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An Inquiry into Self-Determination in Students with Learning Disabilities: The effect of
environment on the development of self-determination

by

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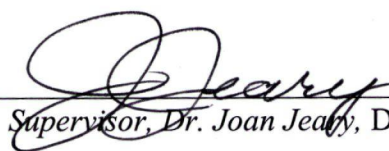
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The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies for acceptance, a thesis entitled "An Inquiry into Self-Determination in Students with Learning Disabilities: The effect of environment on the development of self-determination." submitted by Joshua McLellan in partial fulfillment of the requirements for the degree of Masters of Science.



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Abstract

Research has shown that self-determination may be a critical factor in students with learning disabilities (LD) experiencing later quality of life outcomes. The purpose of this study was to examine the link between learning environment and levels of self-determination in adolescents identified with LD. The research investigated the effects of learning environment on self-determination in high school students with LD. The students completed the ARC Self-determination Scale (ARC). Students in a non-inclusive learning environment displayed higher levels of self-regulation, particularly in problem solving. Students in an inclusive learning environment displayed higher levels of autonomy in personal care and personal expression. The investigation demonstrated that when provided with opportunity and a curriculum that teaches self-determination skills, students behave in a more self-determined manner.

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List of Symbols, Abbreviations and Nomenclature

Symbol	Definition
U of C	University of Calgary
UNESCO	United Nations Educational, Scientific and Cultural Organization
IPP	Individual Program Plan
IEP	Individual Education Plan
SES	Socio Economic Status

An Inquiry into Self-Determination in Students with Learning Disabilities: The Effect of
Learning Environment on the Development of Self-Determination.

INTRODUCTION

Rationale

Although it is uncomfortable to admit, people with disabilities have traditionally been an underclass in the western world, as reflected by reports that the average income of individuals with disabilities is below that of the general population (Dickinson & Verbeek, 2002). While students with disabilities are included in the elementary and secondary education systems, the number decreases within the postsecondary and professional environments (Field, Sarver, & Shaw, 2003). Individuals with disabilities are more likely to be underemployed or unemployed than their non-disabled counterparts (La Grow, 2004). This can be attributed in part to the fact that individuals with disabilities are less likely to complete high school and postsecondary education, which is highly correlated to both underemployment and unemployment (La Grow). The underrepresentation of individuals with disabilities graduating high school as well as those in the post-secondary education systems is one of the great barriers faced by all disabled individuals (La Grow). Given the lower rates of school completion, Madus, Foley, McGuire, and Ruban (2002) reported that employment rates of individuals with disabilities remain 'stubbornly low'. Madus and colleagues also found that individuals with disabilities who obtained a post-secondary degree were more successful than individuals with disabilities who did not obtain a post-secondary degree, at finding and maintaining employment.

The field of self-determination is focused on promoting student success through the use of decision-making and control over one's own life. In order to be successful in the current economic climate individuals with disabilities must complete post-secondary school in order to find employment (Madus, et al., 2002). For individuals with disabilities, success finds its foundation in the skills that educators and parents foster throughout childhood and adolescence (Wehmeyer, 1996). The following groups of skills form the foundation and are precursors for self-determination: choice-making skills, decision-making skills, problem-solving skills, goal-setting and attainment skills, independence, risk-taking and safety skills, self-observation, evaluation and reinforcement skills, self-instruction skills, self-advocacy and leadership skills, an internal locus of control, positive attributions of efficacy and outcome expectancy, self awareness and self-knowledge (Wehmeyer & Schalock, 2005).

Early research within the field of self-determination was focused on self-determination in students with cognitive disabilities and the way in which self-determination affected their lives. Although at its inception the field of self-determination did not directly study students with learning disabilities, researchers such as Field, Sarver, and Shaw (2003) have sought to expand the understanding of self-determination into the area of learning disabilities. A major reason for the expansion of self-determination into the area of learning disabilities in particular was due to the fact that learning disabilities comprise the majority of disabilities reported (Field et al.). Students with learning disabilities make up 49.2% of all students with disabilities (Madus et al., 2002). Due to the fact that learning disabilities affect so many members of the

disabled community it seems logical that research into self-determination and students with learning disabilities would be prudent.

Learning Disability

For the purpose of this discussion the definition of a learning disability by the Learning Disabilities Association of Canada will be used:

A learning disability is a neurologically-based difficulty processing information. It is not a lack of intelligence. People with learning disabilities have average to above average intelligence but their brains process information in a different way from the average person. Their disability is invisible but affects many aspects of their lives.

Over 80% of learning disabilities relate to language and language processing. Others relate to the processing of numbers. People with learning disabilities may have difficulty with attention, memory, reasoning, coordination, speaking, reading, writing, spelling, calculation, social skills or emotional development. (Learning Disabilities Association of Canada, 2002).

Although somewhat broad and far-reaching the definition helps to outline the fact that learning disabilities are a cluster of disabilities with similar traits, rather than a single stand-alone disability.

Learning disabled individuals struggle to obtain employment, independent living and community integration (Chadsey-Rusch, Rusch, & O'Reilly, 1991). Chadsey-Rusch et al. hypothesized that the education system assists students with learning disabilities,

but does not teach students how to assist themselves. Students are often not given the skills that they require to survive in the harsh reality of the post-school world (Martin, Marshall, Maxson, & Jerman, 1993). In order to teach these post-school survival skills we must first understand what it is that students require in order to survive post-school. If we teach students this set of skills, we will prepare them to deal with and persevere through the struggles that they face during their post-school careers and beyond (Wehemyer, 1996).

Self-Determination

According to Mithaug (1991):

In every school in this country a few children succeed regardless of the instruction they receive. Teachers identify these students early because they have purpose in their lives. They know what they like, what they can do, what they want and how to get it. (p. IX).

Mithaug (1991) labelled this resilience in students as self-determination. Mithaug noted that self-determination was not a construct independent of resiliency, but rather a construct that contributes to overall resiliency.

“Over the last decade, self-determination has emerged as an important construct in the education of students with disabilities” (Wehmeyer & Schalock, 2005, p. 404). In order to understand the construct of self-determination it is necessary to first define the construct. Wehmeyer (1996) defined self-determination as “acting as the primary causal agent in one’s life and making choices and decisions regarding one’s quality of life free from undue external forces” (p. 24). In effect, a self-determined person is able to and

does make decisions that guide his or her own life. Self-determined people are able to weigh what others say but can separate others' opinions from their own. Wehmeyer's (1996) initial conception of self-determination missed one major element that is relevant to students with learning disabilities. The element that was missing was the opportunity to make self-determined choices (Abery & Stancliffe, 1996). Abery and Stancliffe reported that, in addition to the skill and support of self-determination, the individual in question must also be given the opportunity to make the decisions that lead to self-determination. Clearly, without a chance to make choices, guiding the individual's acquisition of life skills can only go so far (Abery & Stancliffe). In a later work (Wehmeyer & Schalock, 2005) "opportunity" was noted as being of key importance to the development of self-determined behaviour. Psychologists' current understanding of the construct of self-determination requires that the individual possess three characteristics: the will to be self-determined, the knowledge of how to be self-determined, and opportunities to be a causal agent in their own life (Wehmeyer, 2007).

Wehmeyer and Schalock (2005) divided the construct of self-determination into four component characteristics or domains: first, the individual must act autonomously; second, behaviours of the individual must be self-regulated; third, the individual must interact with events in a psychologically empowered fashion; and fourth, the individual must behave in a self-realized way.

The first component of behaviour that characterizes it as self-determined is autonomy. Sigafos, Feinstien, Damond and Reiss (1988) theorized that human development involved a progression from a dependence on other individuals for care and direction to a state of self-care and self-direction. Wehmeyer and Schalock (2005)

described autonomous behaviour as "... the person acts (a) according to his or her own preferences, interests, and/or abilities, and (b) independently, free from undue external influence or interference" (p. 406). To behave in a fashion of self-care and self-direction should not be confused with selfish or inconsiderate behaviour, rather it is the ability to decide what is in the best interest of oneself (Wehmeyer, 1996). Wehmeyer proposed that actions could not be completely independent of all others around the individual. Essentially, Wehmeyer proposed that self-determined individuals listen to what others want them to choose, but do not allow their views to be overshadowed by what others would have them do.

The second behaviour that characterizes self-determination is self-regulation, which Whitman (1990) defined as "a complex response system that enables individuals to examine their environment and their repertoire of responses for coping with those environments to make decisions about how to act, to act, to evaluate the desirability of the outcomes of the action, and to revise their plans as necessary" (p. 373). Self-regulation is a combination of both behavioural and cognitive abilities that allow the individual to be a causal agent in their life. An individual's ability to set goals and solve problems is considered to be a good indicator of self-regulation (Wehmeyer, 2007). Highly self-regulated individuals tend to be adaptable and very capable of thinking through different situations and regulating their behaviours accordingly (Wehmeyer, 1996).

The third behaviour that characterizes self-determination is what Wehmeyer and Schalock (2005) referred to as psychological empowerment. Psychological empowerment is the perceived control that the individual has over cognitive, personal

and motivational domains (Wehmeyer & Schalock). The cognitive domain involves skills and behaviours that constitute self-efficacy or one's personal assessment of one's own ability to achieve a personal goal that they have set. The personality domain referred to skills and behaviour that constitute an internal locus of control or the ability to connect events with their own ability rather than attributing the results to luck or other external influences. The final domain consisted of motivational skills and behaviours that constitute the individual's ability to identify the outcomes that they expect to achieve, for example setting goals.

The final essential behaviour that characterizes self-determination is self-realization or the knowledge of oneself (Wehmeyer, 1996). This insight is constructed through one's self-observation, understanding gained from experience, as well as through the individual's ability to analyze the world and people around them to enlighten his or her view of the self (Wehmeyer). Wehmeyer and Schalock (2005) summed up the self-realizing person "in that they use a comprehensive, and reasonably accurate, knowledge of themselves and their strengths, as well as limitations and act to capitalize on this knowledge" (p. 406).

Without all four key characteristics or domains of self-determination, behaviours are not deemed fully self-determined. It is also important to note that the age, opportunity, capacity and circumstance affect the extent to which the various essential characteristics manifest (Wehmeyer & Schalock, 2005).

Beyond the four basic characteristics that are associated with self-determination, Wehmeyer (1996) hypothesized several skills that are necessary for the development of self-determination. These skills consist of the following: choice making, decision

making, problem solving, goal setting and attainment, self-observation, evaluation and reinforcement, internal locus of control, positive attribution of efficacy and outcome expectancy, self-awareness, and self-knowledge. Wehmeyer reported that these prerequisite skills are important to an individual's expression of self-determination, and behave as a foundation for self-determined actions. Wehmeyer further reported that these skills are only developed if the individual has the opportunity to practice their skills in a supportive environment.

