perceptions that were produced from the interview process.

Findings

Case Studies

Jack. Jack, a 22-year old university student, is employed full-time in the high tech industry, and is working part-time on his degree. Diagnosed with LDs when he was 7, his assessment revealed that he has difficulties with short-term memory, visual-motor integration, and visual processing. Recently, he was also diagnosed with Asperger's Syndrome and stated that his *social comprehension skills are weak*. In elementary school Jack was withdrawn for remedial assistance and received occupational therapy for writing. With this support, he was able do well in school. Jack received support from his high school resource teacher, whom he credits as being a strong advocate for him. He was permitted to write examinations in a quiet location, have up to 50% more time, and have access to a computer. Jack explained that he needed these three accommodations to achieve high marks. However, not all of his teachers were willing to grant them, and he bitterly complained that *his fate was in the hands of teachers.* In the final year of high school, his average was not high enough to be admitted directly to the university program of his choice.

The university in which Jack is registered offers a transition program for potential students whose average is below the admission cut-off point. He took advantage of this program and learned study skills and how to write essays. Once Jack was admitted to his academic program, he registered with the special services department and talks to his professors about his LDs and accommodations. In addition to the accommodations he had in high school, Jack may have a note taker or a copy of the professors' lecture notes. He also brings his laptop to class because he is able to type faster than he writes. One coping strategy he developed is to search for secondary resources to supplement the lectures, which he claims improves the depth and breadth of his learning. The second strategy Jack sometimes uses is to *challenge the credits* whereby he negotiates with the professor to forego the assignments and only write the final exam in order to receive either a Pass or Fail mark for the course. As well, Jack is a part-time student, which lightens the workload, but also extends the time in which he will complete the program.

Jack knows himself well, *I am strong in math and computer science. I am a quick learner, independent, and good at problem-solving.* He explained how he approaches learning, *I take my toolkit of strategies [and accommodations] and determine how to apply them and my strengths to particular problems*. He has a strong desire to obtain high marks and his GPA is currently in the *A* range. Jack feels that earning a university degree will advance his career and he eventually wants to start his own high tech company.

Jack lives with his parents and the expectation was always that he would attend university. He did not speak of any friendships and it appears that his parents are his most important and possibly only source of social support. Jack is fiercely independent and believes that his strengths define him, not his LDs. He also observed that having LDs forced him to develop some positive attributes, such as planning ahead, becoming adaptable, developing coping strategies, and working hard.

Jack is clearly goal-oriented and self-aware, and his own actions have contributed to his academic success. While he is able to reframe his LDs as a catalyst for the development of some helpful qualities, he did not always acknowledge the importance of the environment as a factor contributing to his academic outcomes. Specifically, the

special services department and professors who are willing to assist him were likely instrumental to his success. As well, unlike the other participants, Jack did not express gratitude for the emotional support his parents probably provided.

Lauren. Lauren is 23 and a fourth year, psychology major attending a university located in a city close to her home. She lives with her parents and commutes to school. While she has a GPA in the *A* range, her marks were not always that high. Lauren was first assessed in Grade 4 when her reading and spelling were at the Grade 1 level. The formal diagnosis of LDs allowed her mother to advocate for an hour of resource assistance per day throughout elementary school to boost her language skills. As well, her mother worked on homework and skill development in the evening with her daughter. In high school, Lauren had a resource period every day to obtain help with homework. In Grade 11, her mother insisted that her daughter be re-assessed to gain a clearer understanding of her strengths and needs. Unlike the earlier assessment, the psychologist assured Lauren that despite her LDs, she was very intelligent and revealed that she also had learning disabilities. This conversation was a turning point in Lauren's life because she began to believe that she was not *dumb* and decided that she too would become a psychologist. The second assessment showed that Lauren had dyslexia and that the following services and accommodations were required: books-on-tape, a reader for exams, a note taker for classes, and speech synthesis software. She was also permitted to write exams in a quiet location and have up to 50% more time and the use a computer. With these accommodations, she graduated from high school with an *A* average and received an entrance scholarship to university. In addition to her own self-knowledge, hard work, and determination, Lauren attributes her academic success to her mother's unfailing support and advocacy and the accommodations she received. She commented, *The accommodations made my average go up and I felt less stupid. You almost forget you have a disability when you have so much help*.

