

**Inclusive Education Knowledge Exchange Initiative:  
An Analysis of the Statistics Canada Participation and  
Activity Limitation Survey**

**FINAL REPORT**

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## **Executive Summary**

### *Background*

Since the 1980s, many children with disabilities in Canada have attended their neighbourhood schools with age-appropriate peers. Research exists that reveals parents' perceptions of their children's school. In particular, Statistics Canada's 2001 Children's Participation and Activity Limitation Survey (PALS), a post-censal survey of people with disabilities, has been undertaken. PALS provides a wealth of information about children with disabilities in Canada.

The purpose of the "Inclusive Education Knowledge Exchange Initiative" research project was to assist in creating an effective knowledge exchange process in order to accommodate a scarcity of knowledge surrounding inclusive education. Researchers from across Canada engaged in an analysis of Statistics Canada's 2001 Participation and Activity Limitation Survey to test the hypothesis that where educational services are organized to ensure inclusion, parents are more likely to report that their children are in good general health and that their children are doing well in school.

### *Methodology*

Permission to analyze the data was gained through a rigorous, adjudicated process in which access to the survey results was obtained through a proposal submission to the Social Sciences and Humanities Research Council of Canada (SSHRC).

The results and discussions presented have created a framework upon which the relationship between inclusive education and health has been examined. Through this research, definitions and conceptualizations of disability have been critically reviewed, and the results have been framed within an understanding of health that encompasses a definition that is not limited to the physical well-being of an individual.

### *Key Findings*

Because education is legislated provincially, students with disabilities across Canada are placed in more or less robust inclusive settings. Prince Edward Island and New Brunswick have the

highest percentage of their students in the high-inclusive grouping (approximately 50% or half of the students with disabilities). Most of the other provinces, including Ontario, which has the largest student population with disabilities, have only one-third (approximately) of their students in the most robust inclusive settings.

The analysis of data revealed that parents were more likely to report that their children with disabilities are in better general health, progress very well/well at school, interact very well/well with their peers, and more frequently look forward to going to school in higher inclusive educational settings than in mid-range or lower inclusion settings. This positive association was consistent, regardless of severity and type of disability.

Although it cannot be stated definitively that inclusive education has a direct impact on health, this research points to the likelihood that this association does exist. Health is a predominant issue for all children, and this research highlights the association between the health of children with disabilities and inclusive educational practices.

### *Recommendations*

Inclusive education is not a panacea, but it may provide an option for improving the health of students with disabilities. Placing students with disabilities in inclusive educational settings, where their diversity is accepted and valued, means making a positive difference in the life of *all* students, and potentially having a positive impact on their health.

This research has the potential to positively influence public perception of the value of inclusive education and impact Canadian education policy; however, the results also prompt considerations for future work, such as:

1. More national research should be conducted using quantitative methodology;
2. International research may be carried out to explore the themes discussed in this report;
3. Further research may be performed to address the gap that exists in exploring the relationship between inclusive education and the health of a child with a disability; and
4. Qualitative research could be conducted to supplement this research.

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## Research Report<sup>1</sup> for the Canadian Council on Learning

### **Project Title:**

Inclusive Education Knowledge Exchange Initiative: An Analysis of the Statistics Canada Participation and Activity Limitation Survey

### **III. OVERVIEW**

The purpose of this research was to assist in creating an effective knowledge exchange process in order to accommodate a scarcity of knowledge surrounding inclusive education. Researchers from across Canada engaged in an analysis of Statistics Canada's 2001 Participation and Activity Limitation Survey to test the hypothesis that where educational services are organized to ensure inclusion, parents are more likely to report that their children are in good general health and that their children are doing well in school.

The National Inclusion team, comprising researchers and community partners from across Canada, worked together to extract data from the 2001 PALS, analyze results, discuss implications of the research, and strategize effective knowledge transfer activities. The team communicated effectively through emails and telephone; however, two productive face-to-face meetings were organized at key stages of the project. The first of these meetings occurred early in the project, prior to data gathering, and was also arranged to coincide with a national inclusion forum occurring in the same city. At this meeting, the researchers and community partners

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<sup>1</sup>Sections of this research report are from "Inclusion and health: A study of the 2001 Participation and Activity Limitation Survey (PALS)" by M. Wagner, 2008. Unpublished Master's thesis. University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada.

developed a strategy for data collection, and identified key variables and salient issues that needed to be identified through the study. A graduate student was also identified as a research coordinator on the project. In addition to facilitating the communication between researchers, she would participate in the research and also use some of the research towards her Master of Education thesis work. The student worked closely with Cameron Crawford of the Canadian Association for Community Living who contributed continuously throughout the project.

The second meeting of the researchers occurred approximately one year later, after data extraction and analyses. The primary goal of this meeting was for researchers and community partners to discuss key findings and their implications, as well as identify knowledge transfer activities. This productive meeting resulted in much strategizing, and consequently, multiple presentations have been given to various audiences, including teachers, parents, policy makers, and other research professionals. Furthermore, several publications have ensued, including a Master's thesis from some of the research. One-page information briefs have been prepared and are being distributed at conferences, schools, and forums. Knowledge transfer activities are continuing, with several planned oral presentations as well as preparation of an article for peer-review.

The subsequent sections of this report provide the context for the research, as well as detailed discussions of the methodology, results, and analysis. Briefly, the research was guided by a broad approach to health, and identification of three levels of educational inclusiveness: low, middle and high inclusion. Subsequently, the analysis revealed that parents were more likely to report that their children with disabilities are in better general health, progress very well/well at school, interact very well/well with their peers, and frequently look forward to going

to school in higher inclusive educational settings than in mid-range or lower inclusion settings. This positive trend was consistent, regardless of severity and type of disability.

#### **IV. INTRODUCTION**

Since the 1980s, many children with disabilities in Canada have attended their neighbourhood schools with age-appropriate peers. Data exist that reveals parents' perceptions of their children's school experiences. In particular, Statistics Canada's 2001 Children's Participation and Activity Limitation Survey (PALS), a post-censal survey of people with disabilities, has been undertaken. PALS provides a wealth of information about children with disabilities in Canada. Responses to questions from PALS were selected to compile a framework in order to analyze inclusive educational settings and compare those findings with the health of the child across multiple domains. The data are subsequently grouped into categories and are presented to illustrate findings.

##### *Participation and Activity Limitation Survey (PALS)*

The data gathered for this research study are derived primarily from Statistics Canada's 2001 Participation and Activity Limitation Survey (PALS). PALS is Statistics Canada's "flagship" survey on persons with disabilities in Canada and is designed as a follow-up to the Canadian Census of Population (i.e. it is a post-censal disability survey). Both an adult and a children's component to PALS exists, providing a variety of information about people with disabilities in Canada. This information includes general details about the child, such as age, schooling, family life, and socio-economic status, as well as disability-specific information, such as type of disability (e.g., learning, developmental, and psychological), and the severity of the child's disability (Statistics Canada, 2002). PALS provides information on the impact of the child's

disability on her or his activities as well as the limitations or barriers experienced within education, transportation, and leisure activities. The research for this particular project focuses on the child's component of the survey. The PALS Children Retrieval Dictionary (2001) identifies the definitions of the types of disability addressed in this research, as well as addressing the severity of the observed disability. These descriptions are provided in Table 1.

Table 1

*Definitions of types of disability identified in the Participation and Activity Limitation Survey (2001)*

| Disability           | Variable Name | PALS (2001) Definition  |
|----------------------|---------------|---|
| Hearing              | HEARING       | Type of Disability - Hearing. i.e., difficulty hearing  |
| Speech               | SPEECH        | Type of Disability - Speech. i.e., difficulty speaking and/or being understood.   |
| Developmental        | DEVELOP       | Type of Disability - Developmental disability or disorder. i.e., cognitive limitations due to the presence of a developmental disability or disorder, such as Down syndrome, autism or mental impairment caused by a lack of oxygen at birth.     |
| Learning             | LEARNING      | Type of Disability - Learning. i.e., difficulty learning due to the presence of a condition, such as attention problems, hyperactivity or dyslexia, whether or not the condition was diagnosed by a teacher, doctor or other health professional. |
| Seeing               | SEEING        | Type of Disability - Does the child have a seeing limitation? i.e., difficulty seeing.  |
| Psychological        | PSYCH         | Type of Disability - Psychological. i.e., limited in the amount or kind of activities that one can do due to the presence of an emotional, psychological or behavioural condition.  |
| Mobility             | MOBILITY      | Type of Disability - Mobility. i.e., difficulty walking. This means walking on a flat firm surface, such as a sidewalk or floor.  |
| Dexterity            | DEXTER        | Type of Disability - Dexterity. i.e., difficulty using hands or fingers to grasp or hold small objects, such as a pencil or scissors.   |
| Degree of Disability | DEGREE        | Degree of severity for limitations: no severity, mild, moderate, severe, very severe, mild to moderate, severe to very severe.  |

The PALS data were pooled from a sample of 43,000 respondents, of which nearly 8,000 were parents/guardians of children birth to 14 years with disabilities (Statistics Canada, 2001b). This data base provides the largest and most comprehensive view of children with disabilities that exists in Canada. While there are data in the Adult file concerning young adults 15 years and older with disabilities, the questions pertaining to education are quite different than those in the Children's component and are not comparable. Accordingly, only data from the Children's component of PALS were analyzed.

Participants for the PALS questionnaire were identified based on "filter questions" from the 2001 census, which were used to identify the percentage of the population who live with a disability. These filter questions act as global indicators of disability. Subsequent to the identification through the census, potential PALS participants were then re-filtered through the same census question several months later, and were screened through further detailed questions before being considered part of the disabled population. PALS provided survey results for an estimated 140,000 school-aged children (aged 5 to 14 years) with disabilities.

The purpose of analyzing PALS for this project is to test the hypothesis that where educational services are organized to ensure inclusion, parents are more likely to report that their children with disabilities are in good general health and that their children are performing well in school. Connotations of these terminologies in various contexts are also discussed.

### *Research in Inclusive Education*

This project aims to explore the relationship of a student's educational placement and the subsequent health of the child across several domains. The next section explores some of the

current research (since 2000), and trends that correspond with the themes that will be examined in subsequent sections of this report.

*Site and nature of educational placement.* According to the 2006 Canadian Census, the population of Canada is 31.6 million people, 5.6 million of which are children under the age of 15 (Statistics Canada, 2007). Based on the 2001 PALS data, 4.0% of school-aged children between the ages of 5-14 have activity limitations (Statistics Canada, 2002). However, this number is not indicative of the entire population of students that may be in some form of special education or inclusive setting. Timmons (2006) reports that approximately 15% of the school-aged population are considered to have exceptionalities, such as behaviour, communication, physical, and intellectual abilities. The services which are provided for these children are not uniform, as education is under provincial and territorial jurisdictions. Consequently, there is no national approach to inclusive education in Canada (Timmons). Furthermore, there are no statistics which offer information on how many students with disabilities are in inclusive educational settings. The reason for this lack of information is that there are limited questions in PALS which address the question of educational settings of students with disabilities (Crawford, 2004). Although this research attempts to address this gap, Statistics Canada has also completed some reporting that suggests an exploration and difference in regular versus segregated classroom placement. A problem with the broad-level data that have been reported is that they tend to focus solely on regular placement, whereas this is not the only consideration concerning effective inclusive practice. Furthermore, the information that Statistics Canada has gathered about students with disabilities is not available on public-use data files, thereby limiting the access to the information.

*Academic performance.* One of the goals of inclusive education is to meet the educational needs of all students (Salend, 2000). Therefore, it is important to examine the academic achievement of students with disabilities placed in inclusive educational settings and compare it to those who are not. McDonnell et al. (2003) performed a quantitative examination of the academic achievement of students with developmental disabilities in primarily inclusive educational settings, and found that these students made gains across many levels and achieved the majority of their individualized education plans' (IEP) objectives. Cole, Watdron, and Majd (2004) reported similar findings in their review of six Indiana schools. Although students with disabilities did not make significant progress in mathematics or reading, their overall average grades were indicative of the relationship between inclusive settings and academic achievement.

Hawkins (2007) performed a longitudinal study in Rhode Island to examine approaches that benefit the academic achievement of students with special needs. His findings indicate that inclusive educational settings are one of the effective approaches in achieving academic success with students with disabilities. Kemp and Carter (2006) conducted an interesting study in which they examined data related to academic achievement of 24 students with disabilities over an 18-month period. They state that "there may well be a link between academic achievement and the success of an inclusive placement" (p. 141). This finding is based on the associations between teacher perceptions of the level of "integration" and student success. That is, students who were identified as being "very successfully integrated" achieved higher academic scores than those who were deemed as being "moderately" or "unsuccessfully integrated." Although this research is informative, it has limitations because it has been gathered from small samples, and is therefore of limited use for making broad generalizations about the effectiveness of inclusive practice.

*Student involvement.* Students with disabilities tend to have fewer friends and participate less frequently in extracurricular activities than their non-disabled peers (Eriksson, Welander, & Granlund, 2007). Although he does not focus on students with special needs, Bailey (2005) reports that there is evidence to indicate the positive impact (both socially and physically) of physical education and involvement in sports; therefore, an examination of students' with disabilities participation in extracurricular activities may be significant. Sherrill (2003) discusses the necessity for physical education and the social benefits of it. She states that research "indicates that persons with disabilities list lack of companions as a major barrier to participation in physical activities" (p. 56). Tapasak and Walther-Thomas (1999) conducted a first-year evaluation of a school's inclusion program. Their evaluation revealed that teachers reported improved social skills for students with disabilities after their inclusion in general classroom settings. Inclusive classrooms allow students with special needs to form larger social networks, which positively influence an individual's future and indicate better social adjustment throughout life (Heiman, 2000; Knox & Hickson, 2001). Students in inclusive classrooms learn advanced social skills such as how to get along with others, are more receptive and helpful to others, and exhibit less prejudice and stereotyping (Stahmer, Carter, Baker, & Miwa, 2003). The research presented here supports the benefits of inclusive education as having a positive impact on student involvement. There is also evidence of the need for student involvement in order to augment social and physical benefits for students with disabilities. In general, the research supporting inclusive education is based on a human rights approach, and not on the effectiveness of it, which has been rarely evaluated (Lindsay, 2007). Lindsay's comprehensive review of the effectiveness of inclusive education research revealed that revealed that only 1% of the 1,300 studies published between 2000-2005 addressed the effectiveness of inclusive education.

## V. INCLUSION AND HEALTH

The primary focus of this research is the exploration of the relationship between the educational setting of a child with a disability and the health of the child. It is hypothesized that parents are more likely to report that their children are in good health if robust inclusive practices are occurring. That is, it is hypothesized that where there is robust inclusive practices, parents are more likely to report that their children are in good health.

Traditionally, the term “health” is simply associated with wellness (or its absence) and general physical conditions of an individual. The World Health Organization’s (WHO, 2002) definition acknowledges that there are social factors which contribute to the health of an individual. The modification of this definition has its roots in a Canadian document published in 1974.

In 1974, Marc Lalonde, Minister of Health and Welfare in Canada, released a working document entitled “A New Perspective on the Health of Canadians.” This document, known simply as the “Lalonde Report,” identified four concepts other than medical interventions that were responsible for health. It has been asserted that this report was the first by an industrialized nation to acknowledge that there are social determinants to health (Health Promotion Agency, n.d.). Lalonde states, “The purpose of this Working Paper, as its title suggests, is to unfold a new perspective on the health of Canadians and to thereby stimulate interest and discussion on future health programs for Canada” (p.7). This new perspective to which he is referring is the recognition of the multiple facets of health beyond the physical dimensions. Lalonde proposed dividing the health field into four components which he referred to as the “Health Field Concept.” These four elements are: human biology, environment, lifestyle, and health care organization.

Human biology refers to the physical and mental aspects of health (Lalonde, 1974). This component of the Health Concept is also concerned with associations of health and well-being derived from biological factors (heredity, genetic make-up). All health-related matters of which an individual has either minimal or no control, and are external to the human body are categorized as the “environment.” These factors include both the physical and social environment. Lifestyle is the element of the Health Concept over which individuals have greatest control. This category represents the combination of decisions of individuals that contribute to their health. “Bad choices” and habits that may be detrimental to a person’s health (such as smoking) are said to be contributors to the individual’s illness or death. The health care organization “consists of the quantity, quality, arrangement, nature and relationships of people and resources in the provision of health care” (Lalonde, p. 32), and represents how the general health care system was defined. Lalonde asserts that much of health care expenditure was focused on this organization, but that in fact an examination of the causes of sickness and death in Canada reveals that their roots are found within the other three elements of the Health Concept. He states, “It is apparent, therefore, that vast sums are being spent treating diseases that could have been prevented in the first place. Greater attention to the first three conceptual elements is needed if we are to continue to reduce disability and early death” (p. 32). In summary, the Lalonde Report asserted that in addition to the health care system, there are other determinants of health, namely, human biology, environment and lifestyle.

Several decades later, in Canada, social factors contributing to health were examined and explored amongst social and health policy experts, community representatives, and health researchers at a conference in 2002, which was entitled, “Social Determinants of Health Across the Life-Span” (Raphael, 2003). The organizers of this conference synthesized various

formulations of the determinants of health, using those published by a WHO working group, the “Ottawa Charter for Health Promotion,” and Health Canada. They identify the 11 key social determinants that, in their view, are most relevant to Canadians (Raphael). They are:

1. Aboriginal Status;
2. Early Life;
3. Education;
4. Employment and Working Conditions;
5. Food Security;
6. Health Care Services;
7. Housing;
8. Income and its Distribution;
9. the Social Safety Net;
10. Social Exclusion; and
11. Unemployment and Employment Security.

