

TEACHERS' ATTITUDES TOWARDS INCLUSION IN PHYSICAL EDUCATION:  
AN EYE-TRACKING STUDY

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## Abstract

Teachers have expressed negative attitudes towards inclusive physical education (PE), leading to the irregular inclusion of students with disabilities (SWD). Guided by the Elaboration Likelihood Model, the objectives of this study were to: a) examine the effect of information from *Ophea's Steps to Inclusion* (SI) document on teachers' attitudes regarding inclusive PE, and b) examine the association between attention, cognitive processing, relevance, and attitude change. Teachers (N=50) were exposed to information from the SI document. Attention data were collected via eye tracking technology. Attitudes significantly improved from baseline to post-information ( $t(49) = -3.16, p < .05$ ), and from baseline to the two-week follow up ( $t(41) = -2.04, p < .05$ ). Attention ( $B=.16, p < .01$ ) was a significant predictor of attitude change,  $R^2=.63, F(4,42)=16.70, p < .01$ . Teachers' attitudes improved after attending to information from the SI teaching resource, which suggests that the resource may be valuable for enhancing teachers' attitudes toward inclusive PE.

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## Literature Review

### Inclusive Physical Education

In 2006, the Participation and Activity Limitation Survey (PALS) reported that approximately 175 000 Canadian children ages 5 to 14 years were living with a disability. Approximately 71 000 of these children live in the province of Ontario (Statistics Canada, 2008a). Disability is defined as, “an activity limitation or participation restriction associated with a physical or mental condition or health problem” (Statistics Canada, 2007a). The most common types of disabilities amongst school-aged children are learning disabilities (69.3%) and chronic health conditions (66.6%). The 2005 PALS illustrated that the prevalence of disability among Canadian children is increasing given that approximately 20 000 more children were reported to have a disability compared to the previous implementation of the survey in 2001 (Statistics Canada, 2008b). The prevalence of speech, psychological and developmental disabilities amongst these children has increased as well (Statistics Canada, 2007b). The growing occurrence of children with disabilities increases the probability that the presence of students with disabilities (SWD) will increasingly become more common in general and physical education (PE) classrooms (Kusano & Chosokabe, 2001). For example, close to 60% of SWD were enrolled in general school classrooms in the province of Ontario in 2001 (Health Analysis and Measurement Group, Statistics Canada, 2008). In the past, SWD participated in PE programs separate from their typically developing peers (Jansma & Decker, 1990), or were completely removed from the PE class (Healy, Msetfi, & Gallagher, 2013). However, the Ontario provincial government has outlined that, “to achieve an equitable and inclusive school climate, school boards and schools will strive

to ensure that all members of the school community feel safe, comfortable, and accepted” (Ontario Ministry of Education, 2009, pp. 10). As such, the goal of an inclusive school climate is to promote inclusion and diversity in all subjects, including PE, and to reduce barriers and social constraints that limit students’ abilities to learn, grow, and contribute to society (Ontario Ministry of Education, 2009).

Inclusive education is the process of providing quality education to all students regardless of their needs, abilities, characteristics, and learning expectations (UNESCO, 2008). More specifically, inclusive PE is defined as the full acceptance and support of SWD and their educational needs within the general PE setting (Avramidis & Norwich, 2002; Block, 2007). Inclusive PE embraces the teaching philosophy that all students should partake in education under one classroom instead of separate classrooms designated to meet special needs (Fournidou, Kudlacek, & Evagellinou, 2011). Inclusion in PE involves engaging students of varying backgrounds and abilities through changes in teaching strategies and curriculum that ensure all students achieve their goals in a safe, positive, and welcoming environment (Kudlacek, 2001).

### **Benefits of physical activity and inclusive PE.**

There is an abundance of literature highlighting the benefits of physical activity participation for children and SWD. Increased participation in physical activity has been associated with enhanced quality of life, improved completion of activities of daily living, decreased probability of acquiring secondary health complications, optimized physical functioning, and enhanced well-being in children with disabilities (Murphy & Carbone, 2008; Bloemen et al., 2014). Moreover, children with disabilities who participated in aerobic physical activity in schools experienced significant increases in

physical (e.g. improved mobility, fitness and stamina) and psychosocial (e.g. happiness, social experience) outcomes (Cleary, Taylor, Dodd, & Shields, 2017). Schools are considered a favourable environment for increasing physical activity levels among children and youth (Dudley, Okely, & Pearson, 2011); PE is an important source of physical activity within the school setting. Participation in inclusive PE classrooms provides many benefits to SWD. Through inclusive PE opportunities, SWD can experience psychosocial (e.g. improved physical self-concept, increased sense of socialization in school amongst other students; Briere III & Siegle, 2008) and physical health improvements (Goodwin & Watkinson, 2002) through opportunities for increased physical activity. Self-concept refers to how students perceive themselves (positive or negative) in the context of their PE classroom (Briere III & Siegle, 2008). SWD who participated in inclusive PE classes experienced positive physical improvements, leading to improved perceptions of their physical selves (Briere III & Siegle, 2008). Inclusive classrooms provide SWD the same opportunities to participate beside their typically developing peers (Mrug & Wallander, 2002), which may promote positive social interactions with typically developing students and an overall sense of belonging (Goodwin & Watkinson, 2000). As a result of such successful social interactions, the inclusive classroom may ultimately improve the self-esteem of SWD (Briere III & Siegle, 2008). Active participation in inclusive PE may also lead to experiences of camaraderie and friendship in SWD (Healy, Msetfi, & Gallagher, 2013). Inclusive PE classrooms also allow SWD the opportunity to engage in skilful participation in PE activities (Goodwin & Watkinson, 2000). Skilful performance and motor skill acquisition have been considered essential goals for SWD in the PE classroom (Davis, 1989).

Students without disabilities may also benefit from participating in inclusive classrooms. Inclusive classes provide students without disabilities opportunities to engage with SWD (Romer & Haring, 1994), to develop empathy and acceptance of SWD (Lieber et al., 1988), to become more aware of the needs of SWD (Peck, Carlson, & Helmstetter, 1992), and to learn more about their peers with disabilities (Horvat, 1990). Specifically within inclusive PE classes, students without disabilities may develop positive attitudes towards SWD and special education needs (Campos, Ferreira, & Block, 2014; McKay, Block, & Park, 2015; Mrug & Wallander, 2002).

Compared to their typically developing peers, SWD have not been afforded similar opportunities to participate in PE and accrue the respective benefits (Briere III & Siegle, 2008). Therefore, it is necessary to identify strategies to facilitate inclusion of SWD in PE classes. PE teachers and teaching practices are a potential target to promote the inclusion of SWD in PE.

### **The role of teachers in inclusive PE.**

Teachers have been identified as key personnel who are instrumental in successfully executing educational and school policies (Darling-Hammond, 2000). With regard to inclusive PE, teachers play a vital role in facilitating physical activity experiences for SWD (Sallis et al., 2012). Effective teachers model skills and strategies and provide numerous examples for students (Ammah & Hodge, 2006), use various forms of guided and independent practice (Siedentop & Tannheill, 2000), and reflect upon their experiences to inform their future practice (Tsangaridou & O'Sullivan, 1997). Most importantly, effective teachers create inclusive classrooms that invite all students to participate in learning that is meaningful for their personal success (Combs, Elliott, &

Whipple, 2010). As such, teachers must be flexible and prepared to tailor their teaching strategies to the needs and abilities of all students (Combs, Elliott, & Whipple, 2010).

### **Challenges to creating an inclusive PE environment.**

Teachers have found it increasingly difficult to implement inclusive teaching strategies in the PE classroom (Combs, Elliott, & Whipple, 2010; Lepore, Gayle & Steven, 1998; Lienert et al., 2001; Roh, 2002; Sherrill, 1998). “The inclusion of students with disabilities into PE classes has provided a tremendous challenge to PE teachers who have planned to meet the PE needs of children with disabilities without neglecting the PE needs of the typical children” (Combs, Elliott, & Whipple, 2010, p. 114). Previous research suggests that difficulties in implementing inclusive teaching strategies in the PE classroom extend from insufficient teacher training (Lepore, Gayle, & Steven, 1998; Sherrill, 1998), lack of knowledge, lack of government support (Roh, 2002), management issues, increased class sizes, lack of equipment, and reduced opportunity to attend in-service training (Lienert et al., 2001). In some cases, inclusive PE training methods may be ineffective for preparing teachers to teach SWD (Coates, 2012). Moreover, many PE teachers have failed to incorporate evidence-based practice into their teaching strategies (Hodge et al., 2009b; Martin & Kudlacek, 2010). Accordingly, there is a large gap between teacher training and the demands of the PE classroom (Ha, Lee, Chan, & Sum, 2010). Therefore, high quality teacher training resources and tools are necessary to support teachers in creating inclusive PE classrooms that promote success and enjoyment for all students.

## **Teachers' Attitudes Toward Inclusive PE**

Attitudes are defined as global assessments of people, objects, and issues (Petty & Cacioppo, 1986). Teachers' attitudes are the greatest contributor to their intentions to teach SWD in PE (Jeong & Block, 2011). Teachers who hold positive attitudes towards teaching SWD are more likely to believe that teaching SWD is important, and thus will have greater intentions to teach SWD (Jeong & Block, 2011). For example, teachers who held positive attitudes towards teaching inclusive PE created lesson plans that incorporated various teaching strategies and addressed needs of all students in the class (Combs, Elliott, & Whipple, 2010). In addition, attitudes can also be characterized by the emotions that individuals relate to a set of actions (Triandis, 1971), expressed through a teacher's degree of favour or disfavour of teaching inclusive PE (Doulkeridou et al., 2011). Teachers who believe that teaching inclusive PE is favourable for themselves and their students may be more likely to have strong intentions of applying inclusive teaching practices in the PE classroom. Therefore, in order to enhance teachers' intentions towards teaching inclusive PE and subsequently change their teaching behaviours, it is necessary to target teachers' attitudes.