When Lauren registered at the special services department in university, she received a grant to purchase text-to-speech software and speech synthesis software. She has the same accommodations as in high school, as well as a tutor for statistics. Lauren is aware that it is her right to have assistive technology, academic support, and accommodations and that it is up to her to put them to good use. She observed that *People who aren't willing to ask for help put barriers up for themselves*. She feels that individuals with LDs must be high achievers, determined, self-motivated, and self-advocates, and they should be able to communicate their needs to other people. This combination of personal qualities, accommodations, and assistive technology has contributed to Lauren's high grades.

Lauren garners emotional support from her parents, especially from her mother, as well as from her friends. Playing hockey while growing up and during the first two years of university on a varsity team also provided social support and much needed self-confidence. While Lauren understands her LDs, she has not reframed them as a positive development in her life. As she stated, *If I could choose not to have one, I would in a minute*. She is self-conscious about her poor spelling and is careful not to expose this weakness to others. Lauren still feels she needs to prove to herself and others that she is intelligent and describes herself as *fragile about it*. Fortunately, Lauren does not dwell on the negative. She is grateful for the assistance from the university and her family and is confident that with these supports along with her own efforts and abilities, she will achieve her goals.

Elizabeth. Now 23, Elizabeth was diagnosed at age 9 with LDs. The assessment revealed that she has poor eye-hand coordination and processing problems. Despite these challenges, Elizabeth completed an undergraduate degree and recently graduated from a faculty of education. In both programs her GPAs were in the *A* range.

Before her diagnosis in the primary grades, Elizabeth was not doing well in school, had no friends, was bullied, and lacked self-confidence. Her mother advocated for an assessment to learn the cause of her difficulties, and she had her daughter placed in a program to help youngsters with LDs learn organizational skills that was offered at the local children's hospital. As well, Elizabeth's mother helped her at home with assignments. In elementary school, she had some understanding and supportive teachers, especially her Grade 6 teacher who created a positive learning environment and facilitated her connections with peers. His actions inspired Elizabeth to become a teacher.

In Grade 9 Elizabeth began self-advocating and shared, *I had to tell my teachers about my learning problems because I knew the teachers wouldn't check on their own.* Her accommodations included extra time on exams and permission to write them alone in a quiet location. Elizabeth also developed coping skills – staying organized, learning how to type, and balancing challenging and easier courses each semester. As well, she acquired the individual capacities of hard work, determination, and self-discipline. Elizabeth also learned to use her strong visual memory and pictured the information on the pages of her study notes as she wrote her exams. She graduated from high school and was accepted into a recreation and leisure program at a university.

During her first year, Elizabeth chose not to register with the special services department and without accommodations, her marks plummeted. She realized that she was overcome with anxiety and did not do well on her exams. In second year Elizabeth made the decision to register at the special services department and received the same exam accommodations as in high school. She also took to time management and note taking workshops offered by the department, which enhanced the skills she had previously developed. Additionally, Elizabeth sat at the front of her class and was not afraid to ask the professors to speak slowly to accommodate her processing delays. She feels she has a deep understanding of how she learns and credits the availability of services and accommodations to her completion of two degrees.

Throughout her educational journey, Elizabeth revealed that she has felt anxious and inadequate and has benefitted from the emotional support of her parents and her mother's advocacy. She also enjoyed the social support of teachers, a small group of friends, and her fiancé. While accepting that she has LDs, she perceives them as having created some negative experiences for her. She stated, *If I could wish them away, I would. I wouldn't wish the frustration I had on anyone.* Despite the academic difficulties and anxiety stemming from LDs, Elizabeth learned that she can make a positive difference in children's lives and realized that LDs will not stop her from achieving her goal of securing a position as a teacher.