Raphael asserts that Canadians are unaware of the importance of these social determinants of health. In a later paper, Raphael (2004) summarizes the meaning of the social determinants of health as:

the economic and social conditions that influence the health of individuals, communities, and jurisdictions as a whole. Social determinants of health determine whether individuals stay healthy or become ill (a narrow definition of health). Social determinants of health also determine the extent to which a person possesses the physical, social, and personal resources to identify and achieve personal aspirations, satisfy needs, and cope with the

environment (a broader definition of health). Social determinants are about the quantity and quality of a variety of resources that a society makes available to its members (p. 1).

This research adopts the aforementioned conceptualization of health. Implementing this framework allows a reasonable connection to be made between inclusive education and the health of a child with a disability. This association depends on the acceptance that health is not solely determined by the health care system and its organization, but also on other determinants, including education and social inclusion/exclusion, which may affect the health of an individual. Conversely, health status may also contribute to these other determinants such as whether a child is in an inclusive setting.

The Canadian classroom has changed dramatically in the past 50 years. One of these changes is reflected in the diversity of the students who attend public education classes. This diversity is clearly shown through the increase in the number of students with disabilities in the education system (Ungerleider & Burns, 2004). Due to new technologies and medical advances, many children who would not have survived due to disability now have the opportunity to attend schools. Ungerleider and Burns state that “deinstitutionalization in the health and social services sectors has resulted in retention in the community of students who, in previous generations, would have been ‘out of sight, out of mind’” (p. 144). However, Ungerleider and Burns introduce a series of alarming statistics with respect to children with disabilities and their educational placement. These issues revolve around income distribution/poverty, and early life experiences and the education of their parent(s), as summarized below:

- In 1994-1995 one-tenth of students received some form of special education;
- Children in low-income families are more likely to receive special education;

- Children living in single-parent families are twice (17%) as likely as children from two-parent families (9%) to receive special education assistance. Single parents face multiple social and economic disadvantages;
- Children receiving special education are more likely (24%) to have a parent who did not finish high school than children who are not receiving special education (14%).

From these statistics, it may be extrapolated that students who are receiving special education largely separated from their age peers are at greater risk of being in poorer general health as compared with their peers who are placed in regular classroom settings.

In addition to low income and low education, another determinant of health, as identified by Raphael (2003), is social exclusion. “Groups experiencing some form of social exclusion tend to sustain higher health risks and lower health status” (Galabuzi, 2004, p. 235). Amongst the people who are situated in this category are people with disabilities (Health Canada, 2004).

Galabuzi offers a definition of social exclusion in the Canadian context as:

the inability of certain subgroups to participate fully in Canadian life due to structural inequalities in access to social, economic, political, and cultural resources arising out of the often interesting experiences of oppression as it relates to race, class, gender, disability, sexual orientation, immigrant status, and the like. Along with the socio-economic and political inequalities, social exclusion is also characterized by processes of group or individual isolation within and from such key Canadian societal institutions as the school system, the criminal justice system and the health care system, as well as spatial isolation or neighbourhood segregation (p. 238).

Galabuzi's identification of segregation and its enablement by the school system as a contributor to social exclusion speaks about the potential impact of inclusive education on the health of students with disabilities.

The benefits of inclusive education for students with disabilities have been reported in the literature (Graves & Tracy, 1998; Gray, 2005; Stahmer et al., 2003). Inclusive classrooms have the positive effect of promoting healthy social relationships between children with special needs, and the rest of society. Students who are regularly exposed to children with special needs, as their equal counterparts, gain understanding and empathy for human difference (Graves & Tracy; Gray). Therefore, students in inclusive classrooms learn advanced social skills such as getting along with others; they are more receptive and helpful to others, and exhibit less prejudice and stereotyping (Stahmer et al.). As Heiman (2000) notes, students with intellectual disabilities have more friends in inclusive schools than they do in special needs schools, and "social connections between students and their peers enrich their private world by providing emotional support, offering means of relaxation and providing opportunities to voice various frustrations" (p. 1). Inclusive classrooms allow students with special needs to form larger social networks, which positively influence an individual's future and indicate better social adjustment throughout life (Heiman; Knox & Hickson, 2001). Individuals who are socially adjusted have a greater chance of maintaining lasting, fulfilling relationships, which in turn leads to a healthier overall life.

Research that examines the relationship between inclusive education and health is scant. Furthermore, to the best of the researchers' knowledge, research that attempts to explore this relationship using quantitative methods with large-scale samples has not been conducted to date. The analysis of the Participation and Activity Limitation Survey will attempt to fill this gap in

the literature by exploring the relationship between inclusive education and health of children with disabilities. As Lalonde (1974) eloquently stated:

Complete well-being for all may be beyond our grasp, given the human condition, but much more can be done to increase freedom from disease and disability, as well as to promote a state of well-being sufficient to perform at adequate levels of physical, mental and social activity, taking age into account. (p. 8)

The relationship between robust inclusion and health is the focus of this research. The perspective on health draws from the multi-faceted framework introduced by Lalonde (1974) and further articulated by Raphael (2003). Accordingly, the health of a child with a disability is studied not only using a physiological perspective, but also with a focus on other determinants of health, specifically, education and social inclusion (exclusion). This research was conducted using Statistics Canada's 2001 Participation and Activity Limitation Survey.

For the purposes of this research, disability is considered using WHO's Internal Classification of Function in which all environmental, societal, and health factors play an interactive role in defining the disability of the child. Additionally, the implications of disability within education are considered. This study also examines the role that inclusive educational settings have on the health of a child with a disability.

## **VI. METHODOLOGY**

Permission to analyze the data was gained through a rigorous, adjudicated process in which access to the survey results was obtained through a proposal submission to the Social Sciences and Humanities Research Council of Canada (SSHRC). Part of the reason for this rigorous process is that Statistics Canada is extremely diligent about protecting the privacy of all

of its respondents. For this same reason, there are no identifying details provided alongside the other PALS survey data, resulting in a compilation of purely quantitative data. In addition, the data were submitted to Statistics Canada's evaluation process, which ensures that most data too marginal for reliable use in analysis, are suppressed at source ( i.e., it is not released to researchers, even though the researchers may have requested it).

The specific strategies used to conduct these quantitative analyses of the PALS survey data are described in the following sections.

### *Data Analysis Strategies*

Prior to collecting any data from the PALS survey, a proposal had to be written and submitted to SSHRC clearly identifying the rationale and objectives of the study, as well as the required data sets, specific variables to be analyzed and computer program requirements. Upon acceptance of the proposal, access was provided to Research Data Centres (RDCs) at Dalhousie University in Halifax, Nova Scotia, and the University of Toronto, in Toronto, Ontario. This adjudication process took approximately six months. Because this is secondary data collection, it was not necessary to apply for ethics approval from the University of Prince Edward Island, where the Principal Investigator began the study before moving to her current institution, the University of Regina.

*Inclusion.* Before data could be gathered and analyzed from PALS, a great deal of preliminary work needed to be done to develop a methodological tool to measure inclusion or degree of “inclusivity” of a child with disability attending school. It was previously stated that for the purposes of this data exploration, Crawford's (2004) definition of robust inclusive practices is employed:

Robust approaches to inclusion are defined as ones that ensure that arrangements exist where all learners

- are welcome and included, in all their diversity and exceptionalities, in the regular classroom in the neighbourhood school with their age peers;
- are able to participate and develop to the fullest of their potential; and
- are involved in social valued relationships with diverse peers and adults

Additionally, Crawford (2004) provided more detailed considerations for operationalizing that definition which informed the analysis of PALS to identify variables that would indicate the inclusiveness of educational arrangements. It was not sufficient to simply use a student's regular classroom placement as the sole measure of inclusion; other facts contributing to robust inclusion were considered as well. One of the tools that was developed to measure inclusion was dubbed the "inclusion index."

*The inclusion index.* The PALS questionnaire contains more than 200 variables which address multiple facets concerning children with disabilities (Statistics Canada, 2002). Therefore, specific variables had to be identified that, when examined together, would best reflect a robust approach to inclusion. These variables are identified in Table 2. Also illustrated in Table 2 are the response options for each variable in parentheses. Additionally, each respondent was offered the choice of "refusing to answer" for any given question. Statistics Canada documents these responses as well.

Table 2

*PALS Analysis for Development of an Inclusion Index*

| <b>Source Data for Sub-Indices (Reference Year: 2001)</b>   | <b>PALS Question Number</b> |
|---|-----------------------------|
| <b>1. Child was in a regular school and classroom in his/her home community</b>   |                             |
| Child was attending school or kindergarten in the reference week (Going to school or kindergarten; Being tutored at home through the school system; Neither of the above, i.e. neither going to school or being tutored at home)  | E1                          |
| Child was attending a regular school (Special education school; Regular school; Regular school with special education classes)  | E6                          |
| Child was attending only regular classes (Only regular classes; Some regular classes and some special education classes; Only special education classes)  | E7                          |
| Child was receiving education in academic subjects (not only in life skills or speech and language therapy, and was not receiving only mental health or counselling services. The child could have been receiving such non-academic services together with academic services, however.) (Yes; No; Don't know) | E20a                        |
| Child attended school in his/her home community (i.e., the child did not have to leave his/her community to attend school) (Yes; No; Don't know)  | E23a                        |
| <b>2. Child was involved in the extra-curricular life of the school</b>   |                             |
| Child was able to take part in physical education or organized games at school without restrictions due to disability/health condition (Yes; No; Don't know)  | E24a                        |
| Child was able to play with others during recess or lunch hour at school without restrictions due to disability/health condition (Yes; No; Don't know)  | E24b                        |
| Child was able to take part in school outings, such as visits to a museum, without restrictions due to disability/health condition (Yes; No; Don't know)  | E24c                        |
| <b>3. Needed supports were available to the child</b>   |                             |
| Needed special (architectural) features or equipment at school were available to the child (ramps, elevators, etc.) (Yes; No; Don't know)   | E27                         |
| Needed assistive aids, devices or services at school were available to the child (teacher's aides, interpreters, attendant service providers, computer with adaptive technologies, etc.) (Yes; No; Don't know)  | E30                         |
| Child was able to participate in the classroom, without restrictions due to disability/health condition (Yes; No; Don't know)   | E24d                        |

Table 2 (continued)

| Source Data for Sub-Indices (Reference Year: 2001)   | PALS Question Number |
|--|----------------------|
| <b>4. Parental involvement</b>   |                      |
| Parent(s) were made to feel welcome in the school (Yes; No; Don't know)  | E24b                 |
| During the school year the parent(s) spoke to, visited or corresponded with the child's teacher (Yes; No; Don't know)  | E33a                 |
| Frequency of parent(s) checking the child's homework or providing help with homework (Never or rarely; Less than once a month; At least once a month; At least once a week; A few times a week; Every day; Don't know) | E22                  |

Table 2 illustrates the variables that were grouped thematically together to comprise four sub-indexes:

1. Child's school and classroom placement, and proximity of school;
2. Child's involvement in extra-curricular life of the school;
3. Availability of supports and accommodations for the child;
4. Parental Involvement.

The first sub-index contains information on whether the child attended school in a regular, neighbourhood school and was placed in a regular classroom (not segregated), all of the time. The second sub-index has information on children's involvement in extra-curricular activities based on their ability to participate in physical education classes and games at school, participation during recess, and involvement in school organized field trips. The third sub-index addresses the availability of physical supports (such as ramps and elevators) and assistive aids (such as educational assistants and technological supports) that a child with a disability might require, as well as the school's overall accommodation of a child's physical and health needs. Finally, the last sub-index addresses parental involvement, which is a key component of this

index, with information about the school's ability to welcome parents, communication with parents, as well as the parents' participation at home in assisting their child(ren) with homework.

The variables which contributed to each of these categories were directly consistent with the definition of robust inclusionary practices as defined in this research. Furthermore, this selection of variables represents all of the variables in PALS that relate to inclusive educational practices.

Upon identification of the variables to include within the four sub-indices, syntax was written so that each variable was recoded with a new name and assigned new values. The purpose of recoding the variables was so that a meaningful value could be given to each answer in order to measure inclusivity. For example, the variable E22, frequency of parent(s) checking the child's homework or providing help with homework, was recoded as E22\_R. Then, each response to this question was given a value: if the response was "never or rarely," then a score of one was given. "Less than once a month" earned a score of two; "at least once a month" achieved a value of three; "at least once a week" scored a four; and responses of "a few times a week" and "every day" garnered scores of five and six respectively. Therefore, the value given to each response was indicative of consistent order and direction: from low to high or from poor to good practice. That is, the higher the score, the better the practice with respect to robust inclusion. It should be stated that most variables allow the respondent to not answer a question with an option such as "refusal to answer" or "don't know." In the cases where this type of answer was given or the question was not applicable, then the respondent was dropped from the analysis. The missing values constituted a small percentage of the total responses (approximately 0.72%).

The next step in completing the inclusion index was to calculate the product of the source variables within each sub-index, and divide this number by the maximum total score for each index. This step resulted in a score between zero and one for each of the four sub-indices. The

decision to multiply the values of the recoded variables in the sub-indices, instead of finding the sum, was to maximize the variability or spread of the scores within each sub-index. The final step in creating the inclusion index was to calculate the sum of the scores across the four sub-indices; a maximum score of four was possible. However, in order to simplify the score for the inclusion index, this value was standardized by dividing the sum by four. The maximum score that could be achieved, which indicated optimum robust inclusive settings, was one, and the lowest score possible was zero.

### *Inclusion Scale*

Due to the large sample size, a vast array of possible inclusion index scores was available. Therefore, to simplify the data analysis and provide meaningful results, the inclusion index was divided into a three-point scale reflecting three degrees of inclusivity, which were labelled “low-inclusion,” “mid-inclusion,” and “high-inclusion.” The three categories were created using a function within SPSS that displays “cut points” for continuous variables. Cut points allow the user to determine the number of equally sized groups of cases that can be created based on a continuous variable.

Originally, a five-point inclusion scale was constructed; however, this was ultimately rejected because, when performing cross-tabulations to obtain research results, the unweighted counts in a large number of cells were too low to meet Statistics Canada’s data release requirements; data suppression by Statistics Canada would have prohibited the use of much of the data. The three-point scale was a resolution to this problem.

The problem of low, unweighted cell counts occurred during analyses of other variables necessitating further collapsing of the data. For example, one five-point ordinal variable, which was cross-tabulated with the inclusion scale, was B68: description of child’s general health. In the PALS survey, respondents were given a choice of five answers. These were “excellent,”

“very good,” “good,” “fair” and “poor.” Because of low frequencies in the areas of fair and poor health when crossed with the inclusion scale, responses to B68 were collapsed into a three point ordinal with the following categories: excellent/very good; good; and fair/poor. The same strategy was adopted with other ordinal variables with 5 or more categories that were cross-tabulated with the inclusion scale.

Table 3 illustrates mean, median, minimum and maximum Inclusion Index scores for each of the three categories in the Inclusion Scale.

Table 3

*Case summary: statistics for the three-point Inclusion Scale using Inclusion Index scores (children with disabilities, 5 to 14 years, attending school in Canada, 2000 –2001 school year)*

| Inclusion scale level | Number of cases (weighted) | Inclusion index scores |             |             |             |
|-----------------------|----------------------------|------------------------|-------------|-------------|-------------|
|                       |                            | Mean                   | Median      | Minimum     | Maximum     |
| Low                   | 48,253                     | .465                   | .492        | .020        | .614        |
| Middle                | 48,489                     | .701                   | .700        | .616        | .775        |
| High                  | 48,217                     | .873                   | .871        | .776        | 1.00        |
| <b>Total</b>          | <b>144,959</b>             | <b>.680</b>            | <b>.700</b> | <b>.021</b> | <b>1.00</b> |

Source: PALS 2001 (children)

*Analysis.* Upon construction of the inclusion index, and its subsequent division into the inclusion scale with its three equally-sized groups, a series of bivariate cross-tabulations were performed to compare the degree of inclusivity with various outcomes. These outcomes were identified from the PALS questionnaire using the following variables:

- B68: How would you describe .....’s general health? (Excellent; Very good; Good; Fair; Poor)

- E21: Based on your knowledge of his/her school work, including his/her report cards, how did..... do during the last school year? (Very well; Well; Average; Poorly; Very poorly)
- E 35: With regard to how he/she feels about school, how often did..... look forward to going to school during the last school year? (Almost never; Rarely; Sometimes; Often; Almost always)
- F9: How well has..... gotten along with other children, such as friends or classmates (excluding brothers or sisters)? Very well (or no problems); Quite well (or hardly any problems); Pretty well (or occasional problems); Not too well (or frequent problems); Not well at all (or constant problems)

The latter three questions were selected as outcomes because, arguably, they are the questions from the PALS survey that best serve as a measure of the broader well-being of the child when their associations are evaluated along with health in relation to the inclusion scale.

Cross-tabulations and analyses also included runs to control for the nature of disability (e.g., developmental, mobility, agility, etc.), and severity of disability (mild/moderate and severe/very severe).