It is important to note that Wehmeyer chose to define the construct of self-determination as a set of characteristics and skills that underlie behaviour rather than a set of behaviours themselves (Wehmeyer, 1996, Wehmeyer & Schalock, 2005). There is a great temptation to define specific behaviours as self-determined, Wehmeyer felt that a list of specific self-determined behaviours would be far too subjective; his opinion was that researchers should look at what it is that makes behaviours self-determined. Creating a master list of self-determined behaviours would facilitate the assessment of self-determination, however, such a list would be endless (Wehmeyer & Schalock). The primary reason for not defining specific behaviours as self-determined is that almost any action can demonstrate self-determination (Wehmeyer). When one conceptualizes self-determination, it is important to remember that actions are merely the manifestation of self-determination rather than the construct itself (Wehmeyer). It is also important to note that a person can demonstrate self-determined behaviours in one situation but not in another (Wehmeyer). The degree to which we act in self-determined ways varies depending upon the circumstances.

Self-Determination as an Educational Outcome

The education system can be conceived of as a process with expected or desired outcomes. Within the Canadian system of education the primary objective is to give each student a chance to learn, regardless of race, religion, sexual preference, gender or disability (Council of Ministers of Education in Canada, 1993). One such desired result of the education system is that students become active, if not self-sufficient, citizens or members of society. This desired result can be found within the mandate of public education system; for example, the Council of Ministers of Education, Canada (CMEC) which represents every province and territory in Canada stated in the 1993 Victoria Declaration: "The future of our society depends on informed and educated citizens who, while fulfilling their own goals of personal and professional development, contribute to the social, economic, and cultural development of their community and of the country as a whole" (CMEC, 1993). Wehmeyer and Schalock (2005) stated, "if teaching students to be self sufficient citizens is an important outcome for the education system, it seems apparent that too few students with disabilities achieve this objective" (p. 413). Beyond the desire for self-sufficient citizens, there is an aspiration by educators for students to do the best they possibly can. The Calgary Board of Education highlights this in the mission statement "We believe that learning empowers students to achieve their potential" (Calgary Board of Education, 2007). The empowerment of students plays a major role in the development of self-determined students (Wehmeyer, & Schalock).

Beyond the social and educational view of why self-determination is important to the community and society, it has also been shown that self-determination can affect an individual's quality of life (Wehmeyer & Schwartz, 1997). Wehmeyer and Schwartz

found that there was a link between self-determination and better educational outcomes in adulthood. In their study of 80 students with mild cognitive or learning disabilities they found that 80% of highly self-determined individuals were more likely to have better outcomes such as independent living, independent finances and were more likely to attain and hold a job. Of those individuals with low self-determination, only 43% had better outcomes such as independent living, independent finances and were more likely to attain and hold a job. Several researchers have examined specific outcomes in which self-determination played a role (Martin, et al., 2003, Wehmeyer & Palmer, 2003). Findings showed that self-determination led to better academic performance (Martin et al.), and better outcomes in employment status (Wehmeyer & Palmer). Martin, et al. found, in a small study of young males with severe emotional and behavioural problems, that teaching self-determination skills such as goal setting, self-management skills and self-evaluation, not only increased self-determination levels but also academic performance. Martin et al. also discovered that the students gained the necessary skills through explicit instruction. These students, having attained these skills, experienced greater academic success. Wehmeyer and Palmer's inquiry into the quality of life of 94 individuals with cognitive disabilities found a significant link between self-determination and employment. Wehmeyer and Palmer found that individuals with higher self-determination were more likely to obtain and maintain employment over their less self-determined counterparts. Higher levels of self-determination were also found to result in greater post-secondary enrolment (Field, et al., 2003) as well as individuals exhibiting greater levels of independence (Sower & Powers, 1995). If, in the end, education is in

part about successful outcomes, self-determination has been proven to be of value in the pursuit of these positive outcomes.

Schalock proposed that self-determination ties directly into a broader construct, that of quality of life (1996). Quality of life can be summed up as "... a construct that attempts to conceptualize what living a good life means" (Wehmeyer & Schalock, 2005, p. 415). Rather than conceive of quality of life as a single outcome for which individuals strive, Wehmeyer and Schalock proposed that quality of life has numerous core elements. These elements consist of emotional well-being, personal development, physical well-being, interpersonal relationships, material well-being, self-determination, social inclusion and rights. Schalock (1996) cited self-determination as one of the building blocks needed in order to possess a favourable quality of life. Self-determination and quality of life are linked to one another in two important ways. First, self-determination has been shown to enhance the lives and life outcomes of disabled individuals (Wehmeyer & Schwartz, 1997). Second, self-determination and quality of life are tied to one another in that self-determined individuals become causal agents in their own lives as highlighted by Wehmeyer's (1996) definition of self-determination. If the self-determined individual is a causal agent in their life, then they are in control of the decisions that dictate the course of their own life. Control over one's own life ties directly to our understanding of what improves the individual's quality of life (Schalock).

Individuals with Disabilities and Manifested Levels of Self-Determination

Although self-determination is the outcome for which educators strive (Wehmeyer, Agran & Hughes, 2000), opportunities to manifest self-determination may

be somewhat restricted in students with disabilities (Wehmeyer, 1996). Choice is an important aspect of self-determination; research has shown that students with disabilities often experience fewer choices and have greater limitations placed on the actions that they can take (Wehmeyer). Wehmeyer and Palmer's (2003) research supports the idea that students with disabilities are less likely to be provided opportunities to make choices, but even when given choices will often defer to others. Only students with disabilities who have higher levels of self-determination have been found to pursue the opportunity to make decisions to govern their own lives (Wehmeyer & Palmer). Through understanding self-determination and the factors affecting its development, there is the possibility to foster opportunities for students with disabilities in order to re-establish choice within their own lives.

Much of the examination of self-determination has pointed to the fact that individuals with disabilities manifest impaired self-determination levels, regardless of the nature of the disability (Mithaug, 1996). Mithaug found that self-determination scores were lower in special education students as compared to those of their non-disabled counterparts. Other researchers reported similar findings. Wehmeyer, Kelcher, and Richards(1995) found that students with learning disabilities exhibited significantly lower levels of self-determination than those of their non-disabled peers. It is interesting to hypothesize why this may be the case. Research has shown that students with disabilities often experience fewer choices and have greater limitations placed on the actions that they can take (Wehmeyer, 1996). Another reason that has been suggested is that students' early experiences of failure when attempting to be self-determined cause them to be more cautious in future attempts (Agran, 1997). Agran's findings regarding student

failure as an undermining factor in the development of self-determination seems to follow simple logic. Due to the fact that academic failure is a known issue in students with learning disabilities, it follows that this lack of success leads to an unwillingness to take the risks needed to develop self-determination (Agran). Without the opportunity and with unsuccessful early experiences, individuals are unable to develop skills that lead to self-determining behaviours or become discouraged with continual failed attempts.

The Importance of Self-Determination to Students with Learning Disabilities

Self-determination is important to all students, regardless of whether those students are disabled or not. In the case of students with learning disabilities, however, self-determination is of greatest importance in that many experience learned helplessness, which is the very antithesis of self-determination (Field, 1996). Experiences throughout their home life and in their schooling can lead students to believe that they do not have the ability to guide their own life (Field). The lack of control over one's life stems from the hidden nature of learning disabilities (Field). Due to the complexity of learning disabilities, students often fail to understand the nature of their disability (Sachs, Iliff, & Donnelly, 1987). An awareness and understanding of one's disability is of key importance as self-realization is one of the core aspects of self-determination (Wehmeyer & Schalock, 2005). If a student understands the effect the disability has on their learning and performance, they may be able to gain the self-awareness and self-realization that is a prerequisite to self-determination (Wehmeyer & Schalock). In effect, if a student lacks knowledge about their disability, they will be unable to inform others about the disability

and advocate for what they need in order to be successful in education and employment situations.

Self-advocacy is also a critical behaviour for students with learning disabilities. Students with greater self-advocacy are better able to engage in actions or create opportunities to become further self-determined. Carter, Lane, Pierson, and Glaeser (2006) found that students with learning disabilities were viewed by their teachers as having lower levels of self-determination than their non-disabled counterparts. The lower level of perceived self-determination as viewed by their teachers led to reduced opportunities to develop and behave in a self-determined fashion (Carter et al.). Carter, et al. found that the teachers they surveyed stated that they did not offer the same day-to-day options to students with disabilities that they offered to students without disabilities. Teachers stated that students with disabilities did not have the knowledge or ability to make informed decisions; so some of the day-to-day decisions (such as what school work to do or with whom to work) were made for the students. Opportunities and self-advocacy create a compounding effect in individuals. A student who does not advocate for him or herself in turn is far less likely to be given the opportunities required to build self-advocacy. Therefore it is of particular importance that the learning disabled population be the focus of efforts to promote self-determination. Students need to be given both self-advocacy skill training and a safe environment in which to be self-determined.

Although self-determination is important to individuals with learning disabilities, a vast majority of the research has been focused on individuals with cognitive delays. Researchers such as Field (1996) have attempted to expand the knowledge and

understanding of the role self-determination plays in the everyday life of individuals with learning disabilities. Field's research examined how teaching different skills, as well as different techniques of teaching the skills, affected the acquisition of self-determination.

Our understanding of self-determination and its effect on students with learning disabilities lags behind the understanding of how it relates to other students with disabilities. Research into students with learning disabilities has focused on specific aspects of self-determination, leading to only a narrow understanding of its affects. In order to form a deeper understanding of the significance of self-determination for students with learning disabilities further research must occur. This research must go beyond earlier research such as Wehmeyer's (1996), which was focused on the relationship of the construct of self-determination to students with cognitive disabilities. A holistic understanding of self-determination can only come from an understanding of how the many factors in students' lives (i.e. the setting in which they learn, their motivation, the opportunities they are given, their academic performance, their social skills, etc.) interact to facilitate the development of self-determined behaviour. Research has sought to broaden the understanding of the nature of self-determination in individuals with disabilities (Field, 1996, Field, et al. 2003). Researchers such as Field have been more focused on the few years leading into transition out of high school, and the skills we teach to students with learning disabilities as they near graduation. If we look at what Field and her fellow researchers have contributed, we realize our understanding of self-determination in learning disabled populations is still in its infancy.