Ashley. In her third year of university with a major in history, Ashley, now 21, was diagnosed with LDs when she was 8 and in Grade 3. She was having severe difficulties reading and math and her Grade 2 teacher recommended that she be assessed by the board of education's psychologist. The results showed that Ashley had deficits in working memory, processing delays, and problems with comprehension. During the winter term of Grade 3, Ashley attended a special education school in her school board and received a lot of 1:1 attention in order to boost her skill levels. When she returned to her neighbourhood school, she was withdrawn to the resource room for individual assistance in language and math. In high school Ashley wrote tests and exams in the resource room and was given time and a half. She was also permitted to use a calculator for math and a computer for tests and exams. She wanted to go to university, like her older brother, and worked hard to ensure her marks were high enough to achieve her goal. She said, *I was highly motivated; I wanted to achieve… I wanted to prove that I could do it.* While she knew her strengths were not in maths and sciences, it was her Grade 11 history teacher who commented positively on her essays and encouraged her to consider the social sciences.

During the summer between high school and university Ashley was in a three-week transition program offered by the special services department of the university. She attended mock lectures on learning strategies and they helped her understand many of the academic and social aspects of university life. Ashley also registered with the department in order to obtain the accommodations she needs. While she finds note taking difficult because she misses some of what the professor is saying, her accommodations are clearly focused on exams. They include permission to write exams at the special services department, up to 50% more time, only one exam per day, and the use of a computer. Ashley finds that these accommodations reduce her anxiety about exams because she is not worried about finishing on time. As well, with processing deficits she takes more time to read instructions and is able to concentrate more fully on what she is doing and makes fewer mistakes in interpreting the directions. Ashley believes that *[t]he accommodations are really necessary and I used them often throughout my schooling.*

In addition to the accommodations, Ashley learned how to study effectively. She feels that her greatest challenge is remembering information because her memory is so poor. To compensate, she reads her notes a week in advance to familiarize herself with the material, then two days before the exam she crams by writing out her notes and memorizing them. Following this procedure, she is able to retain the information until the exam is over. Another coping strategy is to take only four courses during the fall and winter and one course during the summer semester. She commented, *I find that five courses are too hard for me and I end up having to drop one.* The accommodations, the coping strategies, and her own hard work have yielded a GPA in the *B* range.

Ashley's parents have been very supportive during her educational journey. In high school, her father edited her essays and tutored her in math and science. Her mother also provided help with homework and assignments and advocated for services and accommodations in elementary and secondary school. Although Ashley did not mention a network of friends, she receives emotional support from her family and boyfriend.

Ashley described herself as *creative, hard-working, determined, a good writer, a good listener, and sporty*. She stated, *I have very high standards for what I want for myself* and also revealed that she has perfectionist tendencies

and can be *very hard* on herself when she does not meet her goals. However, with maturity Ashley has learned to focus on her strengths and to avoid situations that expose her weaknesses. She used to view her LDs as something to overcome, but now accepts them and does not her let her deficits define who she is. Ashley perceives some benefit to having LDs and reflected that *having learning disabilities has taught me not to give up* and they have also forced her to plan ahead and be proactive. She is on track to graduate within a four year period and is considering continuing her studies in either a teacher education program or at the graduate level.

Discussion

Several themes related to the barriers and facilitators emerged from the cross-case analysis and are discussed below.

Barriers

Individual barriers. All of the four participants had an early diagnosis of LDs. Two had memory deficits (Jack, Ashley), three had problems with reading (Lauren, Ashley), two had processing delays (Elizabeth, Ashley), and two had difficulties with writing speed (Jack, Elizabeth). Although only Jack had a second diagnosis of Asperger's Syndrome, Lauren described herself as emotionally fragile, and Ashley spoke repeatedly of her test anxiety and perfectionist tendencies. The participants' LDs made it more difficult for them to achieve high marks in university than their peers and they needed accommodations to ensure their academic success (Mull & Sitlington, 2003). The academic self-confidence of Lauren and Ashley was also affected by their LDs (Lauren, Ashley) (Harrison, et al., 2007; Orr & Goodman, 2010; Tsagris & Muirhead, 2012) and they were both careful not to expose their weaknesses. Previous research showed that students with LDs were shy about requesting accommodations from their professors (Moola, 2015, Stage & Milne, 1996; Tsagris & Muirhead, 2012; Wilgosh et al., 2010). However, this was not the case with Jack who asked to challenge the credits and Elizabeth who requested that her professors speak slowly.