*Descriptive Statistics.* All of the data were collected using SPSS. This statistical software was used to calculate totals, central tendency (specifically, the mean), probabilities, and correlation measures. The measure of correlation that was used was the Kendall's tau rank correlation coefficient, designated by the lowercase Greek letter,  $\tau$ . Kendall's tau is used to measure the degree of association between two ordinal (rank) variables (Kraemer, 2005). Kendall's tau is equivalent to the Spearman r statistic with respect to its underlying assumptions, and its statistical power, but they differ in magnitude because of their underlying logic. It is beyond the scope of this report to delve into these intricacies, but it is notable that the Kendall's

tau provides a more conservative measure of the association (than the Spearman  $r$ ) between variables. Arndt, Turvey, and Andreasen (1999) conducted an experiment in which they compared Pearson, Spearman, and Kendall's correlation coefficients with a large sample size. Their evaluations showed that Kendall's tau had many advantages over the other statistics. They state that although the Kendall's tau is often the better choice, it is often not considered due to its infrequent use. One limitation of the Kendall tau is that squaring it will not represent the proportion of variance (Kraemer). Kendall's tau-b was used for cross-tabulations of square tables, and tau-c was used for rectangular tables. The possible values for Kendall's tau range between -1 (100% negative association) to +1 (100% positive association). The following guidelines (Table 4) were used to guide the interpretation of the values (Corbett, 1993):

Table 4

*Measures of Association for Kendall's Tau Statistic*

| <b>Value of the ordinal measure of association is:</b> | <b>Association</b> |
|--|--------------------|
| Under .1 (or between 0 and $-1$ )                      | Very weak          |
| From .10 to .19 (or from $-.10$ to $-.19$ )            | Moderately weak    |
| From .20 to .29 (or from $-.20$ to $-.29$ )            | Moderately strong  |
| .30 and above (or from $-.30$ to $-1.00$ )             | Strong             |

Results of the analyses are presented in the subsequent section of this report.

## VII. RESULTS

The research was undertaken with the goal of answering the following question: Are parents more likely to report that their children with disabilities are in good general health and that their children are performing well in school in settings where children are attending inclusive education programs? The following three questions guided the analysis of the results.

- What is the extent of positive student outcomes associated with high and low scores on the inclusion scale? i.e., what is the relationship between robust inclusive educational practice and each of the four outcomes at the focus of this research?
- Who are most (and least) likely to experience such outcomes; i.e. who will benefit?
- Who are most (and least) likely to be involved in robust inclusive educational arrangements?

With the exception of a table on distribution of children with disabilities across the Inclusion Scale by province, there are three general types of tables in this report:

1. “Outcome by Inclusion Scale”

This type of table illustrates the percentage distribution of children with disabilities across response options (e.g., excellent/very good, good, fair/poor) on a given “outcome” within each of the three groups of the inclusion scale (low, medium, high).

2. “Specific types of disabilities and severity of disability, with high outcome scores, by inclusion scale”

This type of table displays the percentage of children who were reported to be doing “best” in any given outcome for each of the three groups of the inclusion scale. Results are shown for each type of disability. It should be noted that any child may have more than one disability. This table also displays results based on severity of disability.

3. “Percentage of children with disabilities in the three Inclusion Scale categories with high outcome scores, by gender and low income status”

This type of table displays the percentage of children who were reported to be doing “best” in any given outcome for each of the three groups of the inclusion scale, by gender and low income status. Statistics Canada’s Low Income Cut-Off (LICO) was used as the measure of low income. The LICO represents income levels at which families or unattached individuals spend 20% more than average on food, shelter and clothing. The LICO takes into account family size and size of community.

*Provincial Distributions*

Table 5

*Distribution of Children with Disabilities Across the Inclusion Scale, by Province*

| Province              | Inclusion scale - 3 groups |        |       | % of total at school <sup>a</sup> |
|-----------------------|----------------------------|--------|-------|-----------------------------------|
|                       | Low                        | Middle | High  |                                   |
| Newfoundland/Labrador | 29.7%                      | 33.9%  | 36.4% | 1.6%                              |
| Prince Edward Island  | 17.1%                      | 32.9%  | 50.0% | 0.5%                              |
| Nova Scotia           | 29.1%                      | 27.1%  | 44.0% | 3.5%                              |
| New Brunswick         | 24.0%                      | 24.8%  | 51.5% | 2.5%                              |
| Quebec                | 39.2%                      | 26.9%  | 34.0% | 14.2%                             |
| Ontario               | 33.5%                      | 35.3%  | 31.2% | 45.0%                             |
| Manitoba              | 31.1%                      | 36.8%  | 32.1% | 4.2%                              |
| Saskatchewan          | 30.1%                      | 35.7%  | 34.2% | 3.0%                              |
| Alberta               | 32.8%                      | 36.1%  | 31.2% | 12.5%                             |

Table 5 (continued)

|                  |        |        |        |         |
|------------------|--------|--------|--------|---------|
| British Columbia | 32.0%  | 33.5%  | 34.5%  | 12.9%   |
| Total percent    | 33.3%  | 33.3%  | 33.3%  | 100.0%  |
| Total number     | 48,250 | 48,490 | 48,220 | 144,960 |

Note. <sup>a</sup>Total is the percentage of the total from each province.

From PALS 2001 microdata (children)

Table 5 illustrates that in the categorization of “high” inclusive education, the provinces of New Brunswick and Prince Edward Island have the highest fraction of students in this setting with percentages of 51.5% and 50.0% of respectively. This statistic reveals that approximately half of the students in these two provinces are in robust educational settings as defined in the present research.

### *General Health*

The measure of health that is reported in the following table is based on parents’/guardians’ perception of their child’s general health (excellent/very good; good; poor/fair). This measure of health is cross-tabulated with the inclusion scale. Thus, Table 6 illustrates the percentages of children who have been categorized as being in a low, mid, or high inclusive setting based on the previously defined conditions for robust inclusion. The percentages are displayed according to the reported health condition and are statistically significant with a moderately weak association ( $\tau_{Ken,b} = 0.085$ ) between health and the inclusion scale.

Table 6

*General Health, by Inclusion Scale*

| General health        | Inclusion scale - 3 groups |        |       | Total |
|-----------------------|----------------------------|--------|-------|-------|
|                       | Low                        | Middle | High  |       |
| Excellent / very good | 55.7%                      | 65.4%  | 76.3% | 65.8% |
| Good                  | 32.2%                      | 26.8%  | 19.9% | 26.3% |
| Fair / poor           | 12.0%                      | 7.8%   | 3.8%  | 7.9%  |

Table 6 (continued)

|               |        |        |        |         |
|---------------|--------|--------|--------|---------|
| Total percent | 100.0% | 100.0% | 100.0% | 100.0%  |
| Total number  | 48,190 | 48,460 | 48,170 | 144,810 |

Note.  $\tau_b = 0.169$ ;

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 1. General Health, by Inclusion Scale

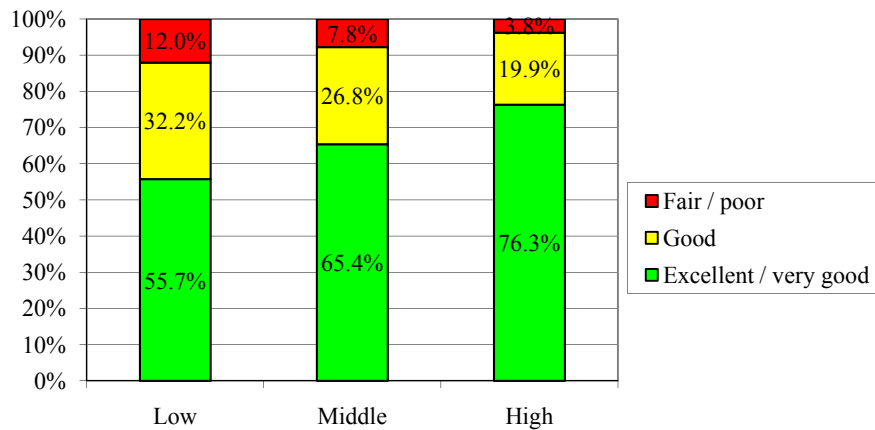


Table 6 (and as illustrated in Chart 1) shows that students with disabilities in “high” or most robust inclusive settings are in the best general health overall. That is, amongst children with disabilities in the highest or “best” categorization of inclusive setting, 76.3 % of children with disabilities are in excellent/very good health and only 3.8% of children are in fair/poor health. In contrast, in the lowest inclusion categorization or least robust setting, 55.7% of students are in excellent/very good health (a lower percentage than in the highest inclusion grouping) and 12.0% of children with disabilities are in fair/poor health. Therefore, Table 4 reveals that children with disabilities in the high inclusion setting are 1.4 times more likely to be in excellent or very good health, and that those in the lowest inclusion scenario are three times more likely to be in fair/poor health.

Table 7 allows for comparison of the inclusive educational categorization (low, middle, high) and general health with consideration of specific disabilities. The “Total” column shows the percentages of children with disabilities in excellent or very good health irrespective of educational arrangement. For instance, 64.6% of children with hearing disabilities taken as a whole are in excellent or very good health. For all types of disability and degrees of severity, the percentages in high inclusion scenarios with excellent or very good health are consistently higher than the figures shown in the “Total” column. Accordingly, not only can better general health be anticipated in the high versus low inclusion settings, but better general health can be expected in high inclusion settings than when looking more broadly at children with various types and degrees of disability.

Table 7

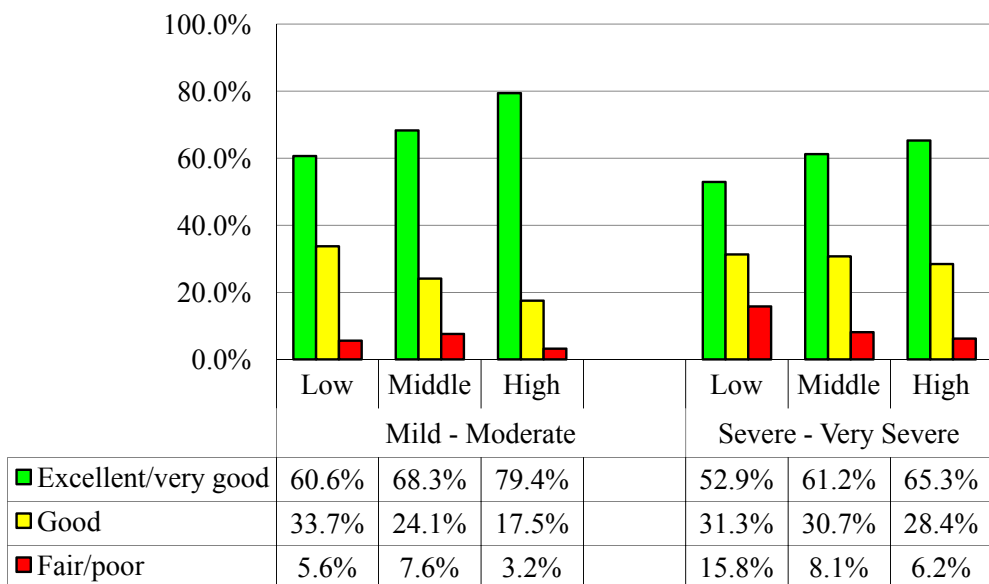
*Percentage of Children with Disabilities in the Three Inclusion Scale Categories with Excellent or Very Good Health, by Type and Severity of Disability*

| Disability status         | Inclusion scale |        |       | Total % <sup>a</sup> | $\tau$   | <i>p</i> |
|---------------------------|-----------------|--------|-------|----------------------|----------|----------|
|                           | Low             | Middle | High  |                      |          |          |
| <b>Type of disability</b> |                 |        |       |                      | $\tau_b$ |          |
| Any Disability            | 55.8%           | 65.4%  | 76.3% | 65.8%                | 0.169    |          |
| Hearing                   | 37.6%           | 68.0%  | 79.2% | 64.6%                | 0.324    | <0.001   |
| Speech                    | 56.2%           | 67.4%  | 79.0% | 64.8%                | 0.182    | <0.001   |
| Developmental             | 49.2%           | 69.9%  | 78.1% | 59.7%                | 0.234    | <0.001   |
| Learning                  | 54.0%           | 68.4%  | 77.7% | 65.5%                | 0.194    | <0.001   |
| Seeing                    | 53.0%           | 47.5%  | 68.2% | 55.2%                | 0.105    | <0.001   |
| Psychological             | 53.9%           | 67.1%  | 66.6% | 60.2%                | 0.126    | <0.001   |
| Mobility                  | 45.5%           | 55.5%  | 65.0% | 52.2%                | 0.155    | <0.001   |
| Dexterity                 | 53.7%           | 67.3%  | 60.4% | 59.0%                | 0.085    | <0.001   |
| <b>Severity</b>           |                 |        |       |                      | $\tau_c$ |          |
| Mild / Moderate           | 60.6%           | 68.3%  | 79.4% | 71.7%                | 0.120    | <0.001   |
| Severe / very severe      | 52.9%           | 61.2%  | 65.3% | 57.8%                | 0.098    | <0.001   |

Note. <sup>a</sup>Total % is the percentage of children on each row of the table reported with excellent/very good health overall.

From PALS 2001 microdata (Children)

Chart 2. Student Healthy by Degree of Disability and Inclusion Scale



The trend that was apparent in Table 6 is the same that is revealed in this table (Table 7). That is, in general, when considering the general health of a child in the highest grouping of the inclusion scale, the percentage of children reported to be in excellent/very good health is greatest, followed by a lower percentage in the middle grouping, and the lowest fraction is found in the low inclusion category. Although there are a few deviations from this pattern (e.g., children with psychological and seeing disabilities), it is still notable in the examination of most of the types of disability, and is certainly true when considering the illustrated percentages for “any disability.” In this instance, the highest categorization of the inclusion scale, 76.3% of the students have been reported to be in excellent/very good health. In the middle inclusion setting, 65.4% of students are in excellent/very good health, and of the students in the lowest inclusive education setting, 55.8% are in excellent/good health. Even for children with psychological and seeing disabilities, the percentage in excellent or very good health is higher in the most robust scenario than in the least robust scenario. There are varying degrees of association (ranging

between very weak to strong) amongst each type of disability and the inclusion scale, but every relationship is statistically significant.

The following table (Table 8) shows the progress at school by children with disabilities cross-tabulated with the inclusion index. The relationship is statistically significant ( $p < 0.001$ ), and a value of  $\tau_{Ken,b} = 0.191$  is indicative of a moderately weak association.

### *Progress at School*

Table 8

*Progress at School, by Inclusion Scale*

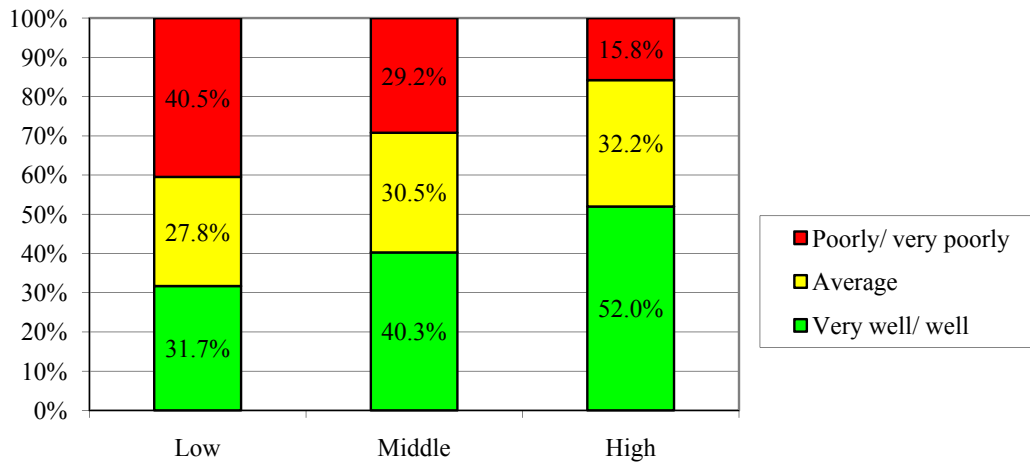
| <b>Progress at School</b> | <b>Inclusion scale - 3 groups</b> |               |             | <b>Total</b> |
|---------------------------|-----------------------------------|---------------|-------------|--------------|
|                           | <b>Low</b>                        | <b>Middle</b> | <b>High</b> |              |
| Very well/ well           | 31.7%                             | 40.3%         | 52.0%       | 42.5%        |
| Average                   | 27.8%                             | 30.5%         | 32.2%       | 30.5%        |
| Poorly/ very poorly       | 40.5%                             | 29.2%         | 15.8%       | 27.1%        |
| Total percent             | 100.0%                            | 100.0%        | 100.0%      | 100.0%       |
| Total number              | 32,730                            | 47,150        | 47,860      | 127,740      |

Note.  $\tau_b = 0.191$

\* $p < .001$

From PALS 2001 microdata (children)

Chart 3. Progress at School, by Inclusion Scale



Similar to the trend observed in the general health section, the children who are in high inclusive settings are performing best at school. For example, in the high inclusion group, 52.0% of children are progressing very well or well at school academically, and only 15.8 % of children are progressing poorly or very poorly. Comparatively, in the low inclusion group, 40.5% of children are progressing poorly at school and a distinctly lower 31.7% are progressing very well or well. There is a marked difference amongst the success at school by children with disabilities in the three inclusion groups.

Table 9 displays the data gathered from the cross tabulation of the progress of children with disabilities at school with the inclusion scale, based on specific disabilities.