Self-Determination of Students in Different Learning Environments

In the education system, students with disabilities are offered school experiences that occur on a spectrum; at one end of the spectrum is a fully inclusive educational environment and at the other end of the spectrum is a fully non-inclusive learning environment. Most classroom settings will fall somewhere in between either end of the spectrum. Non-inclusive or less inclusive models of educating students with disabilities focus on educating students with disabilities with other students with disabilities. Inclusive models of educating students with disabilities involve the student working along side both students with disabilities and students without disabilities, for part or all of the school day. The inclusive learning environment versus the non-inclusive learning environment debate, as to which has a greater effect on the development of self-determination, has not been fully explored in the literature. Wehmeyer (1996) referred to inclusive learning environments as being the optimal environment for the development of self-determination but he did not explore the issue in great depth. The self-determination literature finds its roots in the work of theorists such as Nirje (Wehmeyer, 1996) who proposed the normalization principle. This principle was typified by the following statement: “making available patterns and conditions of everyday life which are as close as possible to the norms and patterns of the mainstream of society” (p. 363). For theorists in the self-determination movement, who were grounded in the normalization principle, the possibility that a non-inclusive learning environment could be beneficial to self-determination development is contrary to their core assumptions. The self-determination movement’s view of non-inclusive learning environments, represents a bias at the foundation of self-determination theory.

The reasoning behind the movement toward inclusive education over non-inclusive education, was founded in philosophical and pragmatic reasoning, rather than research-based reasoning (Jordan, 2007). Philosophical reasoning leads to the conclusion that inclusive education is a logical means to obtain universal access for all, as well as for the promotion of universal acceptance and access. The rise of the philosophical reasoning behind inclusive education has its foundation in the social justice movement (Frattura & Capper, 2007). Social justice, when used in an educational context, refers to equal access to education; creating a system of education that does not discriminate against any student. After the end of World War II, parents of students with disabilities formed advocacy groups for their sons and daughters (Peterson & Hittie, 2003). Over the course of the next fifty years these advocacy groups were instrumental in enacting changes that dramatically altered the way in which students with disabilities were educated (Peterson & Hittie). The movement for universal education was in part responsible for the United Nations Educational, Scientific and Cultural Organization creating the Salamanca Statement in 1994. The Salamanca statement specified goals and strategies for inclusion of individuals with disabilities in education as well as society as a whole. The Salamanca statement (UNESCO) indicated a pragmatic reason to promote inclusive education in addition to ethical reasons, which was its “cost-effectiveness”. The Salamanca statement (UNESCO) sums up the reasons for inclusion, both philosophically and pragmatically, quite effectively in the following quote:

Regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society, and achieving education for

all; moreover, they provide an effective education to the majority of the children and improve the efficiency and ultimately the cost-effectiveness of the entire education system. (p. IX).

Anne Jordan (2007) points out that those philosophical and pragmatic reasons are given even greater weight as inclusion is incorporated into the Canadian Federal Charter of Rights. Inclusive practice recognizes the right to “an education that fulfills the individual’s potential for growth” (Jordan, p.7). In spite of the movement toward greater inclusion, some parents and students with disabilities have chosen to learn and be taught in non-inclusive environments. There has been the emergence in the last twenty years, in large urban centers, of both private and public schools that provide educational programming for students with specific disabilities, including learning disabilities.

Beyond the philosophical and pragmatic reasoning for inclusion there is a body of research that investigated the effect of learning environment on the many facets of the student’s life. Lindsay (2007) conducted a meta-analysis and analyzed 1373 articles focused on inclusive education. He examined articles between 2001 and 2005 in eight major journals. Lindsay (2007) included the following journals in the meta-analysis: *Journal of Special Education*, *Exceptional Children*, *Learning Disabilities Research and Practice*, *Journal Learning Disabilities*, *Remedial and Special Education*, *British Journal of Special Education*, *European Journal of Special Needs Education*, and the *International Journal of Inclusive Education*. Lindsay found that 14 of the 1373 articles or 1% investigated the effect that inclusive and non-inclusive education had on students with disabilities; the other 1359 articles focused on issues that fell into the domain of philosophical and pragmatic reasoning for inclusion. Of the 14 studies the focus was on

three broad areas: academic, social, and emotional effects of inclusive and non-inclusive settings on students (Rafferty, Piscitelli, & Boettcher, 2003; Buysse, Goldman, & Skinner, 2002; Allodi, 2000; Karsten, Peetsma, Roeleveld, & Vergeer, 2001; Wiener & Tardiff, 2004; Rea, McLaughlan, & Walther-Thomas 2002; Myklebust, 2002; Markussen, 2004). As Wiener and Tardiff point out, there is no clear evidence that can be drawn across the studies of inclusion that support one side or the other. Wiener and Tardiff point to the fact that only a few studies have been able to indicate that inclusive education is in some way a better environment for academic, social and emotional development. When one looks through the results of the 14 articles that were part of Lindsay's meta-analysis neither inclusive nor non-inclusive setting were, in a general sense, superior to one another. Inclusive settings benefited students with less severe disabilities (Rafferty, et al.) whereas more severely disabled students benefited from a non-inclusive setting.

At the present time it seems that some version of inclusive education will be the model for the majority of public educational systems. Both for philosophical and pragmatic reasons inclusion has become the model of choice, taking the place of earlier models of segregated special education programs. "Although this [inclusion] means different things in different places, there is a universality to the underlying human rights philosophy of inclusion which suggests that the concept is destined to persist rather than represent the latest educational fad or bandwagon" (Florian, 1998, p. 13). It is important that research investigate the validity of this direction. In an age in which public education seems committed to the principle of normalization it is important to analyze the validity of the assumptions of inclusive environments as the ideal learning environment.

Nirje's principle is at the very foundation of theories of the development of self-determination and therefore should require further investigation to lend validity to self-determination as a theory.

Summary

This brief literature review is meant to examine the construct of self-determination and its affect on students with learning disabilities. Self-determination is a complex, multi-faceted construct that must be teased apart in order to fully understand how it affects individual's future outcomes. What is known about self-determination is that long-term outcomes such as quality of life are more favourable in individuals with high levels of self-determination. As education is at least in some part measured by the successful outcome of students, we must look to foster self-determination in our classroom and schools, particularly in those students with learning disabilities. Due to the fact that self-determination has only been researched for the last decade, there are many aspects of it that need greater exploration. Our understanding of self-determination has been focused on the end results, as they are far more concrete than the nature of the process of developing self-determination. What is incomplete is our understanding of the path that learning disabled individuals travel to get to the point of demonstrating self-determined behaviours. Only a small portion of self-determination research has been dedicated to connecting learning environments with the development of self-determination or any of its domains. Inclusion is a core assumption in the construct of self-determination, however, inclusion still requires greater research to analyse the role it plays. Research into self-determination has increased our understanding of the role self-

determination plays in determining later outcomes. Researchers now need to investigate the factors that affect the development of self-determination. Within the history of research into self-determination a majority of the work has focused on students with cognitive disabilities; self-determination, however, applies equally well to students with learning disabilities. Learning disabilities can be conceived of as a cluster of disabilities rather than one individual disability. As the review of the literature has indicated researchers' understanding of the ties between self-determination and learning disabilities is not comprehensive. Research has yet to explore the factors that affect the development of self-determination. With a deeper understanding of the factors that are critical to the development of self-determination for those students with learning disabilities, we can and should expand our understanding beyond the level of constructs and outcomes.

PURPOSE

The study was part of a larger investigation to better understand self-determination in students with learning disabilities. The purpose of this study was to investigate the development of self-determination in adolescents with learning disabilities who are exposed to different types of learning environments, specifically more inclusive learning environments versus less inclusive learning environments. Moreover, the study explores the link between learning environment, age and the development of skills within self-determination and its domains (autonomy, self-regulation, psychological empowerment and self-realization). The following research questions were investigated:

- 1) Do students with learning disabilities in different learning environments (i.e., more inclusive or less inclusive) develop differently in the domains (autonomy, self-regulation, psychological empowerment and self-realization) of self-determination?
- 2) Does the age (junior high or senior high) of a student with a learning disability determine the development of different core areas (autonomy, self-regulation, psychological empowerment and self-realization) of self-determination and self-determination overall?

Based on earlier investigations by Wehmeyer (1996) it was hypothesized that inclusive and non-inclusive environments would result in the development of differing strengths exhibited in self-determination domains. This hypothesis was informed by the different opportunities offered to students within these inclusive and non-inclusive settings. The final hypothesis is that self-determination scores will increase as students get older, given that children and youth develop greater self-determination with opportunities and life experiences.

METHODS

Participants

Participants were 77 adolescents between the ages of 12 and 17 identified with learning disabilities (in accordance with Alberta Education criteria). The mean age of the participants was 173.65 months or 14.47 years ($SD = 18.60$ months). The students in this study ranged in grade from grade 7 to grade 12; 19 students were in grade 7, 12 students were in grade 8, 20 students were in grade 9, 12 students were in grade 10, 10 students were in grade 11, and 4 students were in grade 12 see table 1. Of the 77 participants 60

were male and 17 were female. Males constituted 78% of the participants, whereas females were distinctly in the minority at 22%. The percentage seen in this study is in keeping with a report from the U.S. Department of Education (1998) that stated two-thirds of all students receiving special education were male and that students with learning disabilities had the highest ratio of males to females. There were 58 students living in an urban setting, they attended a private school designed for students with learning disabilities. There were 19 students living in a small town who attended an inclusive community school with learning disabled and non-learning disabled peers. The students in the study were divided between Junior high school and Senior high school, with 51 students in Junior high school and 26 students in Senior high school. Fifty-eight students lived within the city of Calgary, 19 of the students in the study lived in a small town setting outside of Calgary.

The participants recruited from the non-inclusive learning environment attended a grade 7 to 12 private school for students with learning disabilities in the urban setting of Calgary. The private school constituted a special setting (non-inclusive learning environment) as all students within the school were identified with a learning disability. The students attending the school were transported by bus or public transportation and came from across the city. The curriculum of this learning environment differed from the inclusive learning environment, as students were able to contribute to the planning process for their Individual Program Plans (IPP), and received training in goal setting as well as problem solving.