Institutional barriers. Not one of the participants in this research discussed professors' negative attitudes towards providing accommodations as a problem in university. It might have been the case that these four participants selected specific universities on the basis of the breadth and depth of support for students with disabilities. It is also possible that the participants chose courses and sections of courses according to the professor who was teaching them and their perception of the professors' attitudes. Therefore, in contrast to other studies (Duquette, 2000; Erten, 2011; Ryan, 2007), in this research professors' attitudes were not a barrier to the participants' achievement or sense of belonging.

Facilitators

Individual facilitators. The participants all possessed the individual capacities that are important facilitators of academic success as described previously: self-awareness, self-determination, self-advocacy, goal-orientation, self-discipline, motivation, and determination (Duquette, 2000; Erten, 2011; Getzel, 2008; Greenbaum, et al., 1995; Lindstrom, 2007; Moola, 2015; Reis et al., 1997; Stage & Milne, 1996; Wilgosh ,et al., 2010). As well, these participants understood how they learned (Lindstrom, 2007; Stage & Milne, 1996; Tsagris & Muirhead, 2012) and developed the capacity for hard work (Greenbaum, et al., 1995; Lindstrom, 2007; Reis et al., 1997; Wilgosh, et al., 2010). Moreover, since they had an early diagnosis of LDs, the participants had ample time to develop coping skills (Litner, et al., 2005).

While in high school they all took courses to meet the entrance requirements for university (Duquette, 2000; Webb et al., 2008), only Jack did not have an average in grade 12 that was high enough to qualify for direct admission. Although Elizabeth was initially reluctant to register with the special services department in her university, the others registered immediately. These students with LDs requested accommodations, and made use of them (Lindstrom, 2007; Lombardi et al., 2012; Reis et al., 1997; Tsagris & Muirhead, 2012). Three of the participants also took reduced course loads, which lessened the workload during each semester (Duquette, 2000; Tsagris & Muirhead, 2012; Vogel & Adelman, 1992). The findings related to individual capacities acting as facilitators are therefore consistent with the results of previous research.

Institutional facilitators. Accommodations provided by the universities, such as note takers and transition programs, were regarded by the participants as helpful (Duquette, 2000; Tsagris & Muirhead, 2012; Webb et al., 2008). As well, all of the participants had extra time to write exams and Jack's university permitted the alternate evaluation practices (Duquette, 2000; Linstrom, 2007; Tsagris & Muirhead, 2012; Webb et al., 2008). The four participants also used computers in class and to write exams, and two women took advantage of Ontario's financial support for assistive technology to purchase software to help them read and write (Harrison et al., 2007). As pointed out by

Mull and Sitlington (2003), assistive technology helped them compensate for their academic difficulties stemming from LDs. The provincial policy of providing funds to postsecondary institutions to cover the costs of assistive technology was an important facilitator for the participants with language-based LDs. Assistive technology combined with their individual capacities and accommodations increased their marks, self-confidence, and motivation (Lindstrom, 2007; Tsagris & Muirhead, 2012).

In contrast to previous research, the participants in this study reported no difficulties securing accommodations from professors. As well, they did not have to ask professors for extra time to write exams because the special services departments at their universities managed the conditions under which exams were written (i.e., time permitted, use of a computer, location, number per day). This practice ensured that students with LDs did not have to convince their professors that they genuinely needed extra time to write their exams (Madaus et al., 2003; Tsagris & Muirhead, 2012) and as Jack noted, they were not at the mercy of the instructors' attitudes about disabilities. By administering exam accommodations, the universities made it certain that the students were being evaluated without any constraints that might limit their performance. This finding is important as this institutional practice served to eliminate the potential barrier of professors' negative attitudes towards these types of accommodations.

Social supports. Similar to previous research (Lombardi et al., 2012; Lindstrom, 2007; Orr & Goodman, 2010; Reis et al., 1997), parents were the most important source of emotional support for three participants. While they were in elementary and high school, the parents of the three females also provided academic support and the mothers were strong advocates for their daughters' educational needs. Although Jack felt supported by his high school resource teacher, he was either unaware of his parents' support or chose not to acknowledge it. The female participants also benefited from the emotional support of peers, a boyfriend, and a fiancé (Lombardi et al., 2012). As well, Elizabeth and Lauren were inspired by role models (a teacher and a psychologist, respectively) and Ashley was encouraged by a teacher to study in the social sciences. Although beneficial, in this study social supports were a less important facilitator than individual capacities and institutional support.