### **Favourable attitudes towards inclusion.**

Teachers have generally shown positive attitudes about inclusion as a *concept and educational philosophy* (Hodge, Ammah, Casebolt, LaMaster, & O'Sullivan, 2004). Furthermore, teachers have attributed favourable attitudes towards teaching SWD and inclusion in PE to academic preparation, perceived teaching competence (Block & Rizzo, 1995; Obrusnikova, 2008; Papadopoulou, Kokaridas, Papanikolaou, & Patsiaouras, 2004), increased education on inclusive teaching practices (Hodge et al., 2009a), and

previous experiences teaching SWD (Meegan & MacPhail, 2006; Obrusnikova, 2008). In addition, previous studies demonstrate the usefulness and effectiveness of completing Adapted Physical Education (APE) classes (Hodge, 1998; Hardin, 2005) and practicum teaching experiences on changing attitudes of pre-service teachers towards teaching inclusive PE (Hardin, 2005). Factors specific to SWD (e.g. disability label, age or class level) have also been known to affect teachers' attitudes towards teaching inclusive PE (see Tant & Watelain, 2016). For example, teachers who were given a description of a student that included a disability label (i.e. student with cerebral palsy) were less enthusiastic about teaching SWD compared to those who did not receive a disability label of the SWD (Tripp & Rizzo, 2006). In addition, teachers held more favourable attitudes towards SWD in lower-level grades compared to those in higher-level grades (Rizzo, 1984). Although some teachers have positive attitudes towards inclusive PE, other teachers may not necessarily share similar attitudes towards inclusive PE.

#### **Unfavourable attitudes towards inclusion.**

Not all teachers portray positive attitudes towards teaching inclusive PE. Some teachers reported that uncertainty about their individual teaching efficacy in teaching SWD contributed to their unfavourable attitudes about inclusive PE (Ammah & Hodge, 2006). Many teachers are hesitant in fully supporting inclusive PE implementation because of a lack of self-efficacy and perceived behavioural control, a lack of teaching supports, and a lack of preparation to teach inclusive PE (Hodge, Ammah, Casebolt, Lamaster, & O'Sullivan, 2004). Teachers' self-efficacy in teaching students of varying abilities is related to knowledge and training (Casebolt & Hodge, 2010; Hersman & Hodge, 2010). Self-efficacy reflects one's belief in their ability to complete a task and is

affected by mastery experiences, vicarious experiences, social persuasion, and physiological arousal (Bandura, 1994). Perceived behavioural control is an individual's perceived ability to control and overcome barriers to a given behaviour (Ajzen, 1991). A lack of teaching self-efficacy and perceived behavioural control in teachers may ultimately foster negative attitudes towards teaching inclusive PE. Many pre-service teachers have experienced negative attitudes towards SWD (Mangope, Mannathoko, & Kuvini, 2013), while other teachers have shown negative social acceptance of SWD when teaching inclusive PE (Charles & Gloria, 2015). In addition, many teachers held more favourable attitudes toward teaching students with mild disabilities compared to those with severe disabilities because of perceived time constraints, fear of SWD not experiencing success in the classroom, meeting the needs of SWD, and students gaining acceptance (Casebolt & Hodge, 2010). A majority of teachers (from Africa, Japan, the United States, and Puerto Rico) have disagreed with fully inclusive PE classes due to concerns about their perceived lack of knowledge and readiness to individualize their teaching practices, safety of SWD, and peer acceptance (Hodge et al., 2009b). It is evident that some teachers working with SWD have experienced challenges and many do not have favourable attitudes toward inclusive PE (Ammah & Hodge, 2006; Casebolt & Hodge, 2010; Hodge et al., 2009b). This is an issue given that teachers with negative attitudes towards teaching inclusive PE have been known to less frequently employ teaching strategies that facilitate the inclusion of SWD (Combs, Elliott, & Whipple, 2010). Given the many benefits of inclusive PE and the Ontario Ministry of Education's mandate that schools be inclusive (Ontario Ministry of Education, 2009), it is crucial that

further research is conducted to understand strategies to improve teachers' attitudes towards inclusive PE.

### **Improving Teachers' Attitudes Towards Inclusive PE**

The Ontario Physical and Health Education Association (Ophea) is a not-for-profit organization that advocates for policies and strategies that foster healthy, active living and learning in children and youth in Ontario (Ophea, 2016a). The organization is one of the leading subject associations for health and PE in Ontario, and has established and maintained strong connections with the education and public health sectors (Ophea, 2016a). Ophea has created a resource in an attempt to support teachers in creating inclusive PE environments. The *Steps to Inclusion* (SI) document, available for print or Internet download, was "designed to support inclusive physical activity for students living with physical and intellectual disabilities" (Ophea, 2016b). The SI outlines strategies and crucial steps for teachers to achieve inclusion for SWD, as well as provides information and answers questions for teachers who are unfamiliar with the process of inclusion (Holt, 2010). Teaching resources that provide information about inclusion and suggestions for inclusive teaching strategies may promote positive attitudes towards teaching inclusive PE.

Despite Ophea's intention to create a valuable resource that is projected to help teachers create an inclusive PE classroom, it is unknown whether or not the information in the SI alters teachers' attitudes towards teaching inclusive PE. Attitudes are one of the most pivotal antecedents of educators teaching inclusive PE (Bartonova, Kudlacek, & Bressan, 2007), and influences all aspects of integrating SWD into the PE class (Sherrill, 1993). Furthermore, the attitude an individual holds towards objects, oneself, other

people, a disability, or a racial group (McMurry, 2003) is an underlying factor that guides their intentions to comply with a specific behaviour (Ajzen, 2001). According to the Theory of Planned Behaviour (Ajzen, 1991), teachers who hold positive attitudes towards SWD should be more likely to have strong intentions of teaching inclusive PE.

Additionally, students' educational outcomes and experiences are impacted by teachers' attitudes and expectations (Good & Brophy, 1997). Indeed, if attitude is the key to changing behaviours toward people of various abilities and backgrounds (Sherrill, 2004), then it is imperative that resources such as the SI target teachers' attitudes in order to ultimately facilitate change in their inclusive teaching behaviours. Researchers can play a role in examining and developing methods for cultivating positive attitudes (McMuray, 2003) and changing teachers' attitudes towards inclusive PE. Previous training resources have proven to be effective in promoting teachers' knowledge, confidence and self-efficacy, and attitudes towards teaching SWD (Campbell, Gilmore, & Cuskelly, 2003; Tristani, Gainforth, Tomasone, & Bassett-Gunter, under review). The SI as a teaching resource has not been evaluated in terms of its use in changing teacher attitudes. A thorough evaluation of the SI document and its effect on teachers' attitudes towards inclusive PE is important given Ophea's primary role in disseminating PE resources to teachers in the province. This study evaluated whether information from the SI changed teachers' attitudes towards teaching inclusive PE.

Indeed, one strategy that may hold promise as a tool to change teachers' attitudes regarding inclusive PE is the use of informational resources and targeted messaging. Informational resources, such as the SI, can include messages that can be employed to induce attitude and behaviour change (Atkin & Wallack, 1990; Cavill & Bauman, 2004).

Messaging is the physical process of getting information to a specific population via various channels (e.g. print, internet, television; Brawley & Latimer, 2007). Messages are the totality of information that is to be conveyed to the public or specified population (Brawley & Latimer, 2007). The SI serves as an informational strategy to share targeted information with teachers regarding inclusive PE. There is no known research to evaluate the SI as a messaging and informational resource targeting teachers' attitudes.

Messaging strategies have been used to influence individuals' understanding and beliefs regarding behaviour within various domains (Cavill & Bauman, 2004). Indeed, messaging strategies can serve to educate and persuade individuals to evaluate their attitudes towards various behaviours (Atkin & Wallack, 1990). Successful informational and messaging strategies must include content that targets and alters determinants of a behaviour such as one's attitudes (Randolph & Viswanath, 2004; Fishbein, Hall-Jamieson, Zimmer, von Haefen, & Nabi, 2002). Accordingly, the content of the SI must be able to effectively target teachers' attitudes to optimally promote inclusive PE teaching practices. There is no known research to examine the impact of SI messaging on teachers' attitudes regarding inclusive PE.

Targeted information is an efficient tool compared to generic materials that do not consider the distinct characteristics of a specific group (Strecher, Rimer, & Monaco, 1989). Targeted information strategies are those that are specific to a particular subgroup of the population that share common characteristics (Kreuter, Strecher, & Glassman, 1999; Kreuter & Wray, 2003). Information in targeted messages is presented in a way that is based upon and consistent with the group's needs and characteristics (Brawley & Latimer, 2007; Kreuter, Strecher, & Glassman, 1999), thus redefining or structuring the

issue as salient and relevant to the recipient (Cacioppo & Petty, 1981). Consequently, targeted information that increases personal relevance has been found to increase overall attention to information (Kreuter & Wray, 2003; Cacioppo & Petty, 1981; Noar, 2006), an individual's motivation to cognitively process information (Petty & Cacioppo, 1986), and the probability that the information will influence attitude change in the recipient (Cook & Flay, 1978). Information that targets teachers and addresses the challenges faced in implementing inclusive PE may be perceived as personally relevant and therefore promote greater attention to, and cognitive processing of the information, and subsequent attitude change towards teaching inclusive PE.