Table 1: Participants

	N	% of Total Population
Gender		
Male	60	78
Female	17	22
Grade		
7	19	24
8	12	16
9	20	26
10	12	16
11	10	13
12	4	5
Setting		
Total Junior High School	51	66
Total Senior High School	26	34
Non-Inclusive	58	75
Junior High School	39	51
Senior High School	18	24
Inclusive	19	25
Junior High School	12	16
Senior High School	7	9

The participants recruited from the more inclusive learning environment attended two different community schools (Junior High School and Senior High School) in a small town outside of a Calgary. These schools represented a more inclusive setting and included students with learning disabilities as well as students without learning disabilities in the same classes. These two schools were community based and publicly funded and the student population lived in the immediate geographic area. Students either walked to school or were transported by buses depending on the distance from their home to the school, but it was a designated community school. The curriculum at the two public schools focused on academic skills, rather than goal setting and problem solving skills.

Procedures

Researchers submitted an application to the University of Calgary's Conjoint Faculties Research Ethics Board (CFREB) for ethics approval, which was granted June 2007 (Appendix D). Following ethics approval the researchers met with school administrators in all three schools and received permission to recruit students as participants. Visits were made to each of the three schools and participants were recruited via classroom presentations and school wide emails. The classroom presentation was read from a script (Appendix A), which outlined the nature of the study. Students interested in participating in the study were required to provide informed written consent (Appendix B) from parents or guardians. Students with learning disabilities were identified by the coding requirements of Alberta Education (Code 54). Participants had average or above average intelligence, with academic achievement at least one standard

deviation below their scores on a standardized measure of intelligence. Students who returned signed consent forms were organized by the researcher, for data collection, in such a way as to minimize classroom disruption. Students of similar grade levels were grouped together as well, to assist in lowering school disruption. Students were collected in groups of two to four by the researchers and brought to a quiet working environment. Once the students were gathered they were asked to complete a Demographic form (Appendix C) and The ARC Self-Determination Scale for Adolescents. The demographic form consisted of the following: age, date of birth, sex, grade, school, years in current school, languages spoken at home, years in current home, awareness of coding, and awareness of Individual Program Plan (IPP). All questions were read to the students in order to minimize the effect of reading difficulties on the test results. A researcher was present at all times during the assessment session in order to give instructions when required and appropriate. All procedures as per standardization outlined in the test manual were followed during the administration of the test questions, and the sessions lasted from 30 to 45 minutes.

In order to ensure that confidentiality was maintained the researchers took several steps. Each student received a research number and all forms pertaining to the student were coded with the number and no student names were used. Names of students were linked with their number only on a master list, which was under lock and key at all times.

Measure

The ARC's Self-Determination Scale

The ARC's Self-Determination Scale (Wehmeyer, 1995) is a self-report

questionnaire designed to measure levels of self-determination in children aged 13 to 22. The questionnaire was intended for use with adolescents, particularly those with mild cognitive and learning disabilities. The ARC's Self-Determination Scale contains 72 questions, which produce an overall Self-Determination score as well as domain totals in the four core areas of Autonomy, Self-Regulation, Psychological Empowerment and Self-Realization. Autonomy is assessed through a four point Likert-scale. The domain of Autonomy consists of six subtests. The first two subtests are grouped under the heading of Independence and are: Routine personal care and family oriented function and Interaction with the environment. The other four subtests are grouped under the heading of Acting on the basis of preferences, beliefs, interests and abilities and are: Recreational and leisure time; Community involvement and interaction; Post-school directions and Personal expression. The domain of Self-Regulation consists of two subtests: Interpersonal cognitive problem solving and Goal setting and task performance. Interpersonal cognitive problem solving is measured through story completion (students are given the beginning and end of the story, but must problem solve to complete the middle of the story). Goal setting and task performance is measure through students outlining goals (student setting long-term goals and short-term goals to acquire their long-term goals). In the domain of Psychological Empowerment and Self-Realization assessment is completed through the student choosing between two possible options. The ARC's Self-Determination Scale was designed for individual administration or group administration of up to 15 individuals. If students have a reading disability it is advised that questions are read to students, otherwise students can complete the questionnaire on their own with minimal guidance.

The ARC's Self-Determination Scale was standardized on 500 students: 223 males, 210 females, and in 67 student gender was not known. The students were recruited from five states: Texas, Virginia, Alabama, Connecticut and Colorado. All students in the norming population were identified by their school districts as receiving special education. Students in the norming population were aged 14 years to 22 years.

Construct validity of The ARC's Self-determination scale was assessed through concurrent criterion-related validity, as well as through construct validity. Criterion-related validity was assessed by examining scores on The ARC's Self-determination Scale and comparing those results with those of conceptually related measures. The first measure was the Nowicki-Strickland Internal-External (Nowicki & Duke, 1974) that examined the student's view of their locus of control. The second measure assessed the student's attribution of academic achievement, which was measured by the Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky & Crandall, 1965). The final measure used in the concurrent criterion-related validity was the Self-Efficacy Scale (Sherer, Maddux, Mercadante, Prentice-Dunn, Jacobs & Rogers, 1982) designed to measure self-efficacy. Findings of the correlation analysis were found to be statistically significant, but this result has little real world significances due to the sample size that was used. Nowicki-Strickland Internal-External (Nowicki & Duke, 1974) was found to have the strongest link to Self-Regulation domain score. Intellectual Achievement Responsibility Questionnaire (Crandall et al.) was most closely linked to score of the Autonomy domain. The last measure Self-Efficacy Scale (Sherer, et al.) was linked to the total ARC score as well as the Psychological Empowerment domain score and Self-Realization domain score.

In addition to the concurrent criterion-related validity test, construct validity was also assessed through the use of factor analyses (Wehmeyer, 1995). The analysis produced five factors that accounted for 56.4% of the variance: three of which paralleled domain areas and two of which were combinations of domains. The factor results were as follows: the first factor was linked to the Autonomy domain, the second factor was the Psychological Empowerment domain as well as Self-Realization domain and Autonomy domain, the third factor came from the Self-Realization domain, the fourth factor was linked to Self-Realization, Psychological Empowerment and Autonomy, the fifth and final factor came from the Self-Realization domain. Wehmeyer did not report the amount of variance accounted for by each factor. Wehmeyer also chose not to include the Self-Regulation domain in the factor analyses, there is no clear explanation as to why this is done. The factor analysis showed that although the factors did not tie directly to each individual domain, the ARC's Self-Determination Scale had adequate construct validity (in those areas included in the factor analysis).

As a measure of reliability, Cronbach's Alpha was calculated: coefficient alpha for The ARC's Self-Determination Scale was .90, the alpha for Autonomy sub-scale was .90, the alpha for Psychological Empowerment sub-scale was .73 and the alpha for Self-Realization was .62 (Wehmeyer, 1995). The results for both the scale as a whole and the Autonomy domain show good internal consistency, whereas Psychological Empowerment and Self-Realization scores were within acceptable ranges. As with the factor analysis Wehmeyer chose not to include the Self-Regulation domain in the calculation of Cronbach's Alpha, there is no clear explanation for this decision. The ARC's Self-Determination Scale was shown to have adequate reliability (in those areas

included in the calculation Cronbach's Alpha). It is also important to note that no test, re-test was conducted using the ARC.

RESULTS

Descriptive Analyses

Descriptive statistics were computed in order to gain a basic understanding of the 77 participants and their performance on the ARC. Student performance on the ARC's Self-determination Scale was first examined through raw scores, see Table 2. Students who attended a less inclusive educational environment had Total Raw Scores that ranged in value from 70 to 115 ($M = 94.5$, $SD = 13.0$). Students who attended a more inclusive educational environment had Total Raw Scores that ranged in value from 58 to 123 ($M = 91.2$, $SD = 14.7$). In addition to total raw score, domain scores were calculated in the following areas: Autonomy, Self-Regulation, Psychological Empowerment and Self-Realization. Students who attended the less inclusive educational environment had scores that ranged from 31 to 90 ($M = 56.8$, $SD = 12.6$) in the domain of Autonomy, from 3 to 16 ($M = 8.3$, $SD = 3.2$) in the domain of Self-Regulation, from 8 to 16 ($M = 14.0$, $SD = 1.9$) in the domain of Psychological Empowerment and from 8 to 15 ($M = 12.2$, $SD = 1.8$) in the domain of Self-Realization. Students who attended the more inclusive educational environment had scores that ranged from 42 to 86 ($M = 61.9$, $SD = 11.0$) in the domain of Autonomy, from 3 to 10 ($M = 6.2$, $SD = 2.1$) in the domain of Self-Regulation, from 8 to 16 ($M = 13.7$, $SD = 2.4$) in the domain of Psychological Empowerment and from 9 to 15 ($M = 12.6$, $SD = 1.7$) in the domain of Self-Realization.

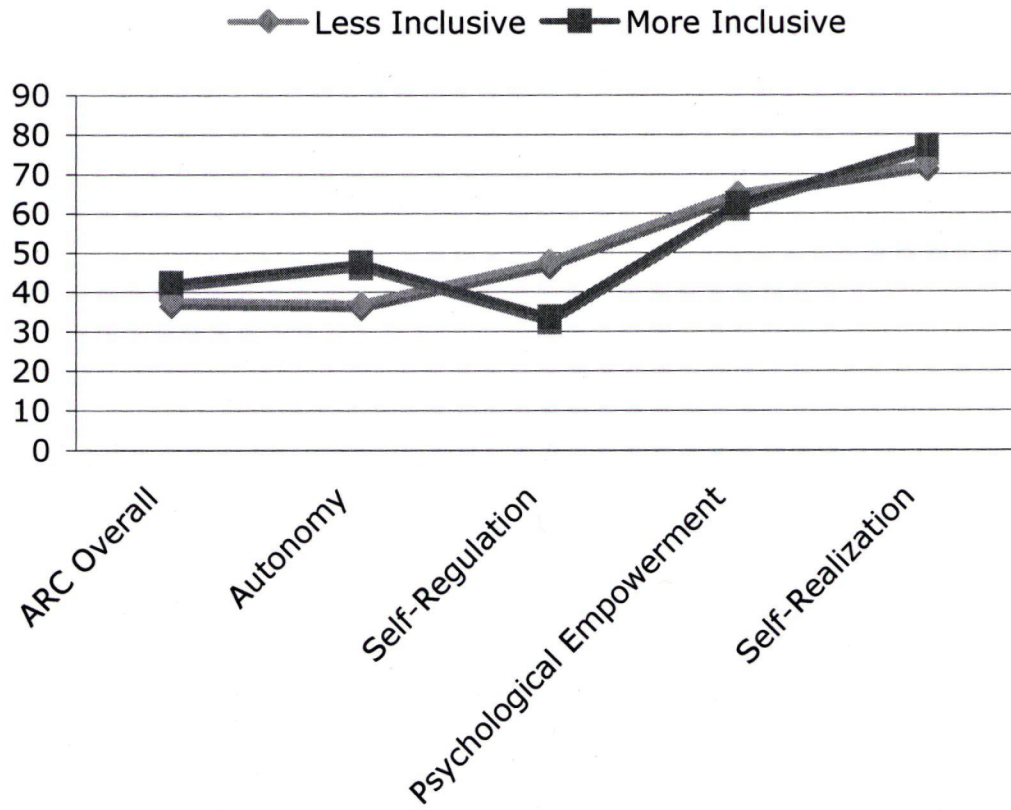
Table 2: Descriptive Statistics (Raw Scores)