Table 9

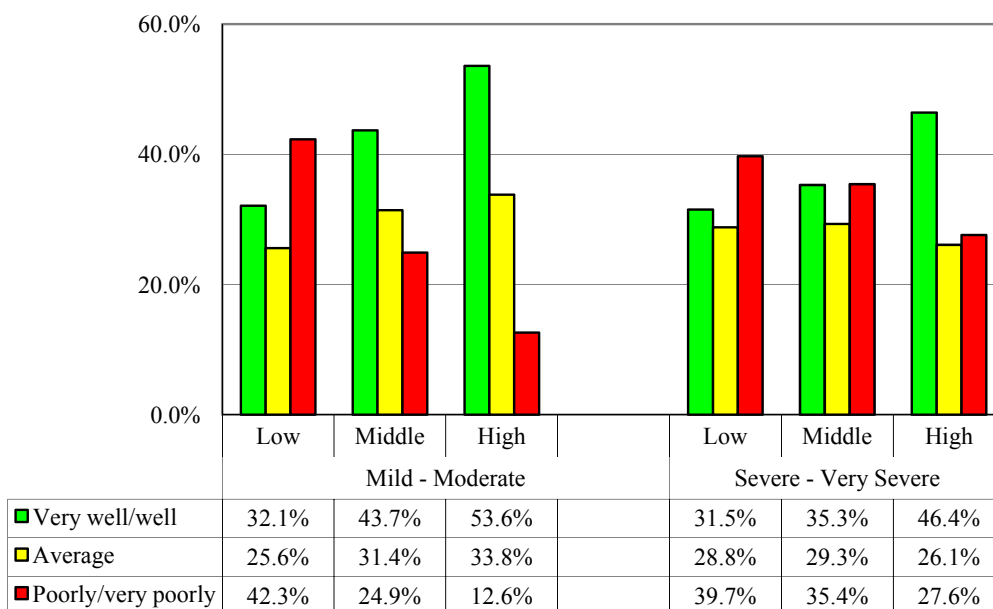
*Children with Disabilities Performing Very Well/Well as a Percentage of All Children with the Same Disability or Severity of Disability, in Each Category of the Inclusion Scale*

| Disability status         | Inclusion scale |        |       | Total % <sup>a</sup> | $\tau$   | <i>p</i> |
|---------------------------|-----------------|--------|-------|----------------------|----------|----------|
|                           | Low             | Middle | High  |                      |          |          |
| <b>Type of disability</b> |                 |        |       |                      | $\tau_b$ |          |
| Any Disability            | 31.7%           | 40.3%  | 52.0% | 42.5%                | 0.191    | <0.001   |
| Mobility                  | 35.4%           | 45.5%  | 56.9% | 43.8%                | 0.115    | <0.001   |
| Seeing                    | 38.7%           | 41.9%  | 56.2% | 45.1%                | 0.158    | <0.001   |
| Hearing                   | 21.6%           | 38.7%  | 52.6% | 41.9%                | 0.314    | <0.001   |
| Dexterity                 | 35.7%           | 39.9%  | 49.5% | 40.2%                | 0.123    | <0.001   |
| Developmental             | 33.8%           | 39.3%  | 44.6% | 37.6%                | 0.109    | <0.001   |
| Speech                    | 35.3%           | 39.4%  | 42.9% | 38.8%                | 0.094    | <0.001   |
| Psychological             | 28.9%           | 30.5%  | 37.8% | 31.3%                | 0.100    | <0.001   |
| Learning                  | 27.3%           | 28.6%  | 35.7% | 30.3%                | 0.111    | <0.001   |
| <b>Severity</b>           |                 |        |       |                      | $\tau_c$ |          |
| Mild / Moderate           | 32.1%           | 43.7%  | 53.6% | 47.1%                | 0.170    | <0.001   |
| Severe / very severe      | 31.5%           | 35.4%  | 46.4% | 35.8%                | 0.096    | <0.001   |

Note. <sup>a</sup> Total % is the percentage of children on each row of the table reported as doing very well/well overall.

From PALS 2001 microdata (Children)

Chart 4. Student Progress, by Degree of Disability and Inclusion Scale



Of children with any disability who are in the high inclusion group, 52% are progressing very well or well at school compared to 40.3% who are in the middle inclusion setting and 31.7% in the low inclusion group. Table 7 illustrates that as the level of inclusivity is decreased, so is the children’s perceived success at school, regardless of the type or severity of disability. A range in  $\tau_{Ken,b,c}$  of 0.096-0.314 was observed.

*Interaction with Other Children*

Table 10, below, displays the results obtained from the cross-tabulation of the interaction of children with disabilities with their peers and the inclusion scale.

Table 10

*Interaction with other children, by Inclusion Scale*

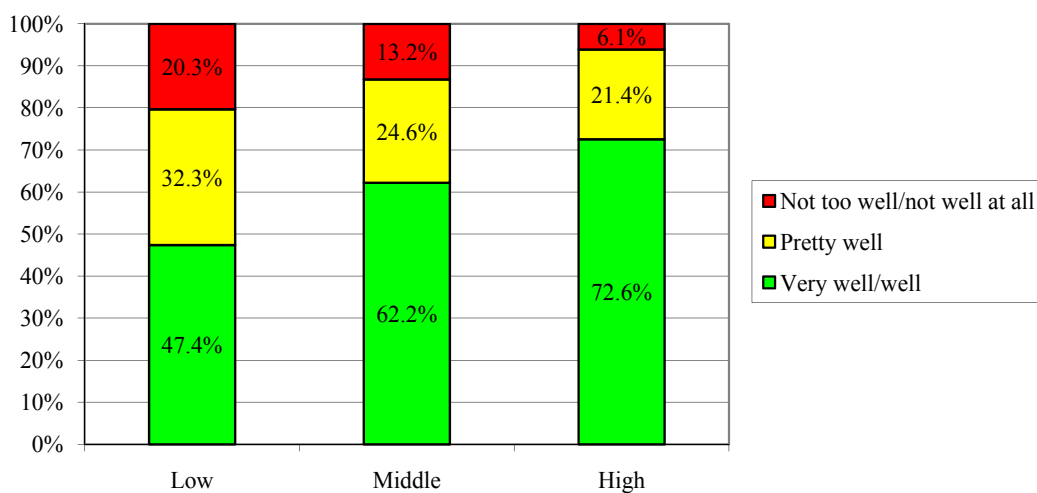
| Interaction with Other Children                              | Inclusion scale - 3 groups |        |        | Total   |
|--|----------------------------|--------|--------|---------|
|  | Low                        | Middle | High   |         |
| Very well/well (none or hardly any problems)                 | 47.4%                      | 62.2%  | 72.6%  | 61.0%   |
| Pretty well (occasional problems)                            | 32.3%                      | 24.6%  | 21.4%  | 26.0%   |
| Not too well/not well at all (frequent or constant problems) | 20.3%                      | 13.2%  | 6.1%   | 13.0%   |
| Total percent  | 100.0%                     | 100.0% | 100.0% | 100.0%  |
| Total number   | 47,690                     | 48,440 | 48,130 | 144,260 |

Note.  $\tau_b = .201$

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 5. Interaction with Other Children, by Inclusion Scale



Students in the most robust inclusive setting are one and a half times more likely to be having no or hardly any problems, as compared to the children in the lowest inclusive education grouping. That is, 72.6% of children in the highest inclusive education group experience no problems or minimal problems, versus 47.4% of students in the lowest inclusive grouping. Conversely, only 6.1% of children in the highest inclusive setting are experiencing frequent or constant problems, while 20.1% of those grouped in the least robust inclusive setting are experiencing frequent or constant problems. This may also be interpreted as a proportion that is 3.3 times greater. This statistically significant relationship demonstrated a moderately strong relationship as revealed from the Kendall's tau value of 0.201.

As in the previous examinations, this variable (interaction with peers) was also cross-tabulated with the inclusion index with the identification of the type and severity of disability limitation experienced by the child. These statistically significant results are displayed in Table 11.

Table 11 is organized according to nature and degree of disability. It is apparent from the results that the same trend that has been observed thus far continues to hold true. To extrapolate, there are a larger proportion of students who are in the high inclusive setting who are interacting very well or well with their peers as compared to their counterparts who are in less robust settings. This pattern holds true for all types and severity of disability. Another recurrent pattern is the variability in the observed tau values.

Table 11

*Children with Disabilities Interacting Very Well/Well with Other Children as a Percentage of all Children with the Same Disability or Severity of Disability, in Each Category of the Inclusion Scale*

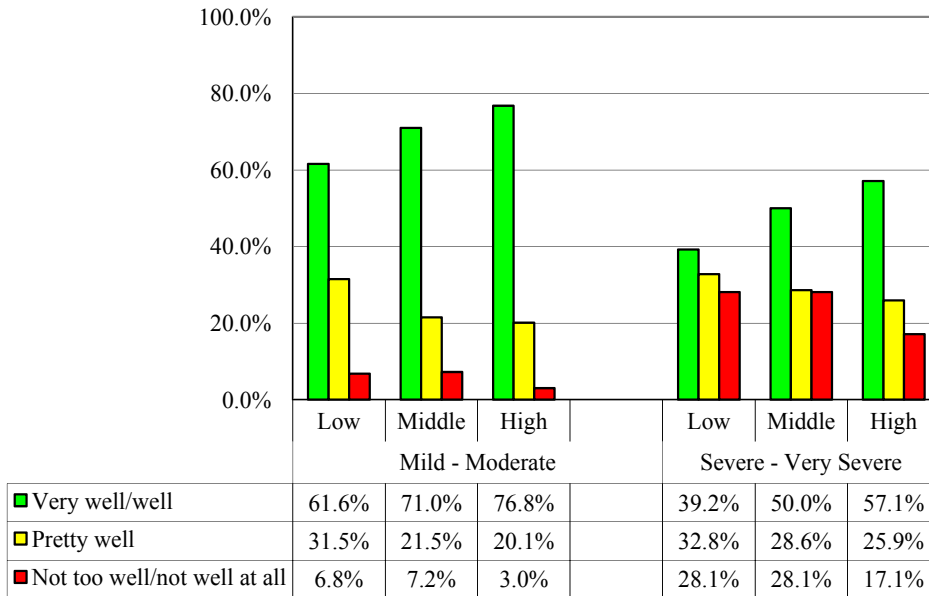
| Disability status         | Inclusion scale |        |                | Total % <sup>a</sup> | $\tau$         | <i>p</i> |
|---------------------------|-----------------|--------|----------------|----------------------|----------------|----------|
|                           | Low             | Middle | High           |                      |                |          |
| <b>Type of disability</b> |                 |        |                |                      | $\tau_b$       |          |
| Any Disability            | 47.4%           | 62.2%  | 72.5%          | 60.8%                | 0.201          | <0.001   |
| Hearing                   | 39.4%           | 66.1%  | 73.1%          | 61.9%                | 0.257          | <0.001   |
| Seeing                    | 54.4%           | 66.4%  | 68.2%          | 62.1%                | 0.119          | <0.001   |
| Speech                    | 44.5%           | 55.0%  | 64.2%          | 38.8%                | 0.139          | <0.001   |
| Learning                  | 39.0%           | 53.5%  | 62.2%          | 50.4%                | 0.181          | <0.001   |
| Dexterity                 | 47.7%           | 54.6%  | 60.9%          | 52.3%                | 0.096          | <0.001   |
| Developmental             | 38.3%           | 51.2%  | 56.5%          | 44.9%                | 0.137          | <0.001   |
| Psychological             | 30.9%           | 31.9%  | 40.0%          | 32.9%                | 0.079          | <0.001   |
| Mobility                  | 60.1%           | 69.8%  | <sup>b--</sup> | 56.7%                | <sup>b--</sup> | <0.001   |
| <b>Severity</b>           |                 |        |                |                      | $\tau_c$       |          |
| Mild / Moderate           | 61.6%           | 71.0%  | 76.8%          | 71.6%                | 0.093          | <0.001   |
| Severe / very severe      | 39.2%           | 50.0%  | 57.1%          | 45.8%                | 0.121          | <0.001   |

Note. <sup>a</sup>Total % is the percentage of children on each row of the table reported as interacting very well/well.

<sup>b</sup>Data suppressed by Statistics Canada.

From PALS 2001 microdata (Children)

Chart 6. Interaction with Other Children by Degree of Disability and Inclusion Scale



*Looking Forward to Going to School*

Table 12 illustrates the results of “looking forward to school” cross-tabulated with the inclusion scale.

Table 12

*Looking Forward to Going to School, by Inclusion Scale*

| Looking Forward to School | Inclusion scale - 3 groups |        |       | Total |
|---------------------------|----------------------------|--------|-------|-------|
|                           | Low                        | Middle | High  |       |
| Often / almost always     | 61.4%                      | 68.7%  | 77.8% | 69.3% |
| Sometimes                 | 17.1%                      | 14.4%  | 10.4% | 14.0% |
| Almost never / rarely     | 21.5%                      | 16.9%  | 11.8% | 16.7% |

Table 12 (continued)

|               |        |        |        |         |
|---------------|--------|--------|--------|---------|
| Total percent | 100.0% | 100.0% | 100.0% | 100.0%  |
| Total number  | 47,360 | 48,420 | 48,020 | 143,800 |

Note.  $\tau_b = 0.132$

\* $p < 0.001$

From PALS 2001 microdata (children)

As shown in Table 12, the largest fraction of students with disabilities who often or almost always look forward to going to school is in the highest inclusion group. That is, 77.8% of children with disabilities, who are in the most robust inclusive grouping, often or almost always look forward to going to school compared to 61.4% of students who are in the low inclusion group. Conversely, the largest fraction of students who almost never or rarely look forward to going to school (21.5%) are found in the lowest inclusive grouping, compared to a lower percentage (11.8%) who are in the high inclusion group. Although statistically significant, a value of  $\tau_{Ken,b} = 0.132$  illustrates a moderately weak relationship between the inclusion scale and the looking forward to going to school variable.

Chart 7. Frequency of Looking Forward to Going to School, by Inclusion Scale

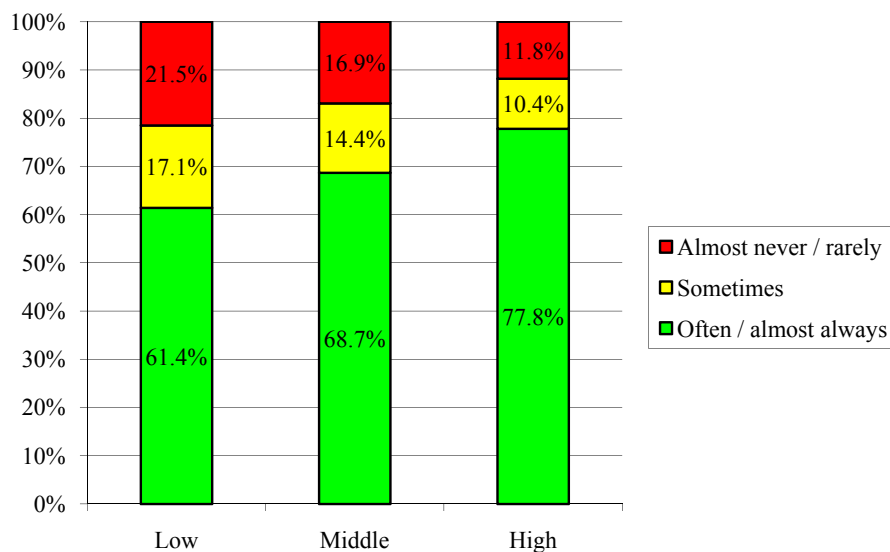


Table 13 organizes the results gathered for children looking forward to going to school cross-tabulated with the inclusion index while accounting for the specific type of disability and severity of disability experienced by the child. These results are statistically significant with a similar variability in the Kendall tau values that have been observed in previous tables. This table shows the percentages of children who often or almost always look forward to going to school.

The results in Table 13 continue to illustrate the positive trend between higher inclusive grouping and a more favourable outcome. For example, when considering students with learning disabilities in the high inclusive grouping, there are 71.0% who look forward to going to school often or almost always, as opposed to 56.2% who are in the low inclusion group. It should be acknowledged that in this table, there are several instances where the percentage of middle inclusion grouping of students with a specific type of disability who look forward to going to school often or almost always is in fact higher than it the high inclusion grouping (for example, amongst students with speech and developmental limitations). However, the difference between

the percentages in these instances is equal to or less than one percent, and the positive trend is observed in the examination of the overall category of “any disability.”