Perceptions of LDs

While accepting that LDs affected their learning and academic performance, the participants in this research refused to be stigmatized by their disabilities and preferred to focus on their strengths. Their adaptive response was to place their LDs in perspective relative to their strengths and minimize the problems. Higgins, Raskind, Goldberg, and Herman (2002) refers to this adaptive response as *compartmentalization*, which is their fourth stage in coming to terms with the effects of LDs and the emotional impact of being labelled. The fifth stage is transformation in which individuals with LDs see the disabilities as a positive force in their lives (Higgins et al., 2002). Only Jack and Ashley were able to reframe the experience of having LDs as having at least one positive outcome (coping strategies and perseverance, respectively) (see also Gerber, Ginsberg, & Reiff, 1992). In this research the participants came to terms with the academic problems caused by their LDs. However, the comments by Lauren, Ashley, and Elizabeth about their emotional state (emotionally fragile, perfectionist tendencies, and feelings of anxiety and inadequacy, respectively) point to the lingering effects of LDs on their emotional wellbeing. This finding implies that personal acceptance of LDs involves overcoming the effects of the specific disabilities (e.g., slower processing speed and problems with reading and writing), as well as coming to terms with the emotional aspects of being identified as having learning deficits. Ashley's situation of being able to reframe her school experience of having LDs, yet still lacking self-confidence suggests that achieving both components of acceptance may be difficult.

Interaction between the Barriers and Facilitators

In this study the most influential barrier to program completion at university studies were the effects of LDs on learning and academic performance. The institutional barriers cited in the literature, such as professors' attitudes and institutional policy, were not a factor. The findings showed that the facilitators of individual capacities and coping skills combined with institutional and provincial policies mitigated the potential negative effects of LDs. While developing individual facilitators were important, the participants acknowledged that their success depended on the provision of services, accommodations, and assistive technology. Unlike other research, this study demonstrated how specific institutional and provincial policies and practices lessened potential threats to achievement for students with LDs. However, it must also be recognized that these students needed to have developed individual capacities to take full advantage of the high level of environmental support. Therefore, in this study the two facilitators (individual capacities and institutional support) were required and interacted to lessen the effect of LDs. As Lauren pointed out, with this level of support the only barriers would be the ones constructed by individuals who choose not to take advantage of them.

Implications

An important implication is for other provinces and jurisdictions to adopt a policy of providing funds for students with disabilities to purchase assistive technology. As shown in this study and elsewhere (Draffan, et al., 2007; Li & Hamil, 2003), assistive technology allows individuals with LDs to compensate for their deficits in reading and writing. A second implication is the need for postsecondary institutions to manage the exam accommodations for students with LDs to ensure that professors' attitudes do not interfere with students' ability to maximize their potential. Specifically, special services departments should coordinate the exam time allotments and locations for students who require these types of accommodations. A third implication is that colleges and universities should provide training for professors to increase their awareness and understanding of disabilities and the need for accommodations (Murray, Lombardi, & Wren, 2011). A final implication is for students with LDs and their parents and high school teachers to prepare transition plans that include the development of the individual capacities and coping skills that are linked to academic success and are informed by up-to-date information on the requirements for admission to a postsecondary institution.

Limitations

The limitations of this study must be acknowledged. The participants self-selected to be involved in this research, and given their GPAs they were fairly successful in their university studies. The experiences of students with LDs who are less successful or who are in college were not included in this study. The data were also affected by the participants' ability to remember past experiences (particularly in elementary school) and their willingness to speak openly about them.

Conclusions

When postsecondary institutions admit students with disabilities into their programs, they have a moral and legal responsibility to offer services and accommodations that provide opportunities for the students to succeed. While special services departments play an important role in supporting these students, professors' attitudes and behaviours can also be critical determinants of their academic outcomes. This study has demonstrated that a facilitating environment combined with various individual capacities can lead to academic success for students with LDs.

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