	Non-Inclusive (N=58)			Inclusive (N=19)		
	Mean	St.Dev.	Range	Mean	St.Dev.	Range
ARC Overall	94.5	13.0	70-115	91.2	14.7	58-123
Autonomy	56.8	12.6	31-90	61.9	11.0	42-86
Self-Regulation	8.3	3.2	3-16	6.2	2.1	3-10
Psychological Empowerment	14.0	1.9	8-16	13.7	2.4	8-16
Self-Realization	12.2	1.8	8-15	12.6	1.7	9-15

The ARC's Self-Determination Scale converts all raw scores into percentiles through norm comparison, see Table 3 and Figure 1. Standard scores are not calculated for the ARC Self-Determination Scale. Participants in the less inclusive learning environment group had a range of percentiles from 3% to 94% ($M = 37.8\%$, $SD = 24.3$). Participants in the more inclusive learning environment group had a range of percentiles from 9% to 83% ($M = 42.4\%$, $SD = 23.8$). Percentiles for the ARC were also calculated for the domains of: Autonomy, Self-Regulation, Psychological Empowerment and Self-Realization. The Autonomy domain percentiles for the less inclusive learning environment group had a range of percentiles from 3% to 97% ($M = 37.2\%$, $SD = 25.1$). The Autonomy domain scores for the more inclusive group had a range of percentiles from 8% to 95% ($M = 47.5\%$, $SD = 24.4$). The Self-Regulation domain percentiles for the less inclusive group had a range of percentiles from 3% to 92% ($M = 47.7\%$, $SD = 21.6$). The Self-Regulation domain percentiles for the more inclusive group had a range of percentiles from 16% to 60% ($M = 33.6\%$, $SD = 14.2$). The Psychological Empowerment domain percentiles for the less-inclusive group had a range of percentiles from 8% to 100% ($M = 65.2\%$, $SD = 27.8$). The Psychological Empowerment domain percentiles for the more inclusive group had a range of percentiles from 8% to 100% ($M = 62.4\%$, $SD = 30.3$). The Self-Realization domain percentiles for the less inclusive group had a range of percentiles from 14% to 100% ($M = 72.5\%$, $SD = 25.1$). The Self-Realization domain percentiles for the less inclusive group had a range of percentiles from 24% to 100% ($M = 77\%$, $SD = 22.2$).

Table 3: Descriptive Statistics (Percentiles)

	Less Inclusive (N=58)		More Inclusive (N=19)	
	Mean	Range	Mean	Range
ARC Overall	37.8	3-94	42.4	9-83
Autonomy	37.2	3-97	47.5	8-95
Self-Regulation	47.7	3-92	33.6	16-60
Psychological Empowerment	65.2	8-100	62.4	8-100
Self-Realization	72.5	14-100	77.0	24-100

Figure 1: Percentile Means for ARC Overall and Domains

Effect of Learning Environment on Self-Determination Domain Performance

The first research question examined how students with learning disabilities are affected by different learning environments (i.e. more inclusive or less inclusive) and how they develop differently in the domain areas (Autonomy, Self-Regulation, Psychological Empowerment and Self-Realization) of self-determination. To answer this question a multivariate analysis of variance (MANOVA) was performed in which students in both groups were compared to one another in each of the core areas. The result of the Wilks' Lambda multivariate test showed significant results $F(1, 75) = 3.37$, $p < .05$, with the results of the Wilks' Lambda in mind, the MANOVA could be further interpreted. The results of the MANOVA are contained in Table 4. The level of significance was set at 0.05 for the purpose of this MANOVA.

The first domain that was investigated was Autonomy which produced results that indicated that the groups were not significantly different $F(1, 75) = 2.428$ $p = 0.123$. Although a visual comparison of the means indicates that the students in the more inclusive environment display greater Autonomy. The level of significance is only approaching significant values, suggesting that a further investigation of the Autonomy subtests (Routine personal care and family oriented; Function and interaction with the environment; Recreational and leisure time; Community involvement and interaction; Post-school directions; Personal expression) is in order.

The domain of Self-Regulation was investigated and showed that the overall domain scores in Self-Regulation, of more inclusive and less inclusive environments, were

Table 4: MANOVA Results Comparing ARC Self-Determination Domain Percentiles by Environment

	Less Inclusive (N=58)		More Inclusive (N=19)		
	Mean	St.Dev.	Mean	St.Dev.	F-Value
Autonomy	37.2	25.1	47.5	24.4	2.43
Self-Regulation	47.7	21.6	33.6	14.2	7.13*
Psychological Empowerment	65.2	27.8	62.4	30.3	.139
Self-Realization	72.5	25.1	77.0	22.2	.477

* Significant at the $p < 0.05$

significantly different $F(1,75) = 7.132, P < 0.01$. Cohen's Delta ($d = .77$) was calculated to assess effects size, the findings in the domain of Self-Regulation had a medium effect size which showed practical real-world significance. Students in the less inclusive population were stronger than the students in the more inclusive population in the area of Self-Regulation, which contained the two sub-areas of Goal setting and Social problem solving. Results showed that students in a less inclusive environment had greater Self-Regulation score; since the domain of Self-Regulation is made up of two subtests further investigation was required to discern if there were significant differences in one or both of the subtests. To follow up the finding of significance both subtests in the domain of Self-Regulation were investigated.

The results for both the domain of Psychological Empowerment $F(1, 75) = 0.139, p = .71$ and the domain of Self-Realization $F(1, 75) = .477, p = .492$ were not statistically significant.

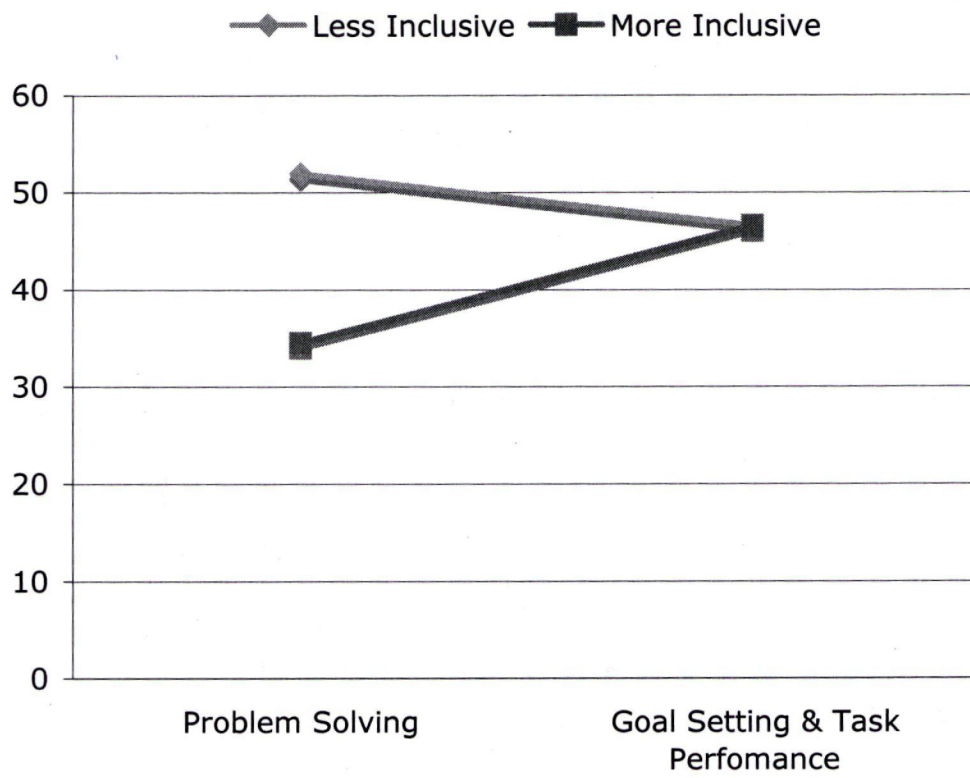
Effect of Learning Environment on Self-Regulation Subtest Performance

The results of the first MANOVA pointed to significance in the domain of Self-Regulation, as well as results approaching significance in the domain of Autonomy. A second multivariate analysis of variance MANOVA was performed in order to compare the subtest results of these two domains by the learning environment that the students attended. The results of the Wilks' Lambda multivariate test showed significant results $F(1, 75) = 3.912, p < .05$. With the results of the Wilks' Lambda in mind the MANOVA could be further interpreted. The results of this MANOVA can be found in Table 5. The level of significance was set at 0.05 for the purpose of this MANOVA.

Table 5: MANOVA Comparing Self-Regulation Subtests by Environment

	Less Inclusive (N=58) *		More Inclusive (N=19)		
Self-Regulation Subtests	Mean	St.Dev.	Mean	St.Dev.	F-Value
Interpersonal Cognitive Problem Solving	51.9	21.9	34.5	14.7	10.45*
Goal Setting and Task Performance	46.6	24.4	46.6	21.0	.945

* Significant at the $p < 0.05$

Figure 2: Means for Self-Regulation Subtests

A significant effect was found for the subtest of Interpersonal cognitive problem solving within the domain of Self-Regulation $F(1, 75) = 10.448, p < .01$. Cohen's Delta ($d = .94$) was calculated to assess effect size. The findings of Cohen's Delta in the domain of Self-Regulation demonstrated large effect size and have practical real-world significance. The results indicated that Interpersonal cognitive problem solving was positively linked to a less inclusive learning environment.

The findings for the subtest of Goal setting and task performance within the domains of Self-Regulation, however, were not statistically significant $F(1, 75) = .945, p = .334$. The significant results seen in Self-Regulation from earlier MANOVAs stem from the stronger performance of less inclusive students on the subtest of Interpersonal cognitive problem solving within the domain of Self-Regulation, while not related as closely to the Goal setting and task performance subtest.