Table 13

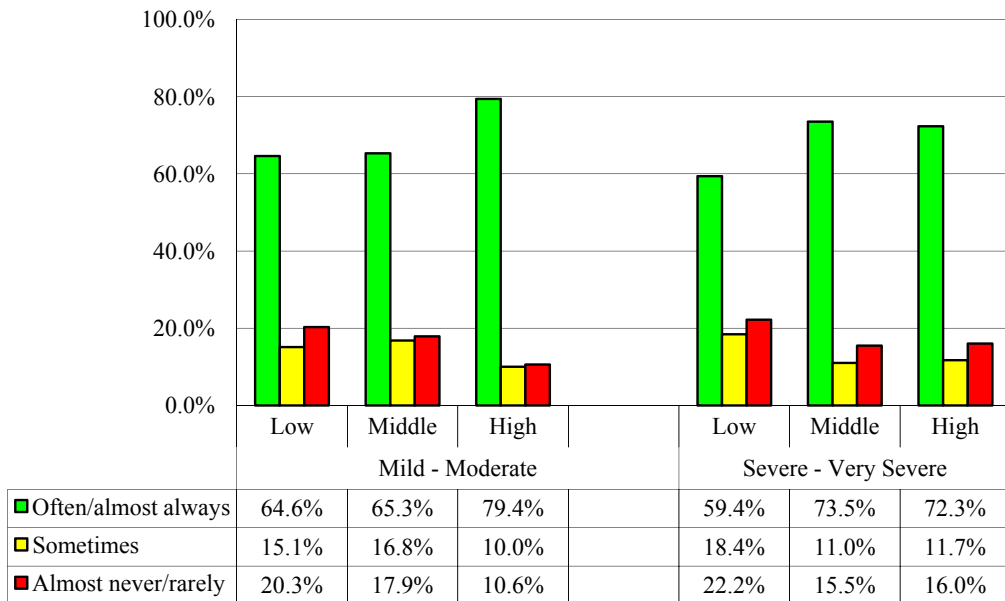
*Children with Disabilities Looking Forward to Going to School Often/Almost Always, as a Percentage of All Children with the Same Disability or Severity of Disability in Each Category of the Inclusion Scale*

| Disability status         | Inclusion scale |        |       | Total % <sup>a</sup> | $\tau$   | <i>p</i> |
|---------------------------|-----------------|--------|-------|----------------------|----------|----------|
|                           | Low             | Middle | High  |                      |          |          |
| <b>Type of disability</b> |                 |        |       |                      | $\tau_b$ |          |
| Any Disability            | 61.3%           | 68.7%  | 77.8% | 69.3%                | 0.132    |          |
| Mobility                  | 77.4%           | 76.8%  | 86.8% | 78.8%                | 0.060    | <.001    |
| Hearing                   | 53.5%           | 72.6%  | 81.5% | 71.2%                | 0.219    | <.001    |
| Speech                    | 65.6%           | 77.0%  | 76.3% | 71.7%                | 0.208    | <.001    |
| Developmental             | 63.4%           | 75.6%  | 74.6% | 68.9%                | 0.032    | <.001    |
| Seeing                    | 50.5%           | 73.6%  | 75.0% | 65.0%                | 0.100    | <.001    |
| Dexterity                 | 64.1%           | 65.5%  | 72.8% | 66.2%                | 0.103    | <.001    |
| Learning                  | 56.2%           | 65.0%  | 71.0% | 63.4%                | 0.049    | <.001    |
| Psychological             | 55.3%           | 60.0%  | 63.3% | 58.3%                | 0.109    | <.001    |
| <b>Severity</b>           |                 |        |       |                      | $\tau_c$ |          |
| Mild / Moderate           | 64.6%           | 65.3%  | 79.4% | 71.5%                | 0.111    | <.001    |
| Severe / very severe      | 59.4%           | 73.5%  | 72.3% | 66.3%                | 0.098    | <.001    |

Note. <sup>a</sup> Total % is the percentage of children on each row of the table reported as often/almost always looking forward to going to school overall.

From PALS 2001 microdata (Children)

Chart 8. Frequency of Looking Forward to Going to School, by Degree of Disability and Inclusion Scale



### Use of Health Services

The following table (Table 14) illustrates the results from the cross-tabulation of the frequency of use of health services by the inclusion scale. The section on methodology discussed how the health services utilization scale was constructed.

Table 14

Frequency of Use of Health Services, by Inclusion Scale

| Frequency of Use of Health Services | Inclusion scale - 3 groups |        |       | Total |
|-------------------------------------|----------------------------|--------|-------|-------|
|                                     | Low                        | Middle | High  |       |
| Lowest quartile                     | 15.5%                      | 26.5%  | 37.4% | 26.0% |
| Lower-middle quartile               | 28.8%                      | 35.3%  | 32.3% | 32.1% |

Table 14 (continued)

|                       |        |        |        |         |
|-----------------------|--------|--------|--------|---------|
| Upper-middle quartile | 20.2%  | 14.8%  | 11.0%  | 15.51%  |
| Highest quartile      | 35.4%  | 23.4%  | 19.4%  | 26.4%   |
| Total percent         | 100.0% | 100.0% | 100.0% | 100.0%  |
| Total number          | 37,140 | 36,350 | 32,960 | 106,450 |

Note.  $\tau_c = 0.211$

\* $p < 0.001$

From PALS 2001 microdata (children)

In Table 14, a quartile represents one-quarter of the students for whom data were available on health service utilization. The quartiles are ranked from most frequent to least frequent service utilization. Table 12 shows that students with disabilities in the high inclusion grouping use health services less frequently than those students who are in the low inclusive setting. For example, 37.4% of students in the most robust category of inclusion use health services infrequently, as compared to 15.5% of students who are in the least robust grouping. Conversely, 35.4% of students who are grouped in the low inclusion setting are in the quartile for the most frequent use of health services, compared to only 19.4% of students who are in the high inclusion grouping. A moderately strong association was revealed through a Kendall's tau value of 0.211 was observed for these statistically significant results.

### *Summary*

The following table (Table 15) illustrates the results of a cross-tabulation of the general population of children with disabilities, aged 5-14 and identified based on the type and severity of their disability, with the inclusion scale.

There is great variability in the results that are shown in Table 15. Generally, it can be seen that with the exception of students with hearing impairments, students with disabilities are more frequently in low inclusive groupings than in more robust ones. Also, students with mild/moderate disabilities are more likely to be in a high inclusive grouping than those with severe or very severe limitations. The negative Kendall's tau values that are observed reveal that there is an inverse relationship between the observed variables. The results are statistically significant.

Table 15

*Percentage of Children with Disabilities in the Three Inclusion Scale Categories, by Type and Severity of Disability*

| Disability status         | Inclusion scale |        |       | Total % <sup>a, b</sup> | $\tau$   | <i>p</i> |
|---------------------------|-----------------|--------|-------|-------------------------|----------|----------|
|                           | Low             | Middle | High  |                         |          |          |
| <b>Type of disability</b> |                 |        |       |                         | $\tau_c$ |          |
| Any Disability            | 33.3%           | 33.4%  | 33.3% | 100%                    |          |          |
| Hearing                   | 26.8%           | 31.1%  | 42.0% | 13.3%                   | 0.054    | <0.001   |
| Learning                  | 37.8%           | 34.8%  | 27.4% | 65.3%                   | -0.182   | <0.001   |
| Seeing                    | 40.1%           | 33.4%  | 26.5% | 9.2%                    | -0.033   | <0.001   |
| Speech                    | 46.0%           | 31.7%  | 22.3% | 42.8%                   | -0.270   | <0.001   |
| Psychological             | 51.1%           | 29.6%  | 19.3% | 31.4%                   | -0.266   | <0.001   |
| Dexterity                 | 51.8%           | 29.3%  | 18.9% | 19.9%                   | -0.174   | <0.001   |
| Mobility                  | 49.5%           | 33.6%  | 16.9% | 13.3%                   | -0.116   | <0.001   |
| Developmental             | 54.8%           | 30.5%  | 14.7% | 29.4%                   | -0.315   | <0.001   |
| <b>Severity</b>           |                 |        |       |                         |          |          |
| Mild / Moderate           | 21.1%           | 33.8%  | 45.1% | 57.8%                   | -0.370   | <0.001   |
| Severe / very severe      | 49.9%           | 33.0%  | 17.1% | 42.2%                   | -0.370   | <0.001   |

Table 15 (continued)

Note. <sup>a</sup>Total % is the percentage of children who have the particular activity limitation. <sup>b</sup>Totals across all the types of disability do not add to 100% because many children have more than one disability

From PALS 2001 microdata (Children)

### *Other Information*

The following tables (Tables 16-22) and charts (Charts 9-14) illustrate other findings based on cross-tabulation of the inclusion scale with various general information available in PALS such as use of Internet, and talking on the telephone.

Table 16

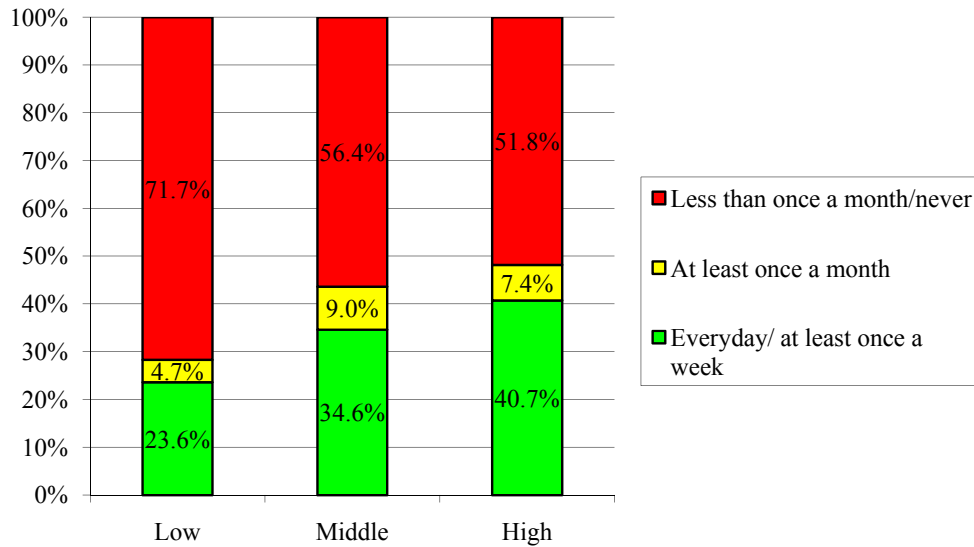
*Use of Internet to E-mail Friends, by Inclusion Scale*

| <b>Use of Internet to e-mail</b> | <b>Inclusion scale - 3 groups</b> |               |             | <b>Total</b> |
|----------------------------------|-----------------------------------|---------------|-------------|--------------|
|                                  | <b>Low</b>                        | <b>Middle</b> | <b>High</b> |              |
| Everyday/ at least once a week   | 23.6%                             | 34.6%         | 40.7%       | 34.6%        |
| At least once a month            | 4.7%                              | 9.0%          | 7.4%        | 9.0%         |
| Less than once a month/never     | 71.7%                             | 56.4%         | 51.8%       | 56.4%        |
| Total percent                    | 100.0%                            | 100.0%        | 100.0%      | 100.0%       |
| Total number                     | 14,360                            | 21,940        | 25,780      | 62,080       |

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 9. Frequency of Internet Use, by Inclusion Scale



*Talking with Friends by Phone*

Table 17

*Frequency of Talking with Friends by Phone, by Inclusion Scale*

| Talking to Friends on Phone    | Inclusion scale - 3 groups |        |        | Total   |
|--------------------------------|----------------------------|--------|--------|---------|
|                                | Low                        | Middle | High   |         |
| Everyday/ at least once a week | 38.8%                      | 62.4%  | 67.1%  | 56.2%   |
| At least once a month          | 8.7%                       | 8.1%   | 9.3%   | 8.7%    |
| Less than once a month/never   | 52.5%                      | 29.5%  | 23.6%  | 35.1%   |
| Total percent                  | 100.0%                     | 100.0% | 100.0% | 100.0%  |
| Total number                   | 47,440                     | 47,820 | 47,810 | 143,060 |

\* $p < 0.001$   
 From PALS 2001 microdata (children)

Chart 10. Frequency of Talking with Friends by Phone, by Inclusion Scale

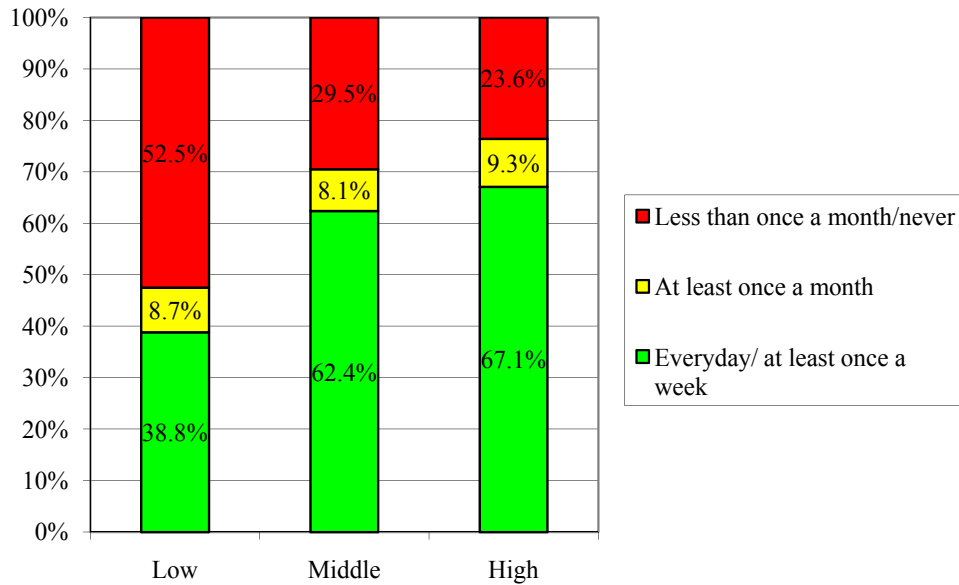


Table 18

*Percentage of Children with Disabilities who Speak on the Phone Everyday or at Least Once a Week in the Three Inclusion Scale Categories, by Type and Severity of Disability*

| Disability status         | Inclusion scale |        |       | Total % <sup>a, b</sup> |
|---------------------------|-----------------|--------|-------|-------------------------|
|                           | Low             | Middle | High  |                         |
| <b>Type of disability</b> |                 |        |       |                         |
| Any disability            | 38.8%           | 62.4%  | 67.1% | 100%                    |
| Seeing                    | 52.6%           | 59.4%  | 61.8% | 9.2%                    |
| Speech                    | 30.2%           | 48.9%  | 54.4% | 42.8%                   |
| Psychological             | 31.8%           | 53.3%  | 57.2% | 31.4%                   |
| Mobility                  | 40.6%           | 56.0%  | 55.1% | 13.3%                   |
| Dexterity                 | 31.5%           | 55.5%  | 40.1% | 19.9%                   |

Table 18 (continued)

|                      |       |       |       |       |
|----------------------|-------|-------|-------|-------|
| Hearing              | 31.0% | 56.2% | 61.5% | 13.3% |
| Developmental        | 26.1% | 50.9% | 43.0% | 29.4% |
| Learning             | 37.0% | 58.5% | 61.4% | 65.3% |
| <b>Severity</b>      |       |       |       |       |
| Mild / Moderate      | 48.6% | 71.2% | 71.8% | 66.7% |
| Severe / very severe | 33.2% | 50.0% | 50.4% | 41.6% |

Note. <sup>a</sup>Total % is the percentage of children who have the particular activity limitation. <sup>b</sup>Totals across all the types of disability do not add to 100% because many children have more than one disability

Source: PALS 2001 microdata (Children)

### *Reading for Pleasure*

Table 19

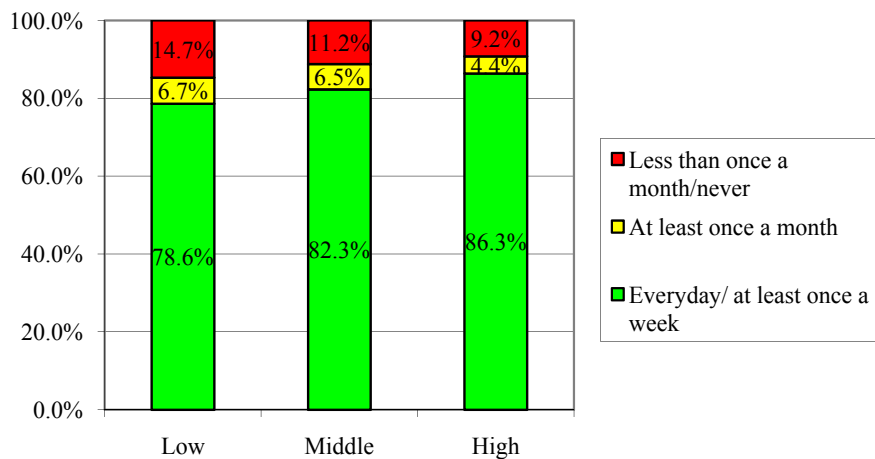
#### *Reading for Pleasure, by Inclusion Scale*

| <b>Reading for Pleasure</b>    | <b>Inclusion scale - 3 groups</b> |               |             | <b>Total</b> |
|--------------------------------|-----------------------------------|---------------|-------------|--------------|
|                                | <b>Low</b>                        | <b>Middle</b> | <b>High</b> |              |
| Everyday/ at least once a week | 78.6%                             | 82.3%         | 86.3%       | 82.4%        |
| At least once a month          | 6.7%                              | 6.5%          | 4.4%        | 5.9%         |
| Less than once a month/never   | 14.7%                             | 11.2%         | 9.2%        | 11.7%        |
| Total percent                  | 100.0%                            | 100.0%        | 100.0%      | 100.0%       |
| Total number                   | 47,980                            | 47,270        | 47,690      | 143,930      |

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 11. Frequency of Reading for Pleasure, by Inclusion Scale



*Sports and Other Leisure Activities*

Table 20

*Taking Part in Sports with a Coach, by Inclusion Scale*

| Sports with a Coach            | Inclusion scale - 3 groups |        |        | Total   |
|--------------------------------|----------------------------|--------|--------|---------|
|                                | Low                        | Middle | High   |         |
| Everyday/ at least once a week | 26.6%                      | 37.5%  | 45.2%  | 36.4%   |
| At least once a month          | 4.2%                       | 8.0%   | 7.0%   | 6.4%    |
| Less than once a month/never   | 69.2%                      | 54.5%  | 47.8%  | 57.2%   |
| Total percent                  | 100.0%                     | 100.0% | 100.0% | 100.0%  |
| Total number                   | 48,040                     | 48,410 | 47,790 | 144,250 |