Messaging and information strategies have been used in various research interventions, particularly in the health behaviour domain. Messaging strategies are most likely to change proximal variables that induce behaviour change (i.e. attitudes, beliefs, intentions; McGuire, 1984). There is ample research to illustrate the use of messages in changing attitudes towards health behaviours (Brawley & Latimer, 2007; Chantzisarantis & Hagger, 2005; Morris, Lawton, McEachern, Hurling & Conner, 2016). For example, persuasive messages targeting behavioural beliefs were effective in promoting positive attitudes and intentions towards participating in physical activity (Chantzisarantis & Hagger, 2005). Therefore, if recent research demonstrates that messages and information successfully target and change attitudes towards health behaviours (Brawley & Latimer, 2007; Chantzisarantis & Hagger, 2005; Morris et al., 2016), then information from the SI that targets teachers may promote attitude change towards teaching inclusive PE.

There is limited research examining messaging and information strategies within the context of teaching behaviours. Teaching practicum and workshops that use

informational strategies have been found to increase attitudes towards teaching SWD in pre-service (Lieberman & Wilson, 2005) and primary school teachers (Sarraf, Karahmadi, Marasy, & Azhar, 2011). Research has examined messaging as a tool to change teachers' behaviours in another domain. Specifically, teachers from elementary and secondary grade levels were exposed to tailored messages and information promoting strategies to enforce "covering-the-cough" among students (David, Henry, Srivastava, Orcena, & Thrust, 2012). Information that was tailored for elementary school teachers was effective in increasing teachers' self-efficacy towards enforcing cover-the-cough in their classrooms (David et al., 2012). These studies suggest that informational resources may be useful in promoting change of psychological antecedents of behaviour (e.g. attitudes) in teachers. We can also draw upon research using messaging and information strategies among healthcare professionals. Like teachers, healthcare professionals have failed to consistently support physical activity among individuals with disabilities (Glasgow, Eakin, Fisher, Bacak, & Brownson, 2001) due to a lack of knowledge, confidence, and resources to facilitate physical activity prescription (Anderson, Blair, Cheskin, & Bartlett, 1997; Douglas, Torrance, van Teijlingen, Meloni, & Kerr, 2006). Seminars using targeted informational strategies have been effective for increasing healthcare professionals' attitudes, subjective norms, and perceived behavioural control regarding supporting physical activity among patients with disabilities (Tomasone, Martin Ginis, Estabrooks, & Domenicucci, 2014). The use of information to enhance healthcare professionals' and teachers' attitudes suggests that there is potential value in using informational strategies to change the attitudes of PE teachers regarding inclusive PE. The SI document is an ideal resource to examine because the information presented

was intended to promote change in teachers' behaviours in the PE classroom. There is a paucity of research examining the effects of the SI information on teachers' attitudes towards teaching inclusive PE.

### **The Elaboration Likelihood Model; A Framework for Understanding Message Effectiveness**

The Elaboration Likelihood Model (ELM) provides a framework for understanding cognitive processing and attitude formation following exposure to targeted information or messages (Petty & Cacioppo, 1981). According to the ELM (see figure 1; Noar, Harrington, & Aldrich, 2009; Petty & Cacioppo, 1981) attitude change resulting from message exposure is associated with message strength and relies on the likelihood that the information is elaborated upon (or cognitively processed). The ELM is also described as a dual processing model, which explains attitude change via two different routes of cognitive message processing (Petty & Cacioppo, 1981; Turner, Skubisz, Pandva, Silverman, & Austin, 2014).

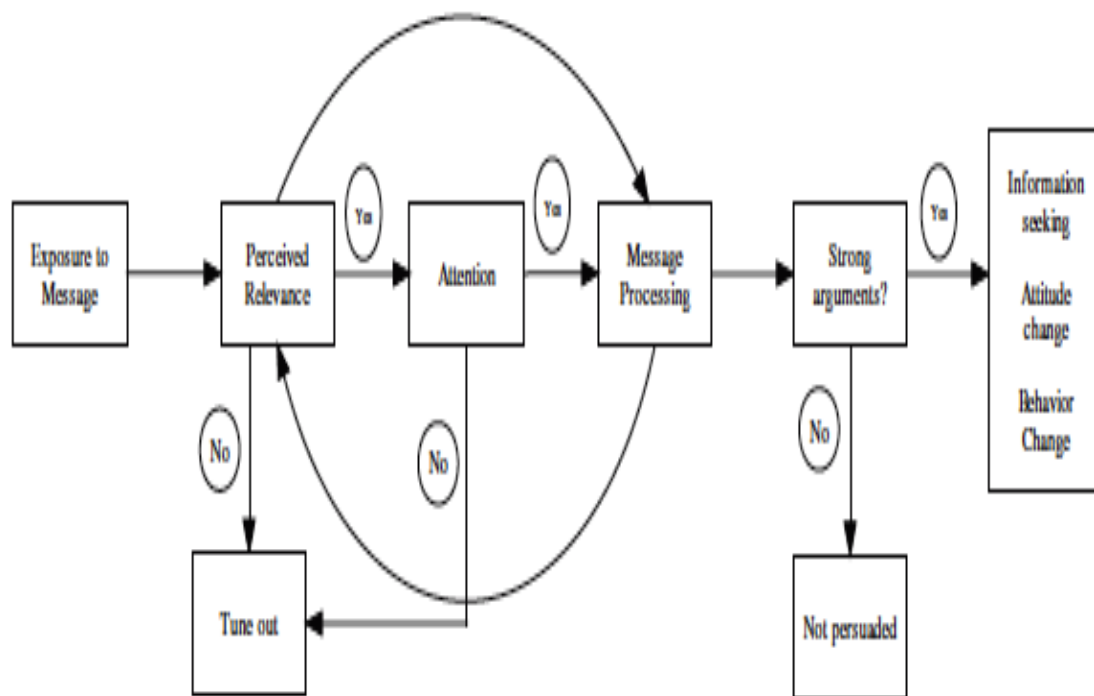


Figure 1. The Elaboration Likelihood Model. Adapted from “The Role of Message Tailoring in the Development of Persuasive Health Communication Messages,” by S. M. Noar, N. G. Harrington and R. S. Aldrich, 2009, *Annals of the International Communication Association*, 33(1), pp. 122, 2009.

According to the ELM (Petty & Cacioppo, 1981), once an individual is exposed to and attends to information or a persuasive communication, they must be motivated and have the ability to process information via the *central route*; information processed via the central route will lead individuals to change or develop strong, predictable attitudes. The central route of cognitive processing, also known as systematic processing, occurs when an individual employs cognitive resources and effort in order to carefully scrutinize the arguments of a message communication. Attitudes developed as a result of central route processing are well constructed, integrated into an individual's schema (Petty & Cacioppo, 1986), stable, persistent, predictive of behaviour (Petty, Heesacker, & Hughes, 1997), and accessible in various contexts (Petty & Cacioppo, 1986; Petty, Heesacker, & Hughes, 1997). Therefore, drawing on the ELM as a framework, the SI messages and information must attract teachers' attention, and promote central route processing to stimulate the formulation of stable and resistant attitudes towards teaching inclusive PE that are constant and predictable in various classroom contexts.

Alternatively, if the individual is neither motivated nor able to cognitively process the persuasive communication, they may be more likely to not pay attention to the information, or process the information through the *peripheral route*; information processing via the peripheral route will lead individuals to little attitude change or the development of temporary and unpredictable attitudes. In the peripheral route, instead of devoting cognitive effort to evaluate the arguments of a message, an individual simply considers positive or negative cues in the message (Petty, Cacioppo, & Goldman, 1981) that alter one's affect related to the argument, or results in the development of simple inferences about the message (Petty, Heesacker, & Hughes, 1997). Attitudes developed

via the peripheral route (e.g. heuristics, environmental cues) are less stable (Petty, Kasmer, Haugtvedt, & Cacioppo, 1987), less predictive of behaviour, and temporary (Cialdini, Petty, & Cacioppo, 1981). For instance, following exposure to the SI, a PE teacher may formulate positive attitudes towards teaching inclusive PE simply because they recognize Ophea as a reputable organization and not because of the quality of information Ophea has provided in the SI. Although their attitudes will be temporarily positive, they are likely to be short-term and unstable across varying teaching contexts since they have been processed through the peripheral route.

Indeed, the ELM posits that it is important to evoke systematic, cognitive processing because it will determine the teacher's attitudes and subsequent behaviour regarding inclusive PE (Petty, Haugtvedt, & Smith, 1995). If messages and information in the SI will be used to change teachers' attitudes, then information must be centrally processed to promote enduring attitude change. This suggests that PE teachers must pay attention to the message, and be motivated and able to cognitively process information from the SI such that information processing via the central route is possible and can support the formation of strong, stable, and predictive attitudes towards teaching inclusive PE over time and within various PE settings. Therefore, informational strategies that are effective in evoking meaningful attitude change must garner teachers' attention and employ central route processing.

According to the ELM, cognitive processing of information is affected by numerous variables including issue involvement (Petty & Cacioppo, 1979), situational factors (e.g. time pressure, personal accountability), personal factors (e.g. sex differences; Bitner & Obermiller, 1985), and need for cognition (Cohen, Stotland, & Wolfe, 1954).