Effect of Learning Environment on Autonomy Subtest Performance

Due to the result of the Autonomy domain approaching significance in the MANOVA comparing the ARC's Self-Determination domains by environment, a MANOVA was performed comparing Self-Regulation subtest percentiles by environment. The result of the Wilks' Lambda multivariate test showed significant results $F(1, 75) = 3.912, p < .05$ with students in less inclusive environments exhibiting greater scores. With the results of the Wilks' Lambda in mind, the MANOVA could be further interpreted. The results of the MANOVA are contained in Table 6. The level of significance was set at 0.05 for the purpose of this MANOVA.

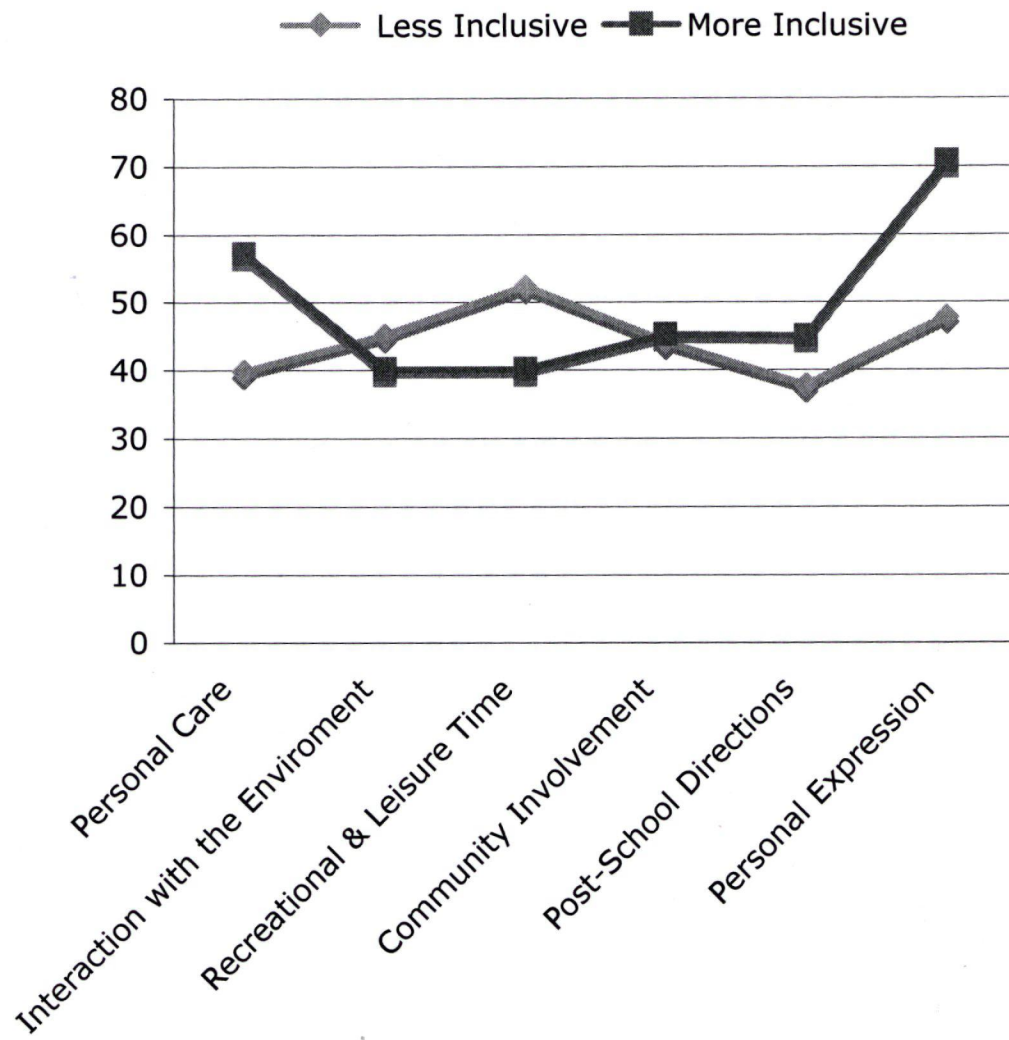
The MANOVA analyzed variance among the following six subtests, which comprised the Autonomy domain. A significant effect was found for the subtest Independence-Routine personal care and family oriented function within the domain of Autonomy $F(1, 75) = 6.518, p < .05$. Cohen's Delta ($d = .70$) was calculated to assess effect size, and the findings in the domain of Self-Regulation had medium effect size and demonstrated practical real-world significance. A significant effect was also found for the subtest Acting on the basis of preferences, beliefs, interests and abilities - Personal expression within the domain of Autonomy $F(1, 75) = 9.857, p < .01$. Cohen's Delta ($d = .77$) was calculated to assess effect size, the findings in the domain of Self-Regulation had large effect size and therefore has real-world significance. The findings on Table 6 indicated that on both Routine personal care and family oriented function, as well as Personal expression, those students in the more inclusive learning environment rated themselves as having greater control over their Autonomy.

The findings for the remaining four subtests in the domains of Autonomy did not produce statistically significant results, the results were as follows Independence - Interaction with the environment $F(1, 75) = .466, p = .497$; Acting on the basis of preferences, beliefs, interests and abilities - Recreational and leisure time $F(1, 75) = .678, p = .413$; Acting on the basis of preferences, beliefs, interests and abilities - Community involvement and interaction $F(1, 75) = .021, p = .885$; Acting on the basis of preferences, beliefs, interests and abilities - Post-school directions $F(1, 75) = .966, p = .329$.

Table 6: Autonomy Subtest MANOVA

	Less Inclusive (N=58)		More Inclusive (N=19)		
Autonomy Subtests	Mean	St.Dev.	Mean	St.Dev.	F-Value
Independence					
Routine Personal care and family oriented function	39.8	26.6	57.2	22.9	6.51*
Interaction with the environment	45.1	27.6	40.1	28.1	.466
Acting on the basis of preferences, beliefs, interests and abilities					
Recreational and leisure time	52.3	27.6	40.1	28.1	.678
Community involvement and interaction	44.1	26.0	45.2	28.7	.021
Post-school directions	37.7	26.8	45.0	30.4	.966
Personal expression	47.8	25.5	70.7	33.2	9.86*

* Significant at the $p < 0.05$

Figure 3: Autonomy Subtest Mean Score

Effect of Age and Learning Environment on Self-Determination Domain Performance

The second question investigated the effect of age (junior high or senior high) on the development of different domain areas (Autonomy, Self-Regulation, Psychological Empowerment and Self-Realization) on students in different learning environments. To answer this question a multivariate analysis of variance (MANOVA) was performed in which students in less inclusive and more inclusive learning environments were compared based on age in each of the core areas. The result of the Wilks' Lambda multivariate test showed significant results $F(1, 75) = 4.01, p < .05$. However the result of the interaction effect Wilks' Lambda multivariate test showed significant results as well $F(1, 75) = 2.96, p < .05$. With the results of both Wilks' Lambda in mind the MANOVA could not be further interpreted.

To understand the nature of the interaction effect two T-tests were performed in the one domain with known significance, Self-Regulation: the first examined the difference in senior high school students in both learning environments and the second examined the junior high school students in both learning environments. The operations that were performed were a two tailed T-test based on the results of the MANOVA comparing junior high school and senior high school by less inclusive or more inclusive setting.

The first T-test examined the nature of the difference in senior high school populations in both learning environments. The Levene's Test of Equality of Variance was conducted with the following results for assumed equal variance $F(1, 24) = 1.586, p = .22$, therefore variance will be assumed for the purpose of this T-test. The result of the two-tailed T-test can be found in Table 8. The level of significance was set at 0.05 for the

purpose of this T-test. The T-test results showed a significant difference between senior high school students in different settings $t=3.208$, $p < .01$. Cohen's Delta ($d = 1.3$) was calculated to assess effect size, the findings in the domain of Self-Regulation showed large effect size and demonstrated practical real-world significance. The results of the first T-test indicate that senior high school students in the less-inclusive setting perceived and rated themselves as being far more self-regulated.

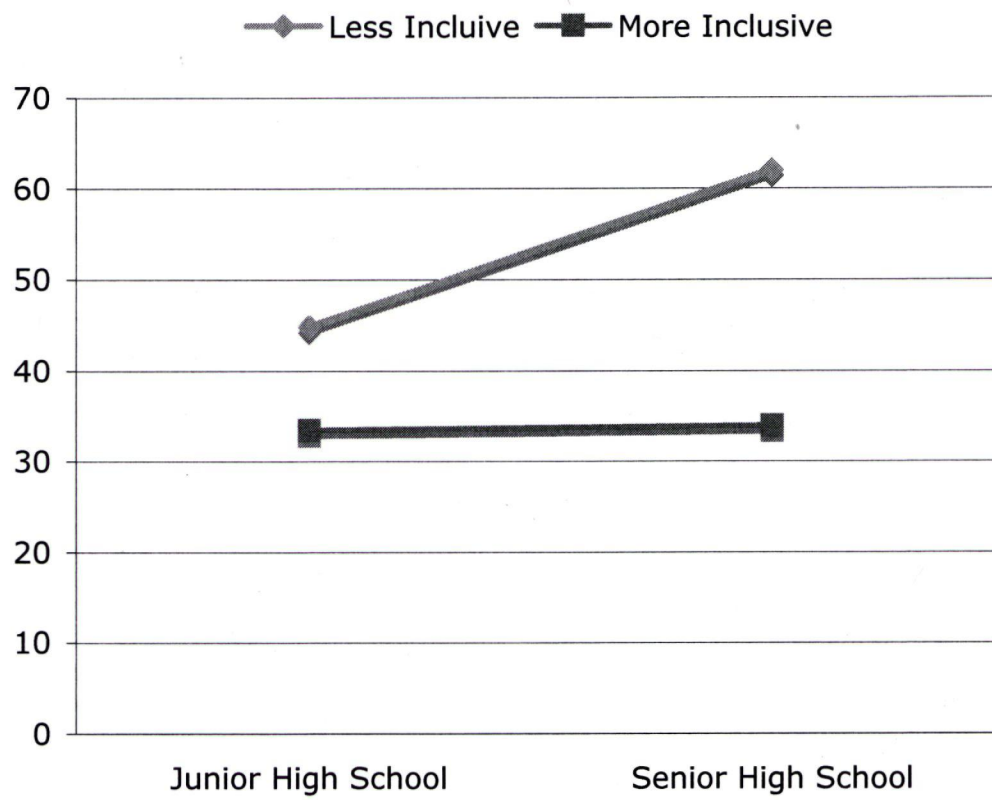
The second T-test examined whether a significant difference could be found between junior high school students in both learning environments. The Levene's Test of Equality of Variance was conducted with the following results for assumed equal variance $F(1, 51) = .460$, $p = .20$, therefore variance will be assumed for the purpose of this T-test. The result of this T-test did not produce significant results.