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 12. Frequency of Taking Part in Sports with a Coach, by Inclusion Scale

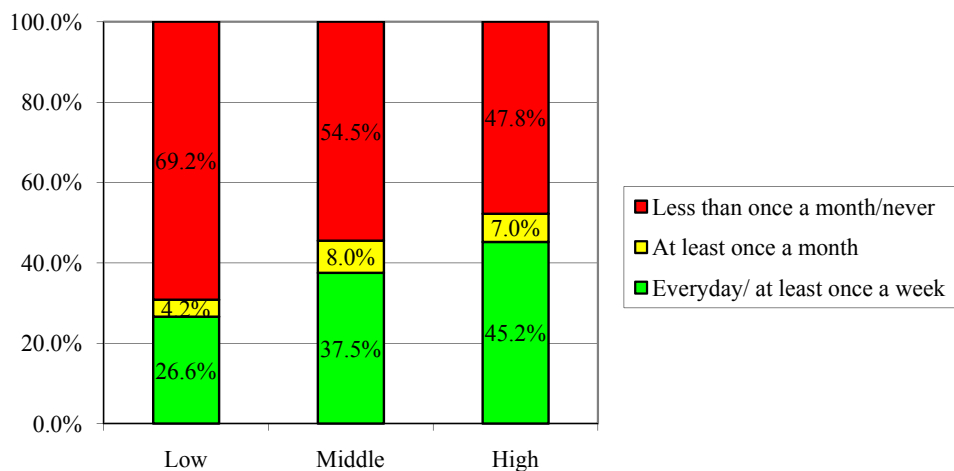


Table 21

*Taking Part in Sports Without a Coach, by Inclusion Scale*

| Sports without a Coach         | Inclusion scale - 3 groups |        |        | Total   |
|--------------------------------|----------------------------|--------|--------|---------|
|                                | Low                        | Middle | High   |         |
| Everyday/ at least once a week | 37.5%                      | 43.8%  | 57.2%  | 46.2%   |
| At least once a month          | 9.4%                       | 9.9%   | 8.2%   | 9.2%    |
| Less than once a month/never   | 53.1%                      | 46.3%  | 34.6%  | 44.7%   |
| Total percent                  | 100.0%                     | 100.0% | 100.0% | 100.0%  |
| Total number                   | 47,750                     | 48,400 | 48,010 | 144,170 |

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 13. Frequency of Taking Part in Sports without a Coach, by Inclusion Scale

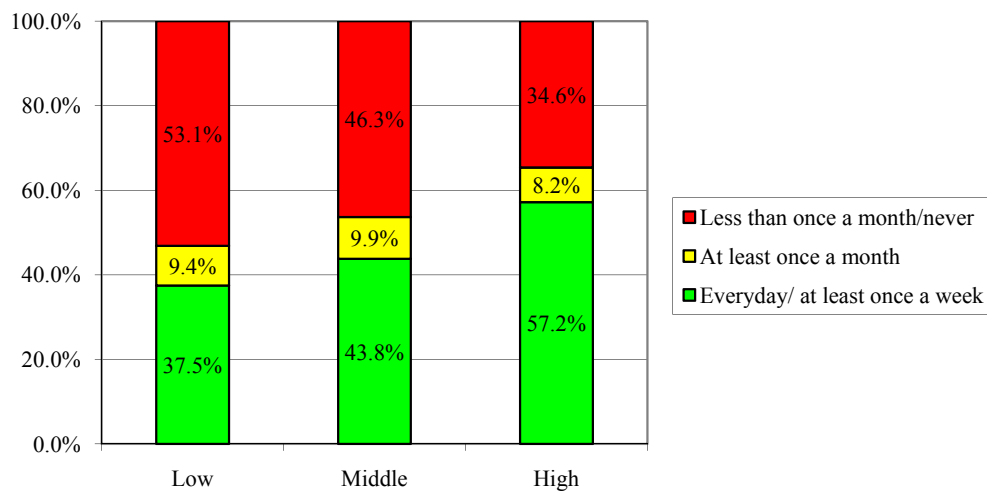


Table 22

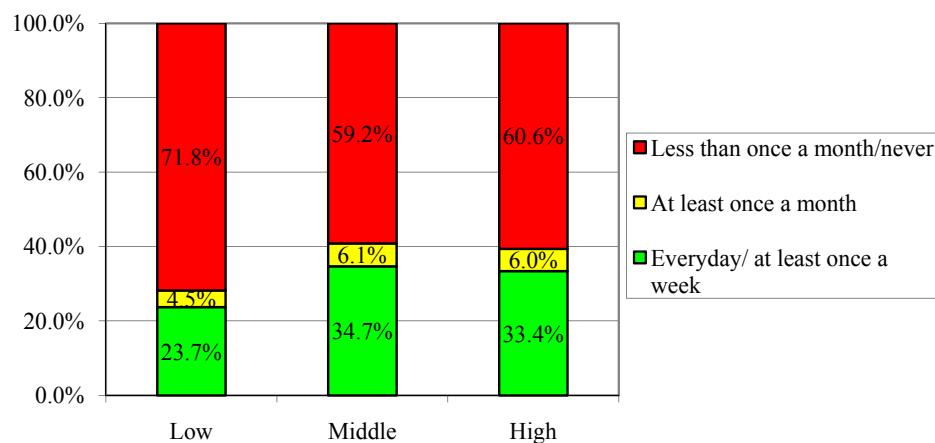
*Taking Part in Clubs and Other Programs, by Inclusion Scale*

| Clubs and other programs       | Inclusion scale - 3 groups |        |        | Total   |
|--------------------------------|----------------------------|--------|--------|---------|
|                                | Low                        | Middle | High   |         |
| Everyday/ at least once a week | 23.7%                      | 34.7%  | 33.4%  | 30.6%   |
| At least once a month          | 4.5%                       | 6.1%   | 6.0%   | 5.5%    |
| Less than once a month/never   | 71.8%                      | 59.2%  | 60.6%  | 63.8%   |
| Total percent                  | 100.0%                     | 100.0% | 100.0% | 100.0%  |
| Total number                   | 47,860                     | 48,270 | 47,840 | 143,960 |

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 14. Frequency of Taking Part in Clubs and Other Programs, by Inclusion Scale



### *Low-Income Status*

The following tables and charts reveal the results of cross tabulation of key outcomes with the inclusion scale when controlling for low income status. In all cases, it was found that the outcomes could not be accounted for based on this classification.

Table 23

*Low Income Status and Getting Along Very Well/Well with Other Children, by Inclusion Scale*

|                                  | Inclusion scale - 3 groups |        |        | Total   |
|----------------------------------|----------------------------|--------|--------|---------|
|                                  | Low                        | Middle | High   |         |
| Member of non-LOINC <sup>1</sup> | 47.2%                      | 64.2%  | 72.7%  | 61.8%   |
| Total number (in all categories) | 32,620                     | 35,200 | 36,430 | 104,260 |
| Member of LOINC                  | 49.9%                      | 61.7%  | 74.3%  | 61.1%   |
| Total number (in all categories) | 12,900                     | 11,530 | 10,470 | 34,890  |

\* $p < 0.001$

1.LOINC is the acronym used by Statistics Canada (2001) to signify ‘low income status’

From PALS 2001 microdata (children)

Chart 15. Low Income Status and Percent Doing Very Well/Well Getting Along with Others, by Inclusion Scale

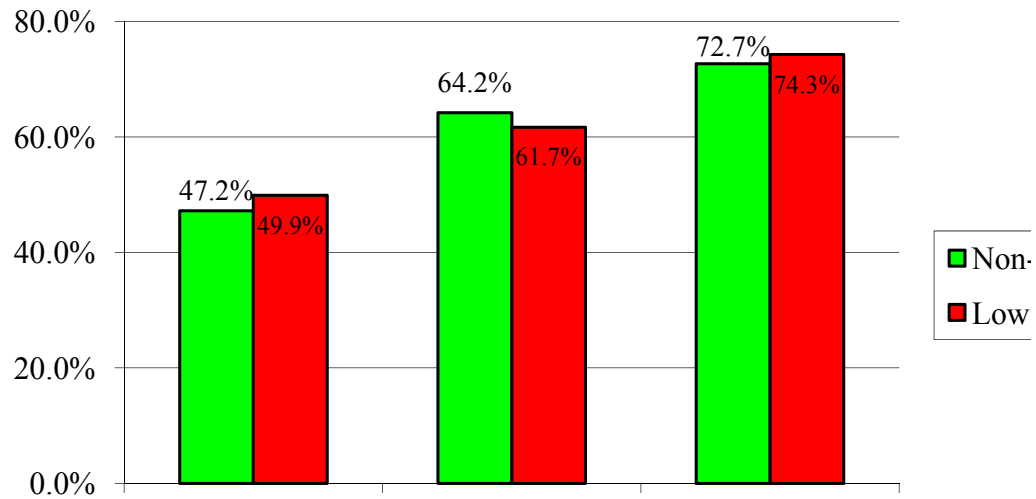


Table 24

*Low Income Status and Looking Forward to Going to School Always/Almost Always, by Inclusion Scale*

|                                  | Inclusion scale - 3 groups |        |        | Total   |
|----------------------------------|----------------------------|--------|--------|---------|
|                                  | Low                        | Middle | High   |         |
| Member of non-LOINC              | 60.6%                      | 68.6%  | 78.4%  | 69.5%   |
| Total number (in all categories) | 32,270                     | 35,130 | 36,320 | 103,720 |
| Member of LOINC                  | 61.4%                      | 66.2%  | 74.4%  | 66.8%   |
| Total number (in all categories) | 12,980                     | 11,580 | 10,470 | 35,030  |

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 16. Low Income Status and Percent Always/Almost Always Looking Forward to School, by Inclusion Scale

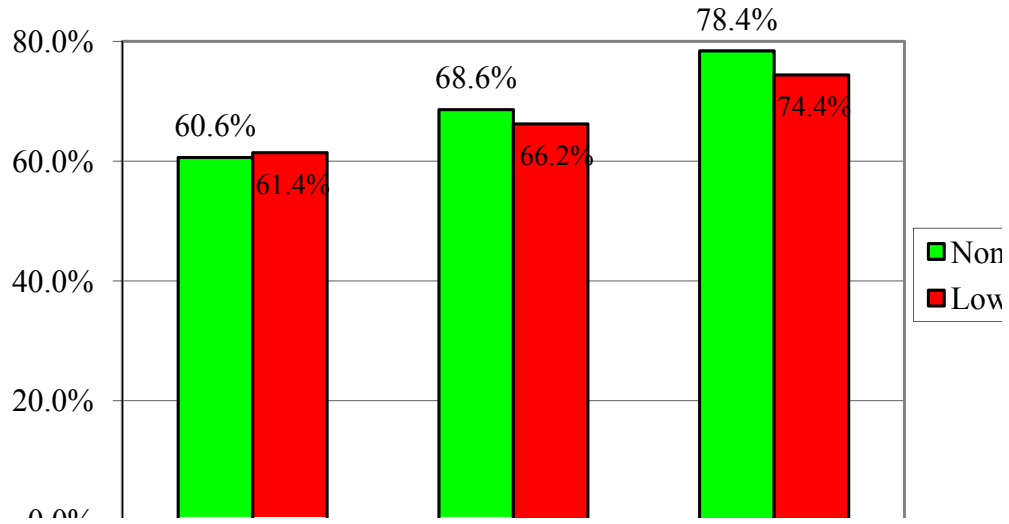


Table 25

*Low Income Status and Doing Very Well/ Well at School, by Inclusion Scale*

|                                  | Inclusion scale - 3 groups |        |        | Total  |
|----------------------------------|----------------------------|--------|--------|--------|
|                                  | Low                        | Middle | High   |        |
| Member of non-LOINC              | 33.9%                      | 42.1%  | 54.0%  | 44.8%  |
| Total number (in all categories) | 21,890                     | 34,180 | 36,210 | 92,270 |
| Member of LOINC                  | 27.1%                      | 37.0%  | 48.1%  | 37.8%  |
| Total number (in all categories) | 9,100                      | 11,460 | 10,420 | 30,980 |

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 17. Low Income Status and Percentage Doing Very Well/Well at School, by Inclusion Scale

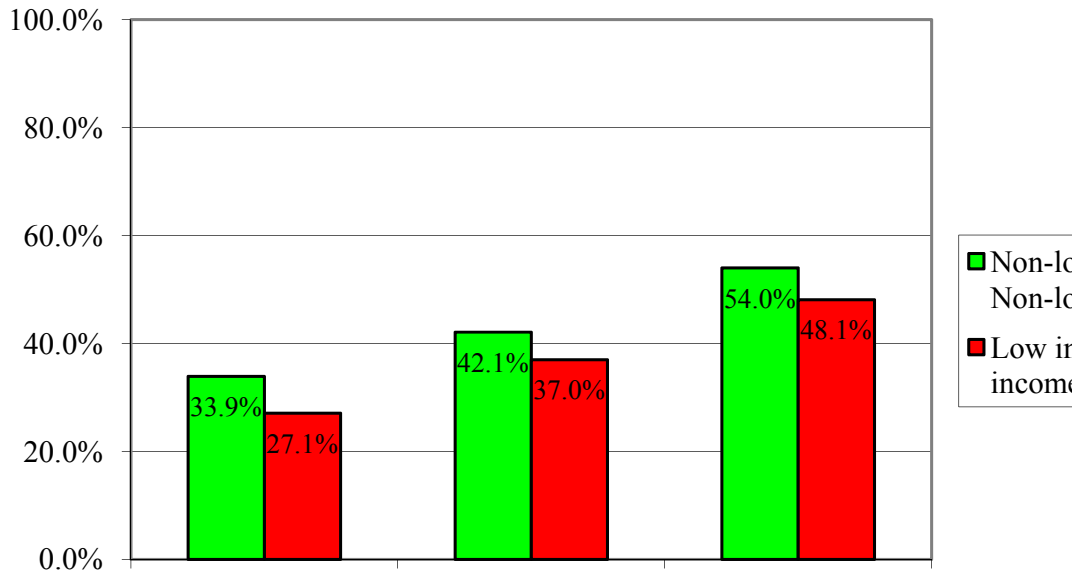


Table 26

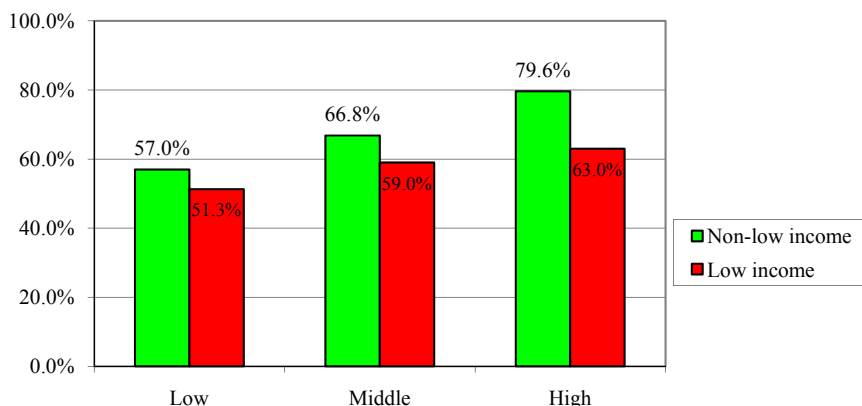
Low Income Status and in Excellent/ Very Good General Health, by Inclusion Scale

|                                  | Inclusion scale - 3 groups |        |        | Total   |
|----------------------------------|----------------------------|--------|--------|---------|
|                                  | Low                        | Middle | High   |         |
| Member of non-LOINC              | 57.0%                      | 66.8%  | 79.6%  | 68.2%   |
| Total number (in all categories) | 32,770                     | 35,170 | 36,470 | 104,400 |
| Member of LOINC                  | 51.3%                      | 59.0%  | 63.0%  | 57.3%   |
| Total number (in all categories) | 13,230                     | 11,580 | 10,470 | 35,280  |

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 18. Low Income Status and Percentage in Excellent/Very Good General Health, by Inclusion Scale



*Gender, Health and Inclusion*

As revealed in Table 27 and Chart 19 (below), gender also did not contribute to the findings.

Table 27

*Percentage of Children with Disabilities in the Three Inclusion Scale Categories with Excellent or Very Good Health, by Gender*

| Disability status | Inclusion scale |        |       | Total % <sup>a</sup> | <i>p</i> |
|-------------------|-----------------|--------|-------|----------------------|----------|
|                   | Low             | Middle | High  |                      |          |
| <b>Gender</b>     |                 |        |       |                      |          |
| Male              | 55.8%           | 64.4%  | 74.1% | 64.7%                | <.001    |
| Female            | 55.7%           | 66.7%  | 80.1% | 67.7%                | <.001    |

Note. <sup>a</sup> Total % is the percentage of children on each row of the table reported with excellent/ very good health overall.