These factors impact the persuasion process (Petty, Heesacker, & Hughes, 1997). Message relevance is a key variable within the ELM that predicts how an individual will evaluate and process a message. The extent to which an individual pays attention and engages in processing information depends on the personal relevance associated with the information (Eagly & Chaiken, 1993; Sinclair, Mark, & Clore, 1994). Individuals who perceive information to be personally relevant will have a greater personal connection with the issue (Petty & Cacioppo, 1979) and thus, are more likely to pay attention to the information and less likely to process simple cues (e.g. source factors such as source expertise) through the peripheral route (Petty & Cacioppo, 1984a, 1984b). Individuals who do not perceive information to be personally relevant will be less motivated to pay attention and process the information (Petty & Cacioppo, 1984b). For example, university and college students who were exposed to messages regarding changes in school policies were more likely to develop strong attitudes towards those policy changes when exposed to high relevance messages compared to low relevance messages (Petty & Cacioppo, 1984a; Petty, Cacioppo, & Heesacker, 1981). Accordingly, the content of the SI must be perceived as relevant to PE teachers in order to motivate attention and central route processing. According to the ELM, only then will the SI lead to stable and predictive attitude change among teachers. Hence, teachers that perceive greater personal relevance and pay attention to information from the SI should be more likely to experience greater attitude change (due to central route processing) compared to those who perceive less personal relevance and pay less attention. Greater attention and cognitive processing should lead to greater attitude change in teachers towards teaching inclusive PE (Petty & Cacioppo, 1981).

The extent to which teachers perceive the information from the SI to be personally relevant may depend on teacher-level factors. For example, teachers who have not received previous adapted PE and inclusion training may find the information relevant because they have not had previous experiences with the subject and may be interested in learning about how to teach inclusive PE. On the other hand, these teachers may perceive the information as irrelevant for their current teaching practice. There is no known research that examines the relationship between teacher-level demographic factors and the perceived relevance of information regarding inclusive PE. Therefore a tertiary purpose of this study was to examine the relationship between teacher-level demographic factors and teachers' perceived relevance of the SI information.

**Attention: An early stage of cognitive processing.**

As noted, factors that increase personal relevance have been found to increase overall attention to information (Kreuter & Wray, 2003; Cacioppo & Petty, 1982; Noar, 2006), motivation to cognitively process information (Petty & Cacioppo, 1986), and the probability that the information will influence attitude change (Cook & Flay, 1978). Attention represents the interaction between the recipient and information (Dejoy, 1991; McGuire, 1981) and is considered an early stage of cognitive processing (Greenwald & Leavitt, 1984). During the attention phase of cognitive processing, the pupils dilate and the lens focuses as the recipient dwells on the content of the message or informational resource (Franzen, 1994). Rapid eye movements (saccades) are made in order for the eye to fixate on key locations (Findlay & Gilchrist, 2003). Fixations are the pauses that occur when the eye moves from one location to another during which the immobilized eye and visual system gather information through focusing on the fixed location and stimuli

(Pieters & Warlop, 1999). Increased dwell time, measured using average fixation duration, is considered indicative of greater attention (Krugman, Fox, Fletcher, Fischer, & Rojas, 1994; Peterson, Thomsen, Lindsay, & John, 2010). Therefore, greater dwell time and attention to messages and information included in the SI document may trigger cognitive processing (via the ELM) that promotes attitude change regarding teaching inclusive PE. Attention to information from the SI may contribute to the process of attitude change among teachers. There is no known research regarding teachers' attention to targeted information and the formation of attitudes towards teaching inclusive PE. The current study examined perceived relevance, attention and cognitive processing in relation to attitude change among teachers following exposure to messages from the SI document. This study will inform our understanding of attention and cognitive processing in relation to message effectiveness in general. Further, this study will inform the pragmatic use of the SI document as a tool to enhance teachers' attitudes regarding inclusive PE.

### **Purpose**

The primary purpose of the proposed study is to examine the effect of the SI information on teachers' attitudes regarding inclusive PE. The secondary purpose is to examine the association between perceived relevance, attention, cognitive processing and attitude change. The tertiary purpose is to explore factors related to attention and message relevance.

## **Hypotheses**

Guided by a) previous research regarding messaging and informational approaches to attitude change and b) the ELM, it is hypothesized that:

1) Teacher's attitudes towards teaching inclusive PE will improve after being exposed to information from the SI.

2) Attention, central cognitive processing, and perceived relevance will be related to changes in attitudes.

The third purpose of this study is to explore factors related to attention and message relevance, therefore there are no hypotheses.

## Method

### Participants

Participants included teachers (N=50) recruited from the Greater Toronto Area through a) web and poster advertisements (see Appendix A), b) social media, and c) snowball sampling. Snowball sampling occurs whereby a researcher collects data from participants of a specific population, and asks those participants to provide information to other members of the population in order to locate participants (Noy, 2008). Teachers were included in the study if they met the following criteria: a) contracted teachers (full-time, part-time, supply, long-term occasional, early childhood educator) at the elementary or secondary level or pre-service teachers attending a teacher's college in the province of Ontario, b) spoke and read English fluently, and c) self-reported 20/20 vision with or without a visual aid including glasses or contact lenses. Secondary school teachers were included if they were trained to teach PE (i.e., PE as a teachable or an additional qualification), which is a requirement to teach PE at the secondary school level. In addition, participants were excluded if they were pre-service teachers not currently enrolled in their final year of teacher training. Participation was voluntary and informed consent was collected prior to data collection. Participants were reimbursed for parking expenses and received a small honorarium (\$20). All procedures were approved by York University's Research and Ethics Board.

## **Materials**

**Steps to Inclusion document text selections.** Participants were exposed to selected text from the SI document. Knowledge (Casebolt & Hodge, 2010; Hersman & Hodge, 2010; Hodge et al., 2009), self-efficacy (Ammah & Hodge, 2006; Casebolt & Hodge, 2010; Hersman & Hodge, 2010; Hodge et al., 2004), competence (Block & Rizzo, 1995), and resource support (Casebolt & Hodge, 2010; Hersman & Hodge, 2010; Hodge et al., 2004) are critical components of teachers' attitude formation. Therefore, text selections from the SI targeted these factors and included a) definitions and characteristics of disabilities (e.g. physical, sensory, developmental), b) strategies and methods to teach inclusive PE, and c) resources that PE teachers can use to teach inclusive PE. All text selections were verbatim from the original SI document. For example, the following text selection targets teachers' knowledge: "It is crucial to be open to all possibilities and be willing to try new things to encourage full participation from the child" (Ophea, 2010, p. 5). The complete list of SI text selections is provided in Appendix B. Appropriate text was identified through a content analysis which sought to identify content within the SI that targets the meaningful predictors of teachers' inclusive PE teaching practices (Tristani, Gainforth, Tomasone, & Bassett-Gunter, under review).

## **Measures**

**Demographics.** Participants completed a demographic questionnaire from the Physical Educators' Attitudes Towards Teaching Individuals with Disabilities Questionnaire (PEATID-III; Block & Rizzo, 1995). The demographic section of the questionnaire contains questions addressing the participants' experiences as a teacher (see Appendix C). For example, teachers will answer questions such as; "Have you taken any

Adapted Physical Education courses?”, and “Have you had any experience teaching individuals with disabilities?”. In addition, the questionnaire asks teachers’ to rank their views towards their quality of past experiences teaching SWD using a 4-point Likert scale (1 = No experience, 4 = Very good) and their perceived competence teaching SWD using a 5-point Likert scale (1 = Not at all competent, 5 = Extremely competent). These measures were assessed as potential covariates to teachers’ perceived relevance of the SI information.

**Attitudes.** Teachers’ attitudes towards teaching inclusive PE were assessed using the PEATID-III questionnaire (see Appendix C), which has been considered an ideal tool for measuring teachers’ attitudes as it requires teachers to express their beliefs about teaching SWD in PE and has been shown to be reliable among undergraduate, college and university students who were enrolled in a university introductory adapted PE course ( $\alpha=.88$ ; Folsom-Meek & Rizzo, 2002). Prior to answering questions in the survey, the teachers read a vignette about the hypothetical scenario of teaching four SWD in a PE class (see Appendix D). The PEATID-III is divided into eleven sections, each consisting of statements which requires teachers to rate their beliefs about teaching inclusive PE using a 7-point Likert scale. Section Two of the PEATID-III specifically measures teachers’ attitudes and consists of three items asking participants to indicate whether they think teaching inclusive PE is good or bad (e.g. 1 = Very bad, 7 = Very good), wise or unwise (e.g. 1 = Very unwise, 7 = Very wise), and satisfying or unsatisfying (e.g. 1 = Very unsatisfying, 7 = Very satisfying). Reliability was calculated at each time point through Cronbach’s alpha (Cronbach, 1951) for an overall attitude score using the mean of the three items ( $\alpha_{\text{Baseline}}=.85$ ;  $\alpha_{\text{Post}}=.71$ ;  $\alpha_{\text{Follow-Up}}=.85$ ) .

**Attention.** Eye-tracking technology is a technique used to quantify the attention of individuals in an ecologically valid context (Turner et al., 2014). Fixation duration (the amount of time one's eyes are fixated on the message content) provides an objective, biometric indicator of attention (Krugman et al., 1994) since a) fixations on a message accumulate in locations perceived to contain valuable information, b) fixations are considered a reflection of cognitive strategy, and c) the fixation sequence permits the coding, storing, and analysis of images (Fischer, Karsh, Francis, & Barnette, 1983). Furthermore, empirical research supports the use of eye fixation duration as a measure of attention (Chaffin, Morris, & Seely, 2001; Vainio, Hyona, & Pajunen, 2009; Wang, 2011). Eye-tracking technology is a practical indicator of visual attention and has been successfully applied to previous research assessing cognitive processing of undergraduate students exposed to physical activity messages (Bassett-Gunter, Latimer-Cheung, Martin Ginis, & Castelhana, 2014), gamblers (Grant & Bowling, 2015), and adolescents exposed to smoking advertisements (Krugman et al., 1994).