The findings of the above T-tests, the MANOVAs interaction effect and a visual review of the means point to the fact that the difference that occurs across age is only significant within a less inclusive environment, see Figure 4. The first T-test of Senior high school students indicates that less inclusive students performed significantly better than those students in more inclusive students. The results of the second T-test however point to the fact that there is little difference between students in both less inclusive and more inclusive settings. Therefore the variable of age is dependent on the variable of setting, in this case age only had an effect on scores for these students in a less inclusive environment. The results of the two T-test as indicate the difference found in Self-Regulation stems predominantly from those students at the senior high school level.

Table 7: T-test of Senior High School Students in Less Inclusive and More Inclusive

	Less Inclusive Senior High School (N=18)		More Inclusive Senior High School (N=7)		
	Mean	St.Dev.	Mean	St.Dev.	t-value
Self-Regulation	62.0	21.6	33.9	12.9	3.21*

* Significant at the $p < 0.05$ (two-tailed)

Figure 4: Means of Self-Regulation by Age

DISCUSSION

The research resulted in three major findings that could contribute to a greater understanding of the effect of school setting on the perceptions of students with learning disabilities, as relates to self-determination. The first hypothesis related to differences in reported scores in specific domains of self-determination (autonomy, self-regulation, psychological empowerment, and self-realization) depending upon whether adolescents attended more inclusive or less inclusive learning environments. The results of the investigation suggested that indeed differences existed between the groups, particularly in the domains of autonomy and self-regulation. The second hypothesis was that self-determination domain scores (autonomy, self-regulation, psychological empowerment, and self-realization) would increase as students get older, was only supported in the less inclusive.

The first major finding is that students in the less inclusive setting reported greater levels of self-regulation than the students in the more inclusive setting. At a superficial glance the findings of less inclusive students with disabilities having greater views of their self-regulation skills seems to be counter to Wehmeyer's (1996) hypothesis that inclusion is key to the development of all domains of self-determination. If researchers were to go beyond the surface results and looked at possible reasons for this disparity, the findings would be useful in supporting key assertions about self-determination regarding the view that self-determination skills are teachable (both formally and informally). The students with learning disabilities in the less inclusive setting were exposed to two opportunities that might explain the increased self-regulation ratings. The first was involvement in their IPP (Individual Program Plan) and the second was the considerable

time spent on informal problem solving. The involvement of students in their IPP planning has been part of a push by educators in special education as well as advocates for teaching self-determination skills. Locke and Latham (1990, 2002) stated that student involvement leads to greater problem solving skills as well as increased goal setting ability. Johnson and Graham (1990) support this view of the vitality of student involvement in IPP planning, which helps in building an understanding of proximal goals (short-term) and distal goals (long-term). It was the opinion of Johnson and Graham (1990) that program planning was an ideal time to teach these goal setting skills. In addition to IPP planning involvement, students in the less inclusive school were given more informal time to be taught problem solving skills. Several researchers supported the value of teaching problem-solving skills and their findings show that opportunities to learn problem solving led to skill growth (Wehmeyer, 1996, 2007, Palmer, Wehmeyer, Gipson, & Agran, 2004, and Agran, Hughes & Washington, 2006). This evidence helps to support the view of advocates for teaching self-determination skills that time spent teaching these self-determination skills leads to higher levels exhibited in the long term. One finding that helps to point to the long-term effects of these opportunities is the large difference at the senior high level in domain total for self-regulation, with students in less inclusive environments exhibiting greater levels than their more inclusive counter parts. It would appear that the greater the time spent in an opportunity-rich environment (one in which a student is both taught the skills and is also given the chance to apply the self-determination skills), the greater the growth then experienced by students. One finding of this research that may contradict the view that the skills can be taught is found in a review of the self-regulation domain at a subtest level. When investigating levels of self-

regulation at the subtest level the significance we see stems from the single subtest of problem solving. The finding seems to contradict the view of Locke and Latham (2002), as they clearly felt that a student's goal setting developed with student involvement in the IPP process. Despite the fact that significance was found only in the subtest area of problem solving skills, the findings still helped to support self-determination. The dogma is that the opportunity to be self-determined (in this case through problem solving) is key to the development of self-determination skills. IPP meetings provided an opportunity for students to grow in their ability to set both short-term and long-term goals and therefore should be given serious consideration in general educational planning.

The second discovery was that students attending school in the more inclusive learning environments did not report greater levels of Autonomy in general (the domain), but reported greater levels of personal autonomy in the following subtests: Personal care and family function, as well as Personal expression. It is interesting to note that the above two subtests are not related directly to school functioning per se, but extend into the home life of the student. Personal care and family function, as well as the personal expression subtest questions, focus on independence and control of aspects of the individual (i.e. making one's own meals, chores around the home, choice of hair styles, etc.). The finding of significance in the domain of personal expression in the participants in the more inclusive setting has interesting implications in light of the fact these same students scored lower on self-regulation. High levels of relative personal expression with low levels of self-regulation may suggest that students are willing to express themselves, but not always in appropriate ways.

The explanation of these findings is both complex and problematic. Variables that might explain this variation are educational setting or the small town setting. Wehmeyer (1996) has consistently stated that the ideal environment for the development of self-determination is an inclusive environment. With Wehmeyer's (1996) hypothesis in mind it would seem logical that inclusive settings should also affect Autonomy scores in areas relating directly to school (i.e. post-school direction subtest), but such was not the case in the findings of this research. An alternate possible explanation of the difference is the fact that students in the inclusive setting lived in an environment which afforded them greater control and responsibility. One path to a more conclusive explanation of this finding is to further study the difference in Autonomy scores as they are affected by exact setting (pastoral residence vs. town residence vs. urban residence).

The third finding was that age affected only one domain, which was Self-Regulation, and the effect of age was only visible within the less inclusive setting. As the students in the less inclusive environment were involved in activities that taught elements of self-regulation, the experience they gained as a part of these activities led to greater self-regulation values. The growth of self-regulation between Junior and Senior high students supports Wehmeyer's (1996) views that with assistance and experience self-regulation can develop over time. Doll, Sands, Wehmeyer and Palmer (1996) support Wehmeyer (and the findings of this research) in his statement that self-regulation is expected to develop throughout an individual's teenage years. These findings help to promote the idea that access to Individual Program Planning and educational program planning can lead to growth of self-regulation. It is the view of researchers such as Sigafoos and his colleagues (1988) that with time and experience self-determination

should develop across all of the domains rather than a single domain. Sigafos' conception of the development of complete self-determination is not, however, supported by the findings of this research. Even upon visual review of group means of the core elements of self-determination it is apparent that greater age does not appear to result in high values in the domains of self-determination. An alternate source might help to explain the overall lack of change in domain scores between junior and senior high school. Doll et al. (1996) hypothesized that over the teenage years, self-attribution can level off and even drop off as teenagers experience the emotional turbulence of adolescence. Although Doll and his colleagues' views are not supported by a majority of self-determination literature, his findings are logical and help to lend a possible reason for the lack of change in many of the domains.

It is important to note that the conclusions found in this study may have been affected by several limitations inherent in the study. The first limitation that may have affected the results is in the methodology and the study's overall design. An important limiting factor was the fact that participation was voluntary and required students to take the initiative to have the consent form signed, as well as return the form. Optional participation of students ensured that the study was ethically sound but represented a distinct limitation when analysing self-determination of individuals and may have lead to inflated levels of reported self-determination. If we return to Wehmeyer's (1996) definition of self-determination "acting as the primary causal agent in one's life and making choices and decisions regarding one's quality of life free from undue external forces" (p. 24), then by agreeing to participate the students are acting as a causal agent by taking the initiative to return their signed forms. As such it is logical to assume that to

some degree the results of the measures may be somewhat inflated due to the fact that participants who volunteered may have been more self-determined than those students who chose not to participate. Another limitation in the research design is the fact that the ARC is a self-report measure. The results should be viewed as how the students perceived themselves rather than an absolute value of their self-determination. It was Wehmeyer's (1996) opinion when he designed the ARC that self-determination was only important from the point of view of the individual. To be a "causal agent in one's life" (p. 24) an individual needed to first and foremost view himself or herself as having the ability and opportunity to do so. Although this researcher would agree with the view of Wehmeyer, it is important not to generalize this research beyond that of self-perception of the students. A limitation resulted from the use of the ARC in that the ARC was normed on a population starting at the age of 13, some students were only 12 years old. Due to the lack of other appropriate measures for self-determination, the researcher chose to accept this limitation.

Other limitations in the study were directly related to the sample population used in the study. As the study is an exploration of the effects of learning environment on students with learning disabilities, the sample size is small. A larger sample would have helped to increase the application of the findings as well as reduce the possibility of sampling error in the findings. The voluntary nature of the study and difficulties finding participants resulted in unequal sample sizes in the two groups in that participants in the less inclusive setting ($n = 58$) far outnumbered those in the more inclusive setting ($n = 19$) and increased the possibility of statistical error. It is also important to note that the participants were predominately male and therefore the findings are less applicable to

females. With males ($n = 60$) constituting 78% of the participants, the findings are far more difficult to apply to females ($n = 17$). A possible explanation for this disproportionate sample is that in all three of the schools the males constituted a majority of the students with learning disabilities. Although this distribution is common across the learning disability community, there has been no clear explanation of why (Coutinho, Oswald & King, 2001; U.S. Department of Education, 1998). Nor is it known whether the learning disabilities population has an over-representation of males or an under-representation of females (Coutinho, Oswald & King, 2001; Rousso & Wehmeyer, 2001). This disproportion in the genders transferred into the sample sizes that we see in the research itself. If gender is at all tied to self-determination, then findings of this research are difficult to extend to females. It is also important to note that the sample contains far more young students with learning disabilities than older students with learning disabilities. A majority of the individuals sampled in this study were between grade 7 and grade 9 ($n = 51$), with students between grade 10 and grade 12 ($n = 26$) making the minority of students included in the sample.