From PALS 2001 microdata (children)

Chart 19. Percent in Excellent/Very Good General Health, in Three Inclusion Scale Categories, by Gender

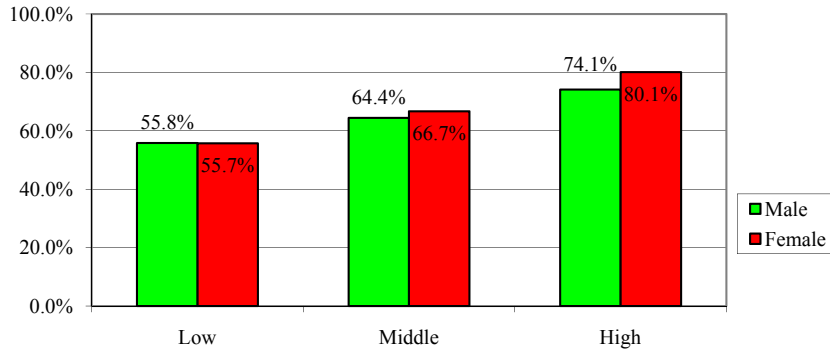


Table 28

*Percentage of Children with Disabilities School Level by Three Inclusion Scale Categories*

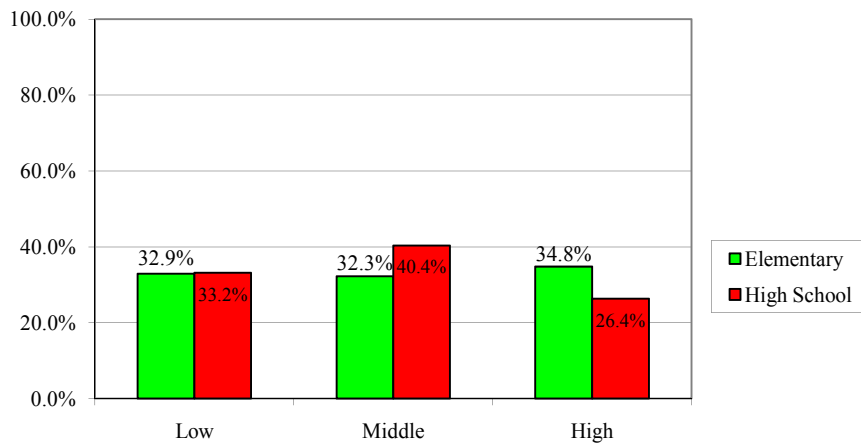
|              | Inclusion scale - 3 groups |        |        | Total   |
|--------------|----------------------------|--------|--------|---------|
|              | Low                        | Middle | High   |         |
| Elementary   | 32.9%                      | 32.3%  | 34.8%  | 83.8%   |
| Total number | 39,960                     | 39,240 | 42,280 | 121,480 |
| High School  | 33.2%                      | 40.4%  | 26.4%  | 14.6%   |
| Total number | 6,880                      | 8,380  | 5,470  | 20,730  |

Note.  $\tau_c =$

\* $p < 0.001$

From PALS 2001 microdata (children)

Chart 20. Percentage Distribution Across Three Inclusion Scale Categories, by Level of School



## VIII. DISCUSSION

This examination of the Children's component of Statistics Canada's Participation and Activity Limitation Survey (Statistics Canada, 2001) affords a glimpse into the health of children with disabilities in relation with their level of inclusivity at school. It has been an exploration to test the hypothesis that where educational services are organized to ensure inclusion, parents are more likely to report that their children with disabilities are in good general health and that their children are performing well in school. Analysis of results involved accounting for specific disabilities as well as their severity.

The results were organized to allow for a consideration of the answers to the following questions:

- What is the extent of positive student outcomes associated with high and low scores on the inclusion scale? i.e. what is the relationship between robust inclusive educational practice and each of the four outcomes at the focus of this research?

- Who are most (and least) likely to experience such outcomes; i.e. who will benefit?
- Who are most (and least) likely to be involved in robust inclusive educational arrangements?

This section explores the answer to these questions and the main research question.

### *Canadian Context*

The results of the cross-tabulation of the provinces and the inclusion scale provide an interesting perspective on education in Canada. Because education is legislated provincially, students with disabilities across Canada are placed in more or less robust inclusive settings. As will be discussed in the subsequent sections, the inclusive setting may be associated with the health of the child. The results show that Prince Edward Island and New Brunswick have the highest percentage of their students in the high inclusive grouping (approximately 50% or half of the students with disabilities). Most of the other provinces, including Ontario, which has the largest student population with disabilities, have only one-third (approximately) of their students in the most robust inclusive settings. This result may have policy implications if, indeed, there is an association between health of a child and her/his level of inclusivity.

In consideration of health in a Canadian context, it is also important to reiterate the fact that in 1974, the Lalonde Report had an enormous impact on the perception of health. This government report introduced the perspective that health is a larger concept than would be suggested by a singular examination of an individual's physical or medical condition. Since that time, 11 determinants of health have been accepted as contributing to a person's overall health and well-being (Raphael, 2003). In addition to the examination of general health of children with disabilities, three of these determinants were chosen as the basis on which the results and this discussion are to be framed: education, social exclusion, and health care services. It is logical to

include education in this discussion and exploration as it relates directly to one of the variables that are being studied. That is, the concept of inclusion is associated with the educational setting of the children with disabilities. Social exclusion encompasses the factors of emotional well-being that are integral to the overall health of children with disabilities. Due to the fact that the children in this study do have disabilities, it is safe to assume that they will require more health care or more frequent visits to doctors than a typical child without a disability. Therefore, an examination of health care services permits an exploration of this facet of health.

### *General Health*

The question of general health that was posed on the PALS questionnaire was: “How would you describe .....’s general health? Would you say that his/her health is excellent, very good, good, fair, or poor?” (Statistics Canada, 2001). Before the results can be discussed, it is necessary to remark upon this measure of health. The general health of the children with disabilities was a subjective measure based on parent/guardian reports. Therefore, it is necessary to consider the validity of self-reported health as an indicator of well-being, and also the confidence of proxy reporting (by parents) in addressing the children’s health. Sibthorpe (2001) asserts that “self-assessed health status has gained increasing attention, becoming an important component of contemporary health research that is arguably as reliable as – or more reliable than – other ‘objective’ biomedical measures for which it can be a proxy” (p. 1660). This claim is further supported by van Doorslaer and Jones (2001) who state that this general health question is indeed a good predictor of health and other related outcomes.

Statistics Canada addressed the issue of proxy reporting in a 2004 document about methods for surveying difficult-to-reach populations. They assert that proxy reporting is especially important when addressing the needs of people with disabilities due to the existence of

communication problems and their dependability on others with it. Statistics Canada reports that proxy respondents are more inclined to identify activity limitations, and are often more conservative in their judgments.

The results in the general health outcomes reveal an identifiable trend wherein children with disabilities who are highly included are in better general health overall. The reverse relationship is also recognized: children who are in better general health overall are more likely to be in highly inclusive settings. This pattern holds true regardless of type or severity of disability. The values obtained for Kendall's tau measure indicate some variability with respect to the strength of the relationship between the variables that are being cross-tabulated ( $\tau_{\text{Ken,b}} = 0.085$  to  $\tau_{\text{Ken,b}} = 0.324$ ,  $p < 0.001$ ). However, the results are statistically significant, i.e., they did not occur by chance. Another important point is that all of the values obtained for the Kendall's tau-b and tau-c were positive. This positive relationship is indicative of the direction of the relationship; as the first variable increases in value, the second value also increases. In other words, as the level of inclusivity increases (from low to high), so does the general health of the child. In all cases, regardless of the degree of association between the variables, it is necessary to acknowledge that there are other factors which may be contributing to the overall general health of the child. It is difficult to speculate what all these factors may be, although it is likely that as the severity of disability of a child increases, so does the likelihood that the child will require more supports and more specialized services that may detract from the inclusivity of the educational setting of the child or that decrease the likelihood that the child will be placed in a more, rather than less, inclusive setting.

Research that assesses the impact of inclusion on the general health of a child is scant. Dugger-Wadsworth and Knight (1999) state that there are characteristics of students with

varying disabilities and health impairments which are significantly different. They discuss a series of health and medical concerns that are necessary to consider in the placement of a child with disabilities in an inclusive setting. Therefore, it may be possible to assume that a child who has increased limitations and requires more supports is more likely to be in an educational setting that reflects a lower level of inclusiveness. Furthermore, this child may be more likely to be generally in poorer health overall.

### *Education*

Education is an important determinant of health. Munro et al. (2000), in examining the relationship between education and health, have demonstrated that education provides the tool (knowledge) that allows individuals to make informed, positive choices for the protection and creation of their own health and that of their environment. Thus, it may be extrapolated that parental level of education is of extreme importance as a determinant of children's health. There is a growing literature that "shows that school connectedness predicts a variety of health outcomes. Students who feel connected to school report higher levels of emotional well-being, less substance abuse, better health, decreased levels of suicidal ideation, decreased depressive symptoms and decreased risk of violent or deviant behaviour and teen pregnancy" (Thompson, Iachan, Overpeck, Ross, Gross, 2006, p. 379). There is strong and mounting evidence that higher education, social and economic statuses are also associated with better health (PHAC, 2004).

The results gathered in this exploration support a possible association between the progress attained at school by students with disabilities (as reported by their parents), and their level of inclusivity. A statistically significant, but moderately weak association ( $\tau_{Ken,b} = 0.190$ ;  $p < 0.001$ ) was obtained from results that illustrated that students in high inclusive settings perform very well or well at school – 1.6 times more frequently than students in low inclusive education

settings. Perhaps more revealing is the fact that students in the lowest inclusive setting are 2.6 time more likely to be performing poorly in school than their counterparts in the highest inclusive setting. The literature suggests that students with disabilities perform better academically in mainstream classrooms (Cole et al., 2004; McDonnell et al., 2003; Hawkins 2007; Kemp & Carter, 2006). Research has also provided evidence that when classrooms are inclusive, there are also positive academic outcomes for all the pupils in the class because teachers become more effective at meeting the needs of all students (Booth & Ainscow, 2002; Jordan & Stanovich , 2001).

The analysis of results in this domain by type and severity of disability revealed an identical positive trend between academic outcome and robustness of inclusive setting, and is apparent across every type of disability. Once again, the statistics reveal strong probability that these results did not occur by chance, and associations range from weak to moderately strong ( $\tau_{Ken,b} = 0.094$  to  $\tau_{Ken,b} = 0.314$ ,  $p < 0.001$ ). It is notable that the stronger Kendall's tau association of 0.314 is observed when looking at the situation for students with hearing impairments. This same strong association was observed for students with a hearing impairment when examining the general health outcome. There are many other factors which may contribute to parent reports of academic success of students; these may include those that are inherent to the student (such as willingness or desire to succeed), as well as parental, peer, and teacher influences. A point that needs to be raised is that parents may have different expectations for their child based on the type(s) and severity of disability that s/he possesses. A parent of a child with a developmental disability may have different expectations than a parent whose child has a learning disability. There may be teachers who have had more experience or training with curriculum adaptation, and are therefore more adept at assisting students with disabilities meet

their academic challenges. Some schools may have access to greater resources with respect to providing the necessary supports to students in helping them achieve success. Some of these factors may also play a role in predicting the academic performance of students with disabilities.

### *Social Exclusion*

A focus on social exclusion as a determinant of health involves consideration of the factors contributing to the emotional well-being of a child with disabilities. This broad category is discussed by focusing on the results obtained from the cross-tabulations of peer interaction and students' desire to go to school with the inclusion index. In examining the results of the first of the two cross-tabulations, the analysis revealed that students with disabilities who are grouped into high inclusive settings are 1.5 times more likely to be experiencing “none or hardly any” problems when interacting with other children than students in the lowest inclusive education grouping ( $\tau_{\text{Ken,b}} = .201, p < 0.001$ ). Furthermore, the results indicated that the students with disabilities who were experiencing frequent or constant problems are 3.3 times more often in the low inclusion grouping than in the high. The results are encouraging not only because of their implications, but also because of the high statistical significance, and the moderately strong association between the two variables. The statistical data illustrate that there is a strong association between inclusive setting and peer interaction of students with disabilities, consequently illustrating the correlation between inclusivity and the health of children with disabilities.

Similar to the outcomes discussed thus far, the positive trend of a greater percentage of students in the high inclusive grouping experiencing a better outcome (none or hardly any problems in this situation) is once again observed when looking at results based on type and severity of disability ( $\tau_{\text{Ken,b}} = 0.079$  to  $\tau_{\text{Ken,b}} = 0.257, p < 0.001$ ). The Kendall's tau values, which

range from weak to moderately strong associations, illustrate that there are other factors that may contribute to this outcome. Before these possibilities are explored, it is noted that once again, the strongest association was for students with a hearing impairment.

One possible contributor to this outcome of the strong association for students with hearing impairments is the fact that students who are generally of a more “agreeable” disposition, and therefore less likely to cause disruptions in a classroom, may be more likely to be included in a mainstream classroom more often. These same students may be more likely to have better interactions with peers. Frederickson, Simmonds, Evans and Soulsby (2007) confirmed previous studies that revealed correlations between peer acceptance and peer ratings of social behaviour. That is, social acceptance “is associated with positive social behaviours and roles, while rejection is associated with undesirable social behaviours and role” (p. 113). However, the observance of the same marked positive trend between a more robust inclusive situation, and a more favourable outcome should be noted.

In the same recent study, Frederickson et al. (2007) assessed the social outcomes of inclusion to assess peer-group belonging, social behaviour, bullying and feelings of belonging at school. Arguably, each of these variables contributes to peer interactions and looking forward to going to school. Frederickson et al. cite multiple studies in which children with disabilities have lower social status and are less accepted than their non-disabled counterparts. However, these authors also state that their review of the literature produced a number of studies that “have reported the development of positive and caring relationships by peers towards classmates who have special educational needs” (p. 106). They attribute this discrepancy in the literature to the different approaches and strategies used by students with special needs and their peers that promoted acceptance. Therefore, it may be possible that with respect to this PALS research study

the instances of higher inclusive setting are perhaps fostering students' use of these different approaches and strategies for socialization; however, this hypothesis would require further research. Furthermore, the implementation of these methods is probably dependent on many factors such as the province, school, and teachers.

As described in the literature review, Eriksson et al. (2007) assert that students with disabilities tend to have fewer friends and participate less frequently in extracurricular activities than their non-disabled peers. From the results gathered in this research, it may be possible that a more robust inclusive arrangement may help to increase the interaction amongst students with disabilities and their peers, which could contribute to the favourable associations that are observed.

The second contributor to social exclusion in this research is an examination of student attitudes regarding attending school. Students who were grouped in the highest inclusion category looked forward to going to school most often or always as compared to students who were in the lowest inclusion grouping. In contrast, the largest percentage of students who almost never or rarely looked forward to going to school was 1.8 times greater in the least robust inclusion grouping than in the most robust ( $\tau_{\text{Ken},b} = 0.132$ ,  $p < 0.001$ ). Although this favourable trend is once again detected and is statistically significant, there is a moderately weak association between the variables as determined by the Kendall's tau value. Once again, the fact that other factors may be contributing to the relationship between the variables is made apparent.

As it has been previously discussed, all the results of the survey are based on parents'/guardians' perceptions. It is possible that this may be a limitation with respect to all the answers, but particularly with respect to this variable. There is no way to validate parents' perceptions against the children's experiences. There is the potential that parents may be more

likely to report that their children look forward to school more frequently than is the actual case. There are several reasons for this. One explanation could be that children do not communicate negative experiences to their parents, and the other and probably more likely explanation is that it would be difficult for many parents to acknowledge that their child(ren) is/are not happy at school. Such a confession would possibly make it extremely difficult to send a child to school, knowing that s/he is not happy. This may skew results in all three inclusive groupings: high, middle, and low, and the degree of the effect of this on the results, which may differ amongst the inclusivity groupings, cannot be measured.

Analysis of the frequency of children's looking forward to school was cross-tabulated with the inclusion scale, with consideration of the type and severity of disability ( $\tau_{\text{Ken,b}} = 0.049$  to  $\tau_{\text{Ken,b}} = 0.219$ ,  $p < 0.001$ ). The analysis of this outcome showed that the highest percentages of students who look forward to school often or almost always were in the higher inclusivity grouping. The consistent trend of the higher inclusive group displaying higher percentages than lower inclusive group is apparent for children with mild to moderate versus severe to very severe disabilities. There was not a great deal of difference, in this situation; however it is notable that regardless of degree of disability, those in more inclusive settings were most likely to look forward to going to school. Perhaps students who are included, whether it be in the classroom, in play, by teachers, or by the school as a whole, are more likely to look forward to going to school.

### *Health Services Utilization*

Students with disabilities who are grouped in the most inclusive grouping seek the help of medical professionals less frequently than those in the middle or lowest inclusive grouping. Conversely, the largest percentage of students who require the most number of visits to health

professionals are in the least robust inclusion setting ( $\tau_{\text{Ken,c}} = 0.211$ ,  $p < 0.001$ ). These results are statistically significant and there is a moderately strong association between the variables.

It would be obvious to assume that if a student requires the attention of health professionals more often, then s/he is more likely to require greater supports, and be less likely to be included in a mainstream classroom. However, this research finding may be given further validity owing to the fact that the results are consistent with the other patterns that have been observed thus far namely the trend that parents of children with disabilities are more likely to report that their children are in good general health and that their children are performing well in school in settings where children are attending inclusive education programs when in higher inclusive settings. Simply stated, if students with disabilities are in higher inclusive settings, they exhibit better health outcomes across a range of measures.

At this point in the discussion, it is important to revisit the conceptions surrounding the perspectives on disability. Previously, the medical, social, and an integrated approach to models of disability were introduced. It would be natural to frame the analysis of this aspect of the results by adopting the medical model conceptualization. However, it is also interesting to remark upon the role of medical professionals in attitudes towards disability. Shakespeare (2005) writes that people with disabilities gain validation from diagnoses; however, diagnosis is also accompanied by “an unwelcome form of labelling” (p. 145). He adds that medical professionals may be “parasitical on disabled people” (Shakespeare, p. 145). The reason why this analysis is important is that it provides a connection between the medical well-being and social health of students with disabilities. Furthermore, a diagnosis by medical professionals may contribute to a lower likelihood of a student being placed in an inclusive setting as there might be perceived

difficulties. In Prince Edward Island, for example, students with disabilities are not categorized or labelled based on their disability.