Using the Tobii T60 XL eye tracker (Falls Church, VA, USA), areas of interest (AOI) were defined directly around the SI text selection within each slide of the slideshow. Each participant viewed a total of 45 screens, of which 44 contained one AOI each that contained information from the SI document. The first screen of the slideshow was a title page of the SI document; the title page does not contain information about inclusive PE. AOIs allow researchers to accumulate and analyze data within specific stimuli (Tobii Technology). Attention to the AOI message content was measured using Fixation Duration (s). Fixation duration is the length of each individual fixation within an AOI (s; Tobii Technology); this measure is the mean length of one fixation within an

AOI. A total mean fixation duration was calculated for all of the AOIs by summing all of the mean fixation durations and dividing by the total number of AOIs viewed (i.e., 44). This measure will be referred to as Average Fixation Duration (s) throughout the remainder of the document. Average Fixation Duration was assessed using the Tobii eye tracker with a 24-inch screen monitor and a 60 Hz rate of data collection (Tobii Technology). Participants were able to move their heads without obstruction throughout the study, as the eye tracker is integrated in the widescreen monitor. Two Dell Precision T3400 Intel® Core™ 2 Quad CPUs with 4 GB of random-access memory (Dell Inc., Round Rock, TX, USA) are integrated with Tobii Studio Professional 2.0 (Tobii Technology), to enable the collection of fixation data. Tobii Studio Professional 2.0 captured participants' eye movements with time-sensitive markers. Data were analyzed using SPSS version 24 (IBM Corporation, Armonk, NY, USA).

**Cognitive processing.** Two indicators of cognitive processing (i.e., message-relevant thoughts and memory of message content; see Appendix E) were assessed.

***Message-relevant thoughts.*** Message-relevant thoughts, a common indicator of cognitive processing (Cacioppo & Petty, 1981), were assessed through a thought-listing exercise. Following message exposure, participants were given five minutes to list thoughts they had during message exposure (Cacioppo & Petty, 1981). Participants were given a sheet of paper with text boxes and instructed to write one thought in each text box. Two researchers independently coded and scored each thought as unfavourable (i.e., negative attributes or associations towards the messages), favourable (positive attributes or associations towards the messages), or neutral (i.e. unrelated to the messages) (Cacioppo & Petty, 1981). Intercoder reliability was satisfactory ( $\kappa = .731, p < .001$ ;

Landis & Koch, 1977). Coding disagreements between the coders were resolved through discussion and arriving at a consensus agreement. The following thought list score was calculated: total = favourable + unfavourable. Irrelevant thoughts were not included in any calculation. Higher scores in the thought-listing procedure are considered indicative of greater cognitive processing (Cacioppo & Petty, 1981). This measure has been successfully applied as an indicator of cognitive processing following information exposure within previous health research (e.g. Bassett-Gunter, Martin Ginis, & Latimer Cheung, 2013; Jones, Sinclair, & Courneya, 2003; Sherman, Nelson, & Steele, 2000).

***Memory of message content.*** Memory of message content (i.e. message recall), has also been considered a key step in cognitive processing (Cacioppo, Petty, & Morris, 1983). Using a message recall procedure adopted from previous message framing research (Block & Keller, 1995), participants were shown six statements and indicated whether each of the statements was or was not included verbatim in the inclusive PE information to which they were exposed. A total recall score was calculated through summation of the number of correctly recalled statements. Individuals who have greater recall of the SI information are considered to be engaging in greater cognitive processing compared to those who have poorer recall of the SI information (Cacioppo, Petty, & Morris, 1983; Keller & Block, 1996).

**Message relevance.** Participants responded to a perceived message relevance scale (see Appendix F; Jensen, King, Carcioppolo, & Davis, 2012), which contains four items following the stem “The information I just read”: 1) seemed to be written personally for me, 2) was very relevant to my situation, 3) was primarily general information that wasn’t applicable to me, and 4) was not customized at all. The scale,

which asks participants to respond using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), showed poor reliability ( $\alpha = .621$ ).

### **Procedure**

Following recruitment, each participant was asked to attend a one-hour testing session at York University. After providing informed consent (see Appendix G), participants completed a baseline questionnaire including an assessment of demographic variables (i.e. age, gender, teaching experience) and attitudes toward inclusive PE. Once the baseline questionnaire was completed, participants were briefed on and acquainted with the Tobii eye-tracker. Participants sat in front of a specialized computer monitor where the Tobii eye tracker equipment was prepared and calibrated for testing. All participants read identical selected text from the SI that was copied onto a blank word processing document using Microsoft PowerPoint 2011 (version 14.6.8), and was displayed through the Tobii eye tracker. Participants viewed the SI text selections related to each concept (i.e., knowledge, self-efficacy, competence, resource support) one at a time on a separate screen. The order of presentation was randomized by the Tobii software program. The participants were able to control the pace of information exposure such that they could use the computer keyboard to proceed to the next screen (i.e. text selection). As participants viewed each text selection, the Tobii eye-tracker collected fixation duration data. Once participants viewed the final SI text selection, they completed a post-information questionnaire, which included measures of a) cognitive processing, b) perceived relevance and c) attitudes. Two weeks after the completion of the in-lab procedure, each participant was sent an email follow up questionnaire, which assessed attitudes toward inclusive PE.

## Statistical Analyses

Statistical analyses were performed using SPSS version 24 (IBM Corporation, Armonk, NY, USA). Preliminary descriptive analyses were conducted in order to provide a description of the sample. Outliers were defined as being more than three standard deviations from the mean (Osborne & Overbay, 2004), and were adjusted to represent the next highest or lowest acceptable score. A total of four outliers were adjusted (n=1 for Average Fixation Duration; n=1 for Thought List; n=1 for Post-information Attitudes; n=1 for Two-week Follow up Attitudes). Means, standard deviations, skewness and kurtosis values for attitude, attention, cognitive processing, and relevance variables were calculated. Normally distributed data should have skewness and kurtosis values nearing zero (Field, 2009). Data are described as skewed or kurtotic if these values are increasingly positive or negative (Tabachnik & Fidell, 2001). Mean values that exhibited abnormally high values of skewness or kurtosis were tested for significance by converting to a corresponding z-score; z-scores greater than 1.96 are considered significant at  $p < .05$  (Field, 2009). Data were cleaned and tested for violations of assumptions including tests for normality (Kolmogorov-Smirnov Test). Results of these tests are presented in Appendix H.

Eight participants (n=8) dropped out at the two-week follow up time point. As a result, the sample size of teachers fluctuated between n = 50 and n = 42 across the analyses. Furthermore, two participants' (n=2) eye-tracking data were excluded due to poor capture rates. Independent-samples t-tests were calculated to compare baseline attitudes, post-information attitudes, and baseline to post-information attitude changes

between participants and dropouts. In addition, independent-samples t-tests were calculated to identify differences in attention, cognitive processing, and relevance scores.

***Hypothesis 1.** Teachers' attitudes' towards teaching inclusive PE will improve after being exposed to information from the SI.*

To test the first hypothesis, paired-samples t-tests were calculated to identify significant differences between teachers' attitude scores from baseline to a) post-information, and b) two-week follow up.

***Hypothesis 2.** Attention, central cognitive processing, and perceived relevance will be positively correlated with changes in attitudes.*

Bivariate Pearson's correlations at the two-tailed level were calculated using the respective variables in order to identify significant univariate relationships between the continuous variables of attention, cognitive processing, and relevance, and variables measuring teachers' attitudes post-information (Table 9) and two-weeks follow up-information (Table 11). In order to explore multivariate relationships, multiple regression analyses were calculated. It was necessary to establish which variables should be included as predictors in regression analyses. It was crucial to identify a parsimonious model given the relatively small sample and limited power. Predictor variables should be selected for which there exists sound theoretical assumptions for expecting them to predict an outcome (Field, 2009). Next, two multiple linear regressions models were calculated with the dependent variables being teachers' attitudes a) at post-information and b) at two-week follow up. Multiple linear regressions are useful because they provide a way of predicting an outcome variable from several predictor variables, and allow researchers to analyze data beyond simple relationships observed through correlations

(Field, 2009). The predictor variables were inputted into SPSS using the “enter” method, which is a forced entry method for adding variables to multiple regression analyses (Field, 2009). In step 1 of the linear regression, baseline attitudes were entered in the model to reflect change in attitudes as the dependent variable. In step 2, Average Fixation Duration, Message Recall, Thought List Scores, and Relevance variables were entered into the regression model to calculate the variance of attitudes explained by the new predictor variables. Tests for multicollinearity for both regression analyses are presented in Appendix I.

***Exploratory analyses.***

In order to identify teacher-level factors related to attention and relevance, independent-samples t-tests, one-way analysis of variance (ANOVA), and bivariate correlations were calculated. Independent-samples t-tests were calculated for binary demographic variables (e.g. gender, adapted physical education course taken). One-way ANOVAs were calculated for demographic variables with more than two categories (e.g. years spent teaching, subject level). Bivariate correlations were calculated to identify univariate relationships between scale psychological constructs (e.g. quality of past experiences teaching SWD, perceived competence teaching SWD), attention, and the perceived relevance of the SI information.

## Results

### Descriptive Statistics

Teacher-level demographic factors (i.e., sex, years spent teaching, type of teaching contract, teacher training history) are summarized in Table 1. Approximately 70% of the teachers were female. The majority of the teachers had between one and five years of teaching experience (36%) and taught at the intermediate (30%) or senior (42%) grade level.

Means and standard deviations for baseline, post-information, and follow up attitude scores are displayed in Table 2. Histograms (Appendix J) as well as skewness and kurtosis values have been provided for each attitude and attitude change variable to illustrate distributions of the data. Previous research has found no difference between transformed and original data for correlation products and reliability scores (Norris & Aroian, 2004). Therefore, no transformations were performed to skewed or kurtotic variables because all items must be similarly skewed, and transformed in order for the transformation to be beneficial (Ferketich & Verran, 1994). In addition, teachers held moderate views towards their quality of past experiences teaching SWD ( $M=3.20$ ,  $SD=.833$ ) and competence teaching SWD ( $M=3.14$ ,  $SD=.700$ ).

Group differences between participants who completed the study and those who dropped out were explored. There were no significant differences between baseline and post-information attitudes. However, those who dropped out had a significantly greater attitude change from baseline to post-information compared to those who completed the study (Table 3). Furthermore, no significant differences existed for average fixation duration, message recall score, thought list score, and relevance scores.

Table 1

*Participant Demographic Characteristics*

Variable	Frequency	Percent
Sex		
Male	14	28.0
Female	35	70.0
Years Spent Teaching		
Less than 1 year	8	16.0
1-5 years	18	36.0
6-9 years	0	0
10+ years	9	18.0
Teachers College	15	30.0
Teaching Contract		
Full-time	13	26.0
Long-term occasional	15	30.0
Part-time	1	2.0
Occasional/Supply	5	10.0
Early childhood educator	1	2.0
Teachers College	15	30.0
Subject Level		
Primary	4	8.0
Junior	5	10.0
Intermediate	15	30.0
Senior	21	42.0
Other	4	8.0
Missing	1	2.0
Additional Qualifications		
Yes	29	58.0
No	21	42.0
Adapted Phys. Ed. Course		
Yes	25	50.0
No	25	50.0
Special Ed. Course		
Yes	26	52.0
No	24	48.0
Experience teaching SWD		
Yes	42	84.0
No	8	16.0

*Notes.* Additional qualifications include all subjects and grade levels, including PE.

Table 2

*Mean Attitude and Attitude Change Scores*

Variable	N	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Baseline Attitude	50	5.63	1.08	-.80	.12
Post-Information Attitude	50	5.94	.78	-.53	-.14
Follow up-Information Attitude	42	5.98	.70	.02	.37
Baseline-Post Attitude Difference	50	.30	.71	.22	1.24
Baseline-Follow up Attitude Difference	42	.19	.85	.93	1.90

*Notes.* Possible score range: 1 (Strongly Disagree) to 7 (Strongly Agree)

N = Sample size

M = Mean

SD = Standard deviation

Table 3

*Comparison of Participant and Dropouts' Baseline and Post-information Attitudes*

Pair	N	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
<b>Baseline Attitude</b>						
Participant	42	5.73	1.04	-1.58	48	.12
Dropout	8	5.08	1.07			
<b>Post-information Attitudes</b>						
Participant	42	5.96	.78	-.42	48	.68
Dropout	8	5.83	.82			
<b>Baseline-Post Attitude Change</b>						
Participant	42	.21	.71	2.03	48	.05*
Dropout	8	.75	.56			

Notes. \*  $p < .05$ .

## Hypotheses Testing

**Hypothesis 1.** *Teachers' attitudes' towards teaching inclusive PE will improve after being exposed to information from the SI.*

There was a significant difference between baseline attitude scores ( $M = 5.63$ ,  $SD = 1.08$ ) and post-information attitude scores ( $M = 5.94$ ,  $SD = .78$ ),  $t(49) = -3.16$ ,  $p < .05$ .

There was also a significant difference between baseline attitude scores ( $M = 5.73$ ,  $SD = 1.07$ ,  $t(41) = -2.04$ ,  $p < .05$ ) and follow-up attitude scores ( $M = 5.98$ ,  $SD = .71$ ).

Specifically, in support of hypothesis 1, compared to baseline, teachers' attitudes towards teaching inclusive PE were more favourable immediately post information and two-weeks following exposure to the SI content.

Table 4

*Comparison of Mean Attitude Scores Across Time*

Pair	N	M	SD	t	df	p
Test 1						
Baseline Attitude	50	5.63	1.08	-3.16	49	.01*
Post-information attitudes		5.94	.78			
Test 2						
Baseline Attitude	42	5.73	1.07	-2.04	41	.05*
Follow up-information attitudes		5.98	.71			

*Notes.*

\* p &lt; 0.05 level (2-tailed). \*\* p &lt; 0.01 (2-tailed).

M = Mean

SD = Standard deviation

df = degrees of freedom

**Hypothesis 2.** *Attention, central cognitive processing, and perceived relevance will be positively correlated with changes in attitudes.*

*Results of bivariate correlations between attention, cognitive processing, relevance, and attitudes immediately post-information (Table 5).*

Pearson's correlations identified significant relationships between post-information attitudes and baseline attitudes ( $r = .76, p < .01$ ). In addition, average fixation was significantly correlated with the difference in attitudes from baseline to post-information ( $r = .36, p < .05$ ). None of the attention, cognitive processing, or relevance measures were significantly related to post-information attitudes.

*Results of bivariate correlations between attention, cognitive processing, relevance, and attitudes at the two-week follow up (Table 6).*

Pearson's correlations identified significant relationships between follow-up attitudes and baseline attitudes ( $r = .66, p < .01$ ). Relevance was also significantly related to teachers' follow up attitudes ( $r = .31, p < .05$ ). Neither average fixation duration nor cognitive processing measures were significantly related to follow up attitudes.

Table 5

*Relationship between Post-Information Attitudes, Attention, Cognitive Processing, and Relevance (N = 50)*

Variables	N	M (SD)	1	2	3	4	5	6	7
1. Baseline Attitude	50	5.27 (1.08)	-						
2. Post-information Attitude	50	5.94 (.78)	.76**	-					
3. Baseline-Post Attitude Change	50	.30 (.71)	-.65**	-.01	-				
4. Average Fixation Duration (s)	48	11.17 (1.24)	-.15	.11	.36*	-			
5. Message Recall	50	4.60 (.88)	-.09	.02	.15	-.13	-		
6. Thought List	50	4.34 (2.25)	.03	-.10	-.19	-.02	-.09	-	
7. Relevance	50	14.38 (2.57)	.17	.24	-.02	-.03	.11	-.02	-

*Notes.* N = Sample size, M = Mean, SD = Standard Deviation

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

Table 6

*Relationship between Follow up Attitudes, Attention, Cognitive Processing, and Relevance (N = 42)*

Variables	N	M (SD)	1	2	3	4	5	6	7
1. Baseline Attitude	42	5.73 (1.07)	-						
2. Two-week Follow up Attitude	42	5.98 (.71)	.66**	-					
3. Baseline-Follow up Attitude Change	42	.19 (.85)	-.56**	.15	-				
4. Average Fixation Duration (s)	40	11.04 (1.24)	-.09	.13	.25	-			
5. Message Recall	42	4.55 (.89)	-.02	.05	.03	-.10	-		
6. Thought List	42	4.36 (2.30)	-.01	-.15	-.26	-.11	-.03	-	
7. Relevance	42	14.60 (.26)	.11	.31*	.02	.10	.14	-.03	-

*Notes.* N = Sample Size, M = Mean, SD = Standard Deviation.

\* Correlation is significant at the 0.05 level (2-tailed).

\*\*Correlation is significant at the 0.01 level (2-tailed).

*Regression model predicting change in attitudes from baseline to immediately post-information.*

To explore the predictors of change in teachers' attitudes from baseline to post-information, a multiple linear regression analysis was calculated (see Table 7). In the first step of the regression model, teachers' baseline attitudes were entered. Baseline attitudes explained approximately 55% of the variance in post-information attitudes ( $R^2=.55$ ,  $F(1, 46)=57.86$ ,  $p<.01$ ). In step two of the regression model, approximately 63% of the variance ( $R^2=.63$ ,  $F(4,42)=16.70$ ,  $p<.01$ ) in teachers' post-information attitudes was explained after entering additional independent variables (i.e., Average Fixation Duration, Message Recall, Thought List Score, Relevance Score). In this model, teachers' baseline attitudes ( $B=.58$ ,  $p<.01$ ) and average fixation duration ( $B=.16$ ,  $p<.01$ ) were significant predictors of teachers' post-information attitudes.

Table 7

*Predictors of Post-Information Attitudes*

	Post-Information Mean Attitude Score						
	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	<i>F</i>	$\Delta R^2$	$\Delta F$
Model 1							
Constant	2.83**	.42		.55	57.86**		
Baseline Attitudes	.55**	.07	.75				
Model 2							
Constant	.08	.99		.63	17.00**	.11	3.56
Baseline Attitudes	.58**	.07	.78				
Average Fixation Duration (s)	.16**	.06	.25				
Message Recall	.13	.08	.14				
Thought List	-.06	.03	-.16				
Relevance	.03	.03	.11				

Notes. N = 50. \*\*  $p < .01$ .  $\beta$  = Standardized Beta.

*Regression model predicting changes in attitudes from baseline to two-week follow up.*

To explore the predictors of change in teachers' attitudes from baseline to two-week follow up, a multiple linear regression analysis was calculated (see Table 8). In the first step of the regression model, teachers' baseline attitudes were entered.

Approximately 44% of the variance ( $R^2=.44$ ,  $F(1, 38)=32.13$ ,  $p<.01$ ) was explained by baseline attitudes ( $B=.48$ ,  $p<.01$ ). On the second step of the model, additional independent variables were entered (i.e., Average Fixation Duration, Message Recall, Thought List Score, Relevance Score), which explained an additional 4% of the variance in follow up attitudes, increasing the overall variance explained to approximately 48% ( $R^2=.48$ ,  $F(4, 34)=8.14$ ,  $p<.01$ ). Neither fixation duration (average) ( $B=.10$ ,  $p=.18$ ), message recall ( $\beta=.06$ ,  $p=.56$ ), thought list scores ( $\beta=-.03$ ,  $p=.50$ ), nor relevance ( $\beta=.05$ ,  $p=.10$ ) were significant predictors of teachers' two-week follow up-information attitudes.

Hypothesis 2 was partially supported. Attention was significantly correlated with the change in attitudes from baseline to post-information. In addition, attention was a significant predictor of change in attitudes from baseline to immediately post-information. Relevance was significantly related to attitudes, although it was not related to attention or cognitive processing. Attention and cognitive processing were not significantly correlated with, or predictors of attitude change from baseline to follow up.

Table 8

*Predictors of Two-week Follow up Attitudes*

	Follow up-information Mean Attitude Score						
	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	<i>F</i>	$\Delta R^2$	$\Delta F$
Model 1							
Constant	3.23***	.50		.44	32.13***		
Baseline Attitudes	.48***	.08	.68				
Model 2							
Constant	1.29	1.14		.48	8.14***	.09	1.62
Baseline Attitudes	.47***	.08	.67				
Average Fixation Duration (s)	.10	.07	.16				
Message Recall	.06	.10	.07				
Thought List	-.03	.04	-.08				
Relevance	.05	.03	.20				

Notes. N = 42. \*\*\*  $p < .01$ .  $\beta$  = Standardized Beta.

*Exploratory analyses.*

Independent samples T-tests and one-way ANOVAs indicated that there were no significant differences in attention and relevance scores across categorical demographic variables (e.g., gender, previous adapted PE training, previous experience teaching SWD). Bivariate correlations indicated that scale psychological constructs were not correlated with attention and relevance scores. Refer to Appendix K for results.

## **Discussion**

This thesis explored the effect of information from the SI on teachers' attitudes regarding inclusive PE. Furthermore, the relationship between attention, cognitive processing, relevance, and attitude change were explored. The following section will discuss the results, and theoretical and practical implications of this thesis.

### **Improved Teachers' Attitudes Towards Inclusive PE**

Attitudes are the global assessments of people, objects, and issues (Petty & Cacioppo, 1986), and are considered the most important predictor of teachers' intentions to teach inclusive PE (Jeong & Block, 2011). In support of hypothesis one, there was a significant change in teachers' attitudes from baseline to post-information, and from baseline to the two-week follow up. The changes in attitudes reflected medium effects that were statistically significant. It seems that exposure to information from the SI document was effective in promoting positive attitude change in teachers. Teachers face many challenges in the PE classroom (e.g. lack of knowledge; Roh, 2002) that may promote negative attitudes towards teaching inclusive PE. Thus presenting information to teachers, via the SI, may have provided them additional knowledge that prompted an increase in their attitudes. However, social desirability may have influenced how participants assessed their attitudes towards teaching inclusive PE. Research in the teaching domain has examined the impact of inclusive PE training (Gursel, 2007) and workshops that use informational strategies (Lieberman & Wilson, 2005; Sarraf, Karahmadi, Marasy, & Azhar, 2011) on teachers' attitudes towards teaching SWD. This existing literature has shown that the additional training and education promoted positive attitudes in teachers. For example, PE teacher candidates held improved attitudes towards

teaching students with physical disabilities after taking part in adapted PE courses during their school year (Gursel, 2007). The results of our study corroborated these results, however this was the first time the SI has been examined. This is important because the SI document is a complimentary, inclusive PE teaching resource that targets teachers in Ontario. Teachers may be more likely to be exposed to Ophea resources since this organization plays a leading role in health and PE information and resource dissemination. Further, our results are encouraging from a pragmatic stance because this study was a simple intervention that yielded a substantial effect in priming teachers' attitudes towards teaching inclusive PE. The information from the SI was not given to teacher participants as part of a seminar, workshop or additional training program. Given that teachers lack time, and additional training and workshops may be economically straining for schools and school board budgets, the value of time and resource efficient strategies cannot be overstated. In addition, teachers were not given the SI document in its entirety. If teachers were provided with the complete document in its original format, it is possible that changes in attitudes may have been even larger and may not have diminished two weeks after exposure to the information.

The sample generally held high baseline attitudes towards teaching inclusive PE, which was unexpected given that previous research has found that teachers tend to hold relatively low attitudes towards inclusive PE (Conatser, Block, & Gansneder, 2002; Duchane, Leung, & Coulter-Kern, 2008). Teachers with high baseline attitudes may have previously experienced changes in their school culture towards being more inclusive, or had a recent positive experience teaching SWD in PE. The SI document includes information that is targeted at, "teachers who wish to create an inclusive physical activity

environment” (Ophea, 2016b). The results of the current study are encouraging because they illustrated that information from the SI was effective in promoting attitude change in teachers who already held somewhat positive attitudes towards inclusive PE. A sample of teachers with poorer baseline attitudes towards teaching inclusive PE could possibly experience even greater changes in attitudes after exposure to the SI information.

This thesis illustrated that information from the SI may be useful for priming teachers’ attitudes which may be particularly valuable to enhance the effectiveness of engaging in further intervention and teaching training. Indeed it is unlikely that the SI information alone will be sufficient to meet all teacher training needs. Rather, the SI information may be effective in combination with other strategies that target additional, meaningful, psychosocial predictors of behaviour change (e.g. self-efficacy, self-regulation). Further research is necessary to fully understand the value of the SI resource as a stand-alone tool as well as in combination with other training strategies.

### **Relationship between Attention, Cognitive Processing, Relevance and Teachers’**

#### **Attitudes**

##### **Attention.**

In support of hypothesis two, average fixation duration was found to be a significant positive predictor of change in teachers’ attitudes. Specifically, when baseline attitudes were controlled, higher fixation on the information in the SI predicted higher post-information attitudes. The results corroborate the theoretical foundations of attention and the ELM, which state that increases in attention are related to greater attitude change (Noar, Harrington, & Aldrich, 2009). This study illustrated that teachers who attended more to the information from the SI had greater attitude change than those who attended

less to the information. Therefore, future inclusive PE teaching resources that engage teachers' attention may be useful in targeting attitude change.

Attention was not a significant predictor of teachers' attitude change from baseline to the two-week follow up. The effects of attention may have deteriorated over time since participants were not exposed to the information for a second time at the two-week follow up. Repeated exposure to the SI information may elucidate the long-term effects of attention on attitude change in teachers. Mere Exposure Theory states that the more often an individual is exposed to a stimulus, the more likely they are to become familiar with it and thus have favourable attitudes towards the stimulus (Zajonc, 1968). Repeated exposure to familiar brand messages has exhibited a significant effect on individual's attitudes towards the message and the brand (Campbell & Keller, 2003). Furthermore, greater frequency of attention to brand advertisements has shown to improve individuals' attitudes towards the identified brand (Lee & Ahn, 2012). Thus, teachers who experience more frequent and repeated exposure to the SI information may become more familiar with the information and subject, which may ultimately lead to further cognitive processing of the information and enduring attitude change about teaching inclusive PE. Ensuring teachers have lasting attitudes towards teaching inclusive PE is key for maintaining their inclusive PE teaching practices.

### **Cognitive processing.**

The results of this thesis did not support our hypothesis that cognitive processing would be related to changes in attitudes. On average, participants correctly recalled 4.6 messages from the information slideshow, and reported approximately four message relevant thoughts. Greater accuracy of message recall (Keller & Block, 1996) and

message-relevant thoughts (Cacioppo & Petty, 1981) are indicative of greater cognitive processing. According to the ELM, increased central cognitive processing should lead to the formation of enduring attitudes, while peripheral route processing leads to the formation of attitudes that are less stable and less resistant over time (Petty & Cacioppo, 1981). However, both message recall and thought list scores were neither significantly correlated with, or significant predictors of changes in attitudes at post-information exposure and the two-week follow up.

The nature of the study sample may have played a role in suppressing the relationship between cognitive processing and attitude change. For instance, the lack of variability within teachers' cognitive processing and attitude scores made it unlikely that a statistical relationship would emerge between the two variables. In addition, the relatively small sample resulted in limited power to detect a small relationship between variables. A larger sample would have greater power and also potentially increased variability, which may have resulted in a significant relationship between cognitive processing and attitude change.

An alternative explanation for the null findings may have been related to the approach employed to operationalize cognitive processing. Cognitive processing was measured using message recall and thought list scores. Thought list scores were calculated as the total thoughts following information exposure (Bassett-Gunter et al., 2014; Bassett-Gunter, Martin Ginis, & Latimer-Cheung, 2013; Cacioppo & Petty, 1981). This score reflects the magnitude of the amount of processing that teachers engaged in, but does not account for whether the thoughts were favourable or unfavourable toward the information. This thesis employed methods similar to previous empirical research

(Bassett-Gunter et al., 2014; Bassett-Gunter, Martin Ginis, & Latimer-Cheung, 2013) for measuring cognitive processing and thought listing scores. It may be of interest for future studies to consider the distinct roles of favourable and unfavourable thoughts in cognitive processing and attitude change. For example, increased favourability of personalized information was related to individuals' readiness to quit smoking (Webb, Hendricks, & Brandon, 2007). Researchers may benefit from employing multiple measures of cognitive processing that illustrate a broad range of relationships between cognitive processing and attitude change. The results of this thesis highlight the increased need to further examine the role of cognitive processing of the SI information and teachers attitude change regarding inclusive PE.

### **Relevance.**

This study sought to examine the association between relevance, attention, cognitive processing and attitude change. Our hypothesis was not supported, as relevance was not a significant predictor of changes in attitudes. In addition, relevance was not significantly correlated with post-information attitudes. On average, teachers in this study perceived the information in the SI to be "somewhat relevant". Information that increases personal relevance may lead to increased attention (Kreuter & Wray, 2003), motivation to cognitively process information (Petty & Cacioppo, 1986), and probability of attitude change (Cook & Flay, 1978). Though teachers perceived the SI information to be relevant to their teaching practice, the relevancy of information did not predict their changes in attitudes. These results were unique compared to previous work, which has found that higher relevancy messages were related to attitude change (Martin, Martin, Smith, & Hewstone, 2007; Petty, Cacioppo, & Heesacker, 1981). In the current study,

perceived relevancy of the SI information was not related to changes in attitudes towards teaching inclusive PE, although these results may be a reflection of the low power inherent in the sample size. Although relevancy failed to predict change in attitudes, it was interesting to observe that relevancy was positively correlated with teachers' attitudes at the two-week follow up. Teachers with higher relevancy scores had higher attitude scores at the two-week follow up. Further research is needed to clarify how the relevancy of inclusive PE information is related to the change in teachers' attitudes towards teaching inclusive PE.

Relevance was not correlated with attention and cognitive processing. According to the ELM, the perceived relevance of information is a key determinant of the amount of attention and cognitive processing that an individual commits to the information (Sinclair, Mark, & Clore, 1994). The null results in the current study may be reflective of the low variability in the attention and cognitive processing measures, and low power within the sample. Furthermore, message recall may not be related to relevance post-information, although it may have been higher in teachers who had greater perceived relevance of the information at the two-week follow up. In the future, message recall should be measured at multiple time points following information exposure in order to identify potential relationships between recall and the perceived relevance of information. Additional research is needed in order to further understand how relevance is related to teachers' attitude change in the short-term, as well as how relevance may be related to attention, cognitive processing, and long-term attitude change amongst teachers regarding inclusive PE.

The tertiary purpose of this thesis was to explore teacher-level factors related to attention and message relevance. This was the first known study to explore the potential relationship between teacher demographic factors related to measures of attention to and perceived relevancy of information regarding inclusive PE. Independent t-tests illustrated that there were no significant differences in attention and relevance across the demographic variables (e.g., gender, additional qualifications earned, having adapted PE training, having special education training, have previous experience teaching SWD). The results of the One-way ANOVAs illustrated that there were no significant differences within or between groups in the demographic variables (e.g., years teaching, teaching contract, grade teaching). In addition, there were no significant correlations amongst attention, perceived relevance, and scale psychological constructs (e.g., perceived quality of previous experience teaching SWD, perceived competence teaching SWD). In order to optimize the effectiveness of the SI for changing teachers' attitudes, it is valuable to have an improved understanding of factors related to relevancy. Further research is necessary to identify factors related to relevancy and strategies to improve the relevancy of the SI information for subgroups of the teacher population that most require support for inclusive PE.

### **Pragmatic Connections**

This thesis illustrated that information from the SI document seemed to be effective in changing teachers' attitudes towards inclusive PE. In addition, attention to information about inclusive PE was significantly related to teachers' changes in attitudes. The results of this thesis emphasize the role that attention plays in attitude change (Cacioppo & Petty, 1981; Noar, Harrington, & Aldrich, 2009). Given the small sample

size and formatting of information delivery, further research is needed to corroborate these findings using the original format of the SI in larger and more diverse teaching populations. Consistent results in diverse teaching populations may lead future researchers and stakeholders to refine and develop additional inclusive PE teaching resources that promote attention and attitude change in broader teaching populations.

### **Limitations and Future Directions**

This study sought to explore the relationship between an informational resource and teachers' attitudes towards teaching inclusive PE. Despite the strengths of the study, there are some limitations that merit discussion. First, the study sample was small, and further limited through the loss of 8 participant dropouts at the two-week follow up. Accordingly there was limited power of analyses and the ability to detect small effects. Given the novelty of this study, future research is needed to verify these results in larger and more diverse teacher populations. Second, the sample was relatively homogenous because the majority of the sample held high baseline attitudes towards teaching inclusive PE. This may have been a reflection of self-selection bias (Lavrakas, 2008). The homogeneity of the sample may limit the generalizability of our findings in a population of teachers with poorer or mixed attitudes towards teaching inclusive PE. Third, the information was not presented in the original format of the SI document, which reduces the external validity and generalizability of our results. In addition, the relatively small dose of information exposure may have limited the effects on attitude change. Future studies may benefit from presenting the information in the original format of the SI document. Fourth, teachers' may have been exposed to the SI document through previous training or classroom experiences, which may have predisposed them to certain attitudes

towards inclusive PE and further restricted the effect of the SI information on their attitudes. The effects of inclusive PE information on teachers' attitudes towards teaching inclusive PE may be improved in a population of teachers who have never been exposed to information of this kind. Sixth, participants' attention, cognitive processing, and attitudes may have been affected by social desirability. Future studies should include checks for social desirability bias. Lastly, this thesis did not utilize a control group within the study design. A control group would allow for increased confidence that the changes observed were a result of the intervention (i.e., exposure to SI information) and not spurious findings with a possible alternative explanation (Pithon, 2013). Future studies should employ a no information control group to better understand the effects of inclusive PE information on teachers' attitudes.

## **Conclusion**

This thesis was the first known study to utilize eye-tracking and cognitive processing data collection methods in examining the effects of an informational resource on teachers' attitudes towards teaching inclusive PE. Results demonstrated that information from the SI might be useful in improving teachers' attitudes towards teaching inclusive PE. Significant relationships were observed between measures of attention and changes in teachers' attitudes towards teaching inclusive PE. In addition, relevance was significantly correlated with teachers' attitudes two weeks after exposure to the SI information. Education stakeholders should consider the development and refinement of existing teaching resources, such as the SI, that promote inclusive PE teaching strategies. Future research should explore the effects of the SI on teaching populations known to have poorer attitudes towards teaching inclusive PE. Refinement of the SI can occur only after researchers have evaluated its uptake in diverse teaching populations with unique needs, barriers to teaching inclusive PE, and teaching styles. In addition, researchers should explore possible methods for increasing teachers' attention toward the SI document in order to facilitate attitude change towards teaching inclusive PE.

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Appendices

Appendix A

Web and Poster Advertisement



## ***TEACHERS NEEDED FOR RESEARCH STUDY***

The School of Kinesiology and Health Science at York University is conducting a study to examine teachers' response to Ophea's *Steps to Inclusion* document regarding inclusive physical education. We are looking for teachers to participate in an eye-tracking study of approximately one hour in duration.

**Participants will receive \$20.00 for their time**

### **Eligible Participants Must:**

- **Be a teacher in the province of Ontario**
- **Be currently teaching either full-time, part-time, as a supply or long-term occasional (LT), or pre-service in a teacher's college in the province of Ontario**

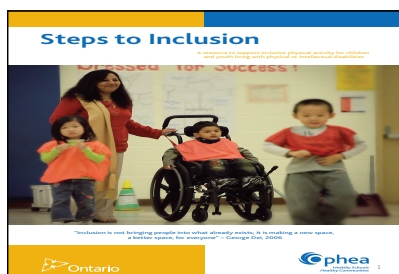
For more information, please email:

\_\_\_\_\_@gmail.com

## Appendix B

### Steps to Inclusion Text Selections

16-11-08



Research studies indicate that children with disabilities are at risk for lower participation in physical activity at home and in the community.

An inclusive environment is one where all children thrive, regardless of ability, culture, gender, interest, learning style or experience. Everyone feels included and appreciated. There are positive expectations for participation and achievement. It inherently brings an understanding that all people can succeed.

An inclusive community is one in which all people feel valued, affirmed and respected for who they are and what they bring to the group.

In an inclusive community the child feels that s/he is part of the community.

A cognitive or intellectual disability refers to a broad spectrum of disorders and conditions. Individuals who are diagnosed with an intellectual disability exhibit significant delays in measured intelligence, adaptive functioning, and academic functioning.

16-11-08

Some of the possible disorders and conditions that fall into this category are: traumatic brain injury, neurological impairments, genetic disorders such as Down Syndrome, Turner Syndrome, and Triple X syndrome, Fetal Alcohol Syndrome, and Autism Spectrum Disorder.

7

Three developmental domains that are affected by Autism Spectrum Disorders are: social understanding and skill development, language and communication, and behaviour learning.

8

It is crucial to be open to all possibilities and be willing to try new things to encourage full participation from the child.

9

A physical disability affects a child's ability to perform physical activities. For example, a child may have trouble hearing, seeing, speaking or walking. Chronic conditions classified as physical disabilities include asthma, heart conditions, respiratory conditions, cancer, epilepsy, spina bifida, cerebral palsy and muscular dystrophy.

10

**Fact:** Some children may have non-visible disabilities which include pulmonary disease, respiratory disorders, epilepsy and other limiting conditions.

11

The difference between planning for a child with a physical and/or cognitive disability lies in the particular accommodations and/or modifications needed to ensure success.

12

16-11-08

Modifications will differ based on whether the exceptionality is cognitive or physical.

13

This resource has been developed to serve two purposes: 1. To simply and clearly outline the necessary steps to achieve inclusion for children with disabilities. The following *Steps to Inclusion* are supported by reproducible colour coded reference cards. The information found on the reference cards provides practical information, templates, or questions to guide you through the steps of planning and implementing an inclusive program.

14

2. To answer many questions for individuals who are new to the concept of inclusion, such as: "What is a disability?", "What is the difference between a physical and cognitive disability?" and "How can I accommodate the needs of children with varying degrees of disability without compromising the integrity of the program?"

15

This resource is: An easy to use, simplified resource that supports teachers and/or community partners to offer inclusive physical activity programming.

16

Children with cognitive disabilities will need the following supports in place to feel part of the group: different types of modeling and instruction (e.g. visual aids, clear/slow speaking and explicit, simple, one-step instructions).

17

Children with physical disabilities will need the following supports in place to feel part of the group: peer support, extra time to complete tasks, positive reinforcement, activities designed for easy modifications and/or accommodation.

18

16-11-08

When planning for children with cognitive and/or physical disabilities in your physical activity program, you will find that there are more similarities than differences.

19

For each activity that you plan, ensure that the child will be actively participating. Soon it will become second nature to plan for all