An additional limitation to the generalizability of the findings is that the more inclusive population came solely from a small town population, whereas the less inclusive came solely from an urban population. The difference in life experiences of either small town or urban students outside of the learning environment makes generalizing across small town and urban environment rather difficult. An important limitation to note is that the inclusive population was in a community public school; whereas all students in the less-inclusive environment attended a private school. The difference of private school as compared to the public education system may also affect

the results in unforeseen ways. The students in the private setting attend smaller classes on average than their inclusive counterparts. A final limitation that resulted from the population was curricular differences between the inclusive and non-inclusive learning environments. The non-inclusive educational environment incorporated goal setting and problem solving skills formally and informally into curricula. The more inclusive environment's curricula focused upon meeting students' academic needs. As pointed out above the two populations compared within this research are distinct and it therefore makes comparison to other learning environments difficult, while affording an opportunity to examine students in quite different learning and living environments.

A positive aspect of the study is that it included participants from a small town. Many studies in the field of self-determination have focused on solely urban populations and neglected to investigate those populations in small town locations. This inclusion of a less often examined population has benefits for both the researcher and the participants as it can afford opportunities for participants to experience the research process where they might rarely have a chance to do so. This can expand their experience and knowledge of the subject matter being researched as well as of the research methods themselves.

Research exploring the effects of special education settings on self-determination has not been able to link setting to students' views of self-determination and as a result there are many research opportunities to further explore. In this study the nature of inclusion of students with learning disabilities was highly simplified and a more in-depth investigation of the effects on specific models of special education could be highly informative to educational planning. It would be beneficial to look at how different

interventions affect students with learning disabilities, as much of the research into intervention has focused on students with cognitive disabilities.

The conclusions drawn from this study can help to inform the nature of program planning and interventions for those students with learning disabilities. As a result of the information, appropriate self-determination skill building support can be given to students with learning disabilities to increase their overall quality of life. Interventions designed to increase self-determination (such as student directed learning, self-management, self-monitoring, self-evaluation, self-reinforcement and self-instruction) will benefit students in their transition into the post high school environment, whether that be the workforce or post-secondary educational setting.

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APPENDIX A: CLASSROOM PRESENTATION TRANSCRIPT

- Good morning everyone, I'm here this morning/afternoon to talk to you very briefly about a research project that I'm working on at the University of Calgary.
- The reason that I'm here talking to you guys today, is because myself, my supervisor Dr. Joan Jeary, and a few of my classmates are looking for students to participate in our study who are between the ages of 12 and 18 years.
- The title of our project is An Inquiry into Self-Determination in Students with Learning Disabilities. We're looking for students of all ability levels to participate, and we're also looking to work with students who have a learning disability and are on an IPP here at school.
- Do you know what self-determination is? Basically, self-determination refers to an individual acting as a causal agent in one's life. So in essence, this individual is able to make choices and decisions that affect his or her quality of life, and these decisions are free from external influence or interference.
- You are probably saying to yourselves, what does that mean? Am I right? So being self-determined means that you are quite successful at things like making choices, setting goals, making decisions, being independent, advocating for yourself, and engaging in interpersonal relationships.
- This is an important topic to study, and it's one that my research group is very interested in. It takes about an hour to participate, and this will be done in a one-on-one basis here at school.

- If you agree to participate, you will be asked to complete some questions that look at the topic of self-determination. We also have some questions that examine motivation and social skills. So for example, things that will be covered include cooperation, empathy, and self-control.
- I'm going to hand around some consent forms, information sheets, and recruiting notices. So if you think that this is something that you might be interested in, we would greatly appreciate you working with us. You can take these forms home, and talk it over with your parents. If you and your parents feel that this is something that you would like to do, have your parents sign the consent form, and bring the sheet back to your teacher.
- For participating in our study you'll get to fill out a ballot, and your name will be entered in a draw to win a \$50 gift certificate to Chapters Bookstore. I'll just let you know, that participating is completely confidential, and you're free to withdraw from the study at any time, without penalty.
- Does anyone have any questions about the project, or about participating?
- Thank you very much for letting me take up some of your class time today. I hope you have a good day at school, and I hope to work with some of you soon.

APPENDIX B: CONSENT FORM

Name of Researcher, Faculty, Department, Telephone & Email:

Dr. Joan Jeary

Graduate Students: Amanda Coxhead, Josh McLellan, Lindsey Ortiz, Shannon Rioch

Note: Data collected in this research project will be used by the graduate students listed above in their individual theses. All data reported in theses will be anonymous.

Supervisor:

Joan Jeary, Assistant Professor, Faculty of Education, Division of Applied Psychology

Title of Project:

An Inquiry into the Development of Self-Determination in Adolescence

This consent form, a copy of which has been given to you, is only part of the process of informed consent. If you want more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompany information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study:

The purpose of this study is to examine self-determination in adolescents with learning disabilities and those without learning disabilities. Participants of this study will be selected from schools in Alberta, and will be between 12 and 18 years of age. Students will be invited to participate through a class presentation, where an information sheet and consent form will be distributed.

What Will I Be Asked to Do?

Participants will be requested to complete three inventories:

1. The Arc Self-Determination Scale
2. The Social Skills Rating System
3. The Nowicki Strickland Locus of Control Scale

My teacher will also complete a rating scale on my social skills.

What Type of Personal Information Will Be Collected?

Participants will be asked to provide information about the birth date, grade, and language(s) spoken at home.

Are there Risks or Benefits if I Participate?

Some possible benefits would include the following: Assist in making students more effective strategic learners who can demonstrate their knowledge and skills accurately. It may also benefit the development and implementation of intervention programs geared towards students with learning disabilities. Finally, it may complement current research in the field of learning disabilities. Participation is completely voluntary and participants may refuse to answer any question, or withdraw at anytime without penalty.

What Happens to the Information I Provide?

All participants will be assured that their answers are strictly confidential. The participants will be assigned code numbers and all identifying information will be kept confidential. If participants decide to withdraw from the study the remaining information will be systematically destroyed.

Only graduate students listed on page 1 of this form and Dr. Joan Jeary will have access to the results of the inventories. Group information will be summarized for any presentation or publication of results. All raw data will be kept in a locked cabinet

accessible only by the four graduate students and their supervisor. Data will be stored for three years on a computer disk, at which time, it will be permanently erased.

Signatures (written consent)

Your signature on this form indicates that you 1) understand to your satisfaction the information provided to you about your participation in this research project, and 2) agree to participate as a research subject.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Student's Name: (please print) _____ Parent/Guardian Name: _____

Parent/Guardian Signature: _____ Date: _____

_____ I agree that my results can be shared with school personnel

_____ I do Not agree to share my results with school personnel

Students are under no obligation to share the inventory results with their teachers. There will be no consequences of either a positive or negative nature (marks, assignments) for those students who do not wish to share their results with their teachers.

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Dr. Joan Jeary

Faculty of Education

(403) 220-3669, jjeary@ucalgary.ca

If you have any concerns about the way you've been treated as a participant, please contact Bonnie Scherrer, Ethics Resource Officer, Research Services Office, University of Calgary at (403) 220-3782; email bonnie.scherrer@ucalgary.ca.

APPENDIX C: DEMOGRAPHIC INFORMATION

Participant Number: _____

Age: _____

Date of Birth: _____

Sex: _____

Grade: _____

School: _____

Years in Current School: _____

Languages Spoken at Home: _____

Years in Current Home: _____

Albert Ed. Code: _____

IPP: _____

APPENDIX D: CERTIFICATION OF INTUITIONAL ETHICS REVIEW

UNIVERSITY OF
CALGARY

MEMO

CONJOINT FACULTIES RESEARCH ETHICS BOARD
c/o Research Services
Main Floor, Energy Resources Research Building
3512 - 33 Street N.W., Calgary, Alberta T2L 1Y7
Telephone: (403) 220-3782
Fax: (403) 289 0693
Email: rburrows@ucalgary.ca
Monday, June 11, 2007

To: Joan Jeary
Applied Psychology, Division of

From: Dr. Janice P. Dickin, Chair
Conjoint Faculties Research Ethics Board (CFREB)

Re: Certification of Institutional Ethics Review: An Inquiry into Self-Determination in
Students with Learning Disabilities

The above named research protocol has been granted ethical approval by the Conjoint Faculties Research Ethics Board for the University of Calgary. Enclosed are the original, and one copy, of a signed **Certification of Institutional Ethics Review**. Please note the terms and conditions that apply to your Certification. If the research is funded, the sponsor should be notified, and the original certificate sent to them for their files. The copy is for your records. The Conjoint Faculties Research Ethics Board will retain a copy of the Certification on your file.

Please note, an annual/progress/final report must be filed with the CFREB twelve months from the date on your ethics clearance. A form for this purpose has been created, and may be found on the "Ethics" website, <http://www.ucalgary.ca/research/compliance/ethics/renewal>

In closing, let me take this opportunity to wish you the best of luck in your research endeavor.

Sincerely,

A handwritten signature in black ink, appearing to read 'Russell Burrows'.

Russell Burrows

For:

Janice Dickin, Ph.D., LL.B., Faculty of Communication and Culture and
Chair, Conjoint Faculties Research Ethics Board

Enclosures(2)



UNIVERSITY OF
CALGARY

CERTIFICATION OF INSTITUTIONAL ETHICS REVIEW


This is to certify that the Conjoint Faculties Research Ethics Board at the University of Calgary has examined the following research proposal and found the proposed research involving human subjects to be in accordance with University of Calgary Guidelines and the Tri-Council Policy Statement on *"Ethical Conduct in Research Using Human Subjects"*. This form and accompanying letter constitute the Certification of Institutional Ethics Review.


File no: 5255
 Applicant(s): Joan Jeary
 Amanda M. Coxhead
 Joshua J. McLellan
 Lindsey D. Ortiz
 Shannon N. Rioch
 Department: Applied Psychology, Division of
 Project Title: An Inquiry into Self-Determination in Students with Learning
 Disabilities
 Sponsor (if applicable):

Restrictions:

This Certification is subject to the following conditions:

1. Approval is granted only for the project and purposes described in the application.
2. Any modifications to the authorized protocol must be submitted to the Chair, Conjoint Faculties Research Ethics Board for approval.
3. A progress report must be submitted 12 months from the date of this Certification, and should provide the expected completion date for the project.
4. Written notification must be sent to the Board when the project is complete or terminated.


 Janice Dickin, Ph.D, LLB,
 Chair
 Conjoint Faculties Research Ethics Board


 Date: 11 June 2007

Distribution: (1) Applicant, (2) Supervisor (if applicable), (3) Chair, Department/Faculty Research Ethics Committee, (4) Sponsor, (5) Conjoint Faculties Research Ethics Board (6) Research Services.