### *Robust Inclusive Settings*

In order to answer the final of the three questions that was posed at the beginning of this discussion section (Who are most (and least) likely to be involved in robust inclusive educational arrangements?), it is necessary to examine the results that are presented in the summary table (Table 15). This table provides the results of a cross-tabulation of the general population of children with disabilities, aged 5-14 and identified based on the type and severity of their disability, with the inclusion scale. For students with disabilities, there is a strong association between severity of disability and degree of inclusivity; this is the first important point for discussion. This association is demonstrated by the fact that there is a greater percentage of students who are placed in high inclusive settings with mild or moderate disabilities than with severe or very severe disabilities ( $\tau_{\text{Ken,c}} = 0.370$ ,  $p < 0.001$ ). In fact, there is an inverse trend: students who are in more robust inclusive settings are more likely to be only mildly or moderately disabled.

Another important outcome is one that has been observed in previous cross-tabulations: students with hearing impairments in high inclusion settings appear to be benefiting the most across the health-related measures explored in this research. Children with hearing impairments are also more likely to be in high inclusion settings. A hypothesis to be tested is the possibility that it is simply easier to provide necessary supports to students who possess hearing impairments than to those with other forms of disability, especially where hearing impairment does not amount to deafness.

A third point made evident is that for every type of disability, with the exception of hearing, the largest percentage of students across the three inclusion groupings are in low inclusion settings, and the lowest percentage are in the highest inclusion category. That is when examining the inclusive setting for children with disabilities, without the analysis of a health outcome variable, the greatest of the three percentages of children are found in the least robust setting. It should be noted that these results are statistically significant, but that there is variability in their strength of association ( $\tau_{\text{Ken,b}} = 0.033$  to  $\tau_{\text{Ken,b}} = 0.315$  absolute values are reported,  $p < 0.001$ ).

Students with learning disabilities constitute the largest fraction of the students with disabilities. They comprise more than 65% of the population of students with disabilities aged 5 to 14, yet only 27.4% are in high inclusion settings. Similarly, children with speech, psychological and developmental disabilities comprise fairly large segments of the disabled child population at 42.8%, 31.4% and 29.4% respectively, but, only a minority of such children is in high inclusion settings (22.3%, 19.3% and 14.7%, respectively). These results suggest that the inclusive setting may be chosen for students who are already succeeding in each disability group and for those with mild disabilities.

With respect to degree of inclusivity, it is disappointing that all students are not able to be in the highest robust settings all of the time. However, these results only provide a glimpse into the Canadian situation; worldwide, it is estimated that a mere 1-5% of the 120 -150 million children with disabilities even attend school (UNESCO, 1994). Evans' (2004) comparison of inclusionary practices of 15 Organization for Economic Cooperation and Development/Centre (OECD) countries presents an equally worrisome picture. Even within these countries there is great variability in the percentage of students who are in inclusive classrooms; many continue to

attend segregated schools and classrooms. Therefore, it is important to recognize that although there is a vast amount of change needed to be implemented to improve the situation for students with disabilities in Canada, it is nonetheless progressive when compared with international statistics.

### *Implications*

The results discussed provide consistent evidence that students with disabilities in more robust inclusive arrangements exhibit more positive health outcomes. Specifically, these outcomes are:

- General health;
- Academic progress;
- Interaction with peers;
- Looking forward to school;
- Utilization of health services.

The results, although statistically significant, exhibited varying degrees of strength of association. Consequently, it has to be acknowledged that there are alternate interpretations to explain some of the results. Some possible interpretations have been offered. It is important to note that these results are suggesting that there may be an association between inclusivity and health (broadly conceived), but that a causal relationship cannot be assumed. The results illustrated a repeated trend that is notable, and which have many implications, some of which will now be explored.

*Teachers.* The potential benefits of inclusive education on health have been previously suggested in the literature, but not shown quantitatively. While inclusive education has potential health, social, academic and economic benefits for students with disabilities, the access of

students to such benefits depends largely on the predisposition of school administrators and teachers to facilitate the necessary educational accommodations so young people with disabilities can succeed in regular classrooms (Dugger-Wadsworth & Knight, 1999; Molto, 2003).

Therefore, school and teacher disposition are extremely important factors in the implementation of successful inclusion.

Successful inclusion or robust inclusive practice depends on teachers' agreeability in accepting students with exceptionalities into their classroom and having a willingness to modify and adapt their curricula and instruction to meet the needs of all learners. Jordan and Stanovich (2001) found "an indication that the success of students with disabilities who are included in regular classes depend in part on teaching factors" (p. 47). They showed that heterogeneous classrooms that are exemplary in including students with disabilities benefit all students, in part because teachers who subscribe to inclusion tend to have mastered multiple strategies for meeting diverse instructional needs. This result has been substantiated by others, including Wedell (2005). He states that "effective teaching for those with special needs has direct relevance to effective teaching in general" (p. 7). Another eloquent quote on the same topic comes from Davis and Florian (2004): "questions about whether there is separate special education pedagogy are unhelpful .... The more important agenda is about how to develop a pedagogy that is inclusive of all learners" (p. 34).

Teachers and schools may also be instrumental in helping students with disabilities improve their social relationships, and develop friendships. Cuckle and Wilson (2002) assert that teachers may provide such opportunities through "direct social skills teaching, exploration of emotions and relationships with groups, opportunities in school, outside of school hours and

during school holiday for a range of supervised activities and cultural events similar to those enjoyed by their mainstream peers” (p. 71).

From this brief discussion on the role of teachers in the classroom, their role in encouraging inclusive practices and improving academic outcomes and social relationships of students with disabilities is evident. Therefore, it may be possible to assert that teachers have an extremely influential role in fostering the health of children with disabilities as viewed through the multiple lenses presented in this report. Consequently, lack of school support for inclusive practices, and/or the unwillingness of teachers may represent barriers to the inclusion and health of students with disabilities.

*Parents.* Forlin and Hopewell (2006) assert that there is an international movement towards increasing parental involvement in the education of children. This is especially important with respect to children with disabilities. Parents have a responsibility to act as advocates for their children. When organizations, policies, and society fail to meet the needs of students with special needs, parents can assist in attaining what is socially just and appropriate for their children. Yssel, Engelbrecht, Oswald, Eloff, and Swart (2007) declare that parents’ roles in the inclusion movement are pivotal, and that strong school-parent partnerships are essential in ensuring success of placements in inclusive settings. It is not surprising that these researchers’ findings would be true; however, the key element is that parents need to be provided the opportunity to voice their opinions. Parents are their children’s first and most important teachers; arguably, they have the largest impact on their children’s health. Advocacy for an inclusive educational placement may be one of the ways by which parents can exhibit their concern for the health and well-being of their children.

### *Knowledge Translation*

One of the research objectives of the national inclusion team was to strategize effective knowledge exchange activities. To meet this objective the team has participated in various activities including: preparation of research summaries for distribution to schools; publications in teacher targeted journals; as well as national and international presentations to a variety of audiences. These audiences include policy makers (e.g., presentation at the Ontario Ministry of Education research forum), academics (e.g., presentation at the Canadian Society for Studies in Education annual conference), and teachers. A comprehensive list of these activities is presented in Appendix 1.

Furthermore, during their second face-to-face meeting, the national inclusion team identified 17 key knowledge exchange messages based on the results of the data analyses. These messages are highlighted in the presentations and other knowledge activities in which the team participates. This list is also included in Appendix 2.

## **IX. CONCLUSIONS**

Health is a predominant issue for all children and their parents. The social determinants of health identify the multiple dimensions that may have an effect on the health of an individual. Through the consideration of several of these determinants and the educational placement of students with disabilities, the relationship between inclusive education and health of students with disabilities has been explored in this quantitative analysis. Although it cannot be stated definitively that inclusive education has a direct impact on health, this research points to the likelihood that this association does exist.

These results may be of interest to many different individuals and groups who have an interest in the education and well-being of children with disabilities. This research has the potential to impact students, teachers, administrators, policy makers, advocacy groups, and parents. Health is a predominant issue for all children, and this research highlights the association between the health of children with disabilities and inclusive educational practices. This research also has the potential to positively influence public perception of the value of inclusive education.

In order to investigate this association further, there are several recommendations presented here for further work:

1. More national research should be conducted using quantitative methodology;
2. International research may be carried out to explore the themes discussed in this report;
3. Further research may be performed to address the gap that exists in exploring the relationship between inclusive education and the health of a child with a disability; and
4. Qualitative research could be conducted to supplement this research.

#### *National Research*

PALS data from Statistics Canada's children's component of the 2001 survey was used in this quantitative exploration; however, in the fall of 2008 the results from the 2006 PALS survey were released. It would be both interesting and beneficial to conduct the same analyses performed in this research study in order to compare results. If similar results are obtained, it may be possible to make more conclusive determinations about the relationship between inclusive education and health.

Although PALS is superior to other databases in providing a wealth of information regarding the educational settings of children and their health, it may be beneficial to conduct

research explorations using the National Longitudinal Survey of Children and Youth (NLSCY) or Youth in Transition Survey (YITS) to further explore associations between health and inclusive education that may exist.

There is a definite gap in quantitative data and analysis in educational literature that may be beneficial to address. Research at the provincial and territorial levels may provide data that will help close the current knowledge gap that exists in this arena. As noted in an earlier section of this report, Statistics Canada was not able to release all the data that exist at these levels due to their strict policies. Therefore, data collected independently of Statistics Canada at these levels could greatly enhance the knowledge that exists.

#### *International Research*

The WHO's International Classification of Functioning, Disability and Health is a tool for measuring health and disability at individual and population levels (WHO, 2008). The ICF was endorsed by 191 member states in 2001. Specifically, a Children and Youth version of the ICF exists. An exploration of the results of this instrument would be noteworthy, and may provide further insight into the data that are presented in this study within an international framework. Comparisons between Canadian results and those from other countries may reveal important results.

#### *Research in Health and Inclusive Education*

The investigation of the relationship between health and inclusive education revealed definite gaps. Many aspects of inclusive education have been explored including, amongst other themes, the academic achievement of children with disabilities, and their non-disabled peers, and social relationships. Furthermore, the health of students with disabilities has been explored applying the models of disability that have been discussed in the literature review. However,

there is scant literature that investigates the relationship between these two domains. This research reveals that there may be an association between health and inclusive education. This relationship deserves further exploration.

### *Qualitative Research*

One of the limitations of this research is that it is solely quantitative. A disadvantage of quantitative research is that it is possible to forget that behind the numbers and percentages are real people for whom these issues are prevalent. Qualitative research has the ability to bring numbers to life. It has the potential to bring a voice to the statistics so that the research has the ability to bring greater impact to a greater number of people. Consequently, it would be advantageous to build upon the results of this study to design a mixed method research project to address some of these issues.

### *Summary*

Whilst the merits of further lines of inquiry as well as those involving qualitative research have been presented, the fact remains that quantitative research remains a powerful research methodology in driving government policy. Kamil (2004) recognizes that quantitative research is making a resurgence in social science research after “predictions of its demise” (p.101). Kamil states that “policymakers have become focused on experimental quantitative research to guide their formulation and implementation of instruction” (p. 101). His rationale is that policymakers are required to be accountable to the public, and have limited resources which are best utilized through quantitative research methods.

The results and discussions presented in here have created a framework upon which the relationship between inclusive education and health has been examined. Through this research definitions and conceptualizations of disability have been critically reviewed, and the results

have been framed within an understanding of health that encompasses a definition that is not limited to the physical well-being of an individual.

The analysis of data revealed that parents were more likely to report that their children with disabilities are in better general health, progress very well/well at school, interact very well/well with their peers, and more frequently look forward to going to school in higher inclusive educational settings than in mid-range or lower inclusion settings. This positive association was consistent, regardless of severity and type of disability. These favourable results have the potential to impact Canadian education policy; however, the results also prompt considerations for future work.

Inclusive education is not a panacea, but it may provide an option for improving the health of students with disabilities. Placing students with disabilities in inclusive educational settings, where their diversity is accepted and valued, means making a positive difference in the life of *all* students, and potentially having a positive impact on their health.

## X. REFERENCES

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## APPENDIX 1

### *Knowledge Exchange Activities*

#### *Publications*

Timmons, V. and Wagner, M. (2009). *Parent perceptions: Examining the relationship between inclusive education and health*. *Journal of Intellectual Disability Research* (under review).

Timmons, V. and Wagner, M. *Connection Between Inclusion and Health*. *Health and Learning Magazine*, June 2008, pp. 3-8.

Timmons, V. and Wagner, M. *The Connection Between Inclusion and Health*.  
Professional Development Perspectives, Summer 2008, pp. 20-24.

Wagner, M. (2008). *Inclusion and health: A study of the 2001 Participation and Activity Limitation Survey (PALS)*. Unpublished master's thesis. University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada.

Wagner, M. & Timmons, V. (2008). Inclusive education: Analysis of the statistics from Canada participation and activity limitation survey. *Journal of Intellectual Disability Research*, 52(8).

Note: Four brochures communicating key findings of the study have been developed for distribution at public and academic presentations, covering the areas of general health, looking forward to school, progress at school and interaction with other children

### *Presentations*

- Timmons, V. (2010, February). From Rhetoric to Reality: Reflections on Inclusive Education. Keynote Address at Community Living Ontario conference on inclusive education. Ryerson University, Toronto , ON. (this keynote address included a brief presentation of key findings from this study)
- Timmons, V. (2009, September). Health Research at the University of Regina. Address to Regina-Qu'Appelle Health Authority Board Meeting, Regina, SK. (this overview of health research at the University of Regina included a presentation of the key findings from this study)
- Wagner, M. (2009, May). Inclusive education and health. Paper presented at the Ministry of Education/Faculties of Education Forum, Toronto, ON.
- Wagner, M. (2009, March). Examining the relationship between inclusive education and health. Paper presented at the 9<sup>th</sup> Annual Dean's Graduate Research Conference, OISE, Toronto, ON.
- Wagner, M. (2009, February). Disability and inclusion: Research on well-being and outcomes. Invited presentation at the Inclusive Education Canada Forum, OISE, Toronto, ON.
- Timmons, V. (2008, November). Inclusion and health: A study of the Participation and Activity Limitation Survey (PALS). University of Saskatchewan Faculty of Medicine Council. Regina, SK.
- Wagner, M., & Timmons, V. (2008, August). Inclusion and Health: A study of the Participation and Activity Limitation Survey (PALS). Paper presented at the International Association for the Scientific Study of Intellectual Disabilities. Cape Town, South Africa.

Wagner, M. (2008, May). Inclusion and health: A study of the Participation and Activity Limitation Survey (PALS). Paper presented at the 77th CSSE Congress, Vancouver, BC.

Wagner, M. (2008, May). A study of the Participation and Activity Limitation Survey (PALS). Paper presented at the Education Research Forum, UPEI, Charlottetown, PE.

Wagner, M. (2007, November). Inclusive Education: A statistical analysis of PALS. Poster presentation at the Atlantic Educator's Conference, Charlottetown, PE.

## APPENDIX 2

### *Knowledge Translation Messages:*

1. Inclusive practices differ across Canada; the three Maritime provinces lead the country.
2. No province relies on low inclusive setting.
3. Parents rate their child's health higher when s/he is in more inclusive settings. This finding hold true regardless of severity and type of disability.
4. The PALS dataset encompasses information for children across all of the provinces in Canada (excludes the territories).
5. The results are based on a robust sample size (bigger than any other disability data set); there were approximately 4000 participants which are representative of a weighted sample of almost 145 000 children with disabilities in Canada.
6. Parents rate their child's progress higher in school when s/he is in a more inclusive setting.
7. Regardless of type or severity of disability parents rate their children's progress at school higher when their children are in higher inclusive settings.
8. The majority of parents who rate their children's progress at school as poor/very poor have their children in low inclusive setting regardless of disability.
9. Regardless of disability most children in Canada are in good/very good health.
10. Overall, 87 % of parents say that their children are having only occasional or no problems or no problems getting along with other children. Moreover, in high inclusion settings, the percentage increases to 94%. This trend remains true regardless of degree and type of disability.
11. Overall 69.3% of children with disabilities often/almost always look forward to going to school as reported by their parents. Moreover, in high inclusion settings the figure is 77.8%
12. Regardless of severity and/or type of disability parents report that, overall, their children look forward to going to school and this number increases dramatically in more inclusive settings.
13. Nearly 80% of children with mild-moderate disabilities are in middle-high inclusive settings; in contrast, 50.1% of children with severe-very severe disabilities are in middle-high inclusive settings.

14. Regardless of the severity or type of disability, children in high inclusion settings are reported by their parents to be more likely than those in middle or low inclusion settings to be: doing excellent/very well at school, having none or hardly any problems interacting with other children, often/almost always looking forward to going to school, and be in excellent/very good health.
15. Unfortunately less than half (36.4%) of children with disabilities take part in coached sporting activities daily or at least weekly. In high inclusion settings this participation increases.
16. Overall, only 36.1% of parents of children with disabilities report that their children participate in clubs and other programs at least once a month or more frequently.
17. Overall message: Parents more likely to report that their children with disabilities are in good general health and that their children are performing well in school in settings where children are attending inclusive education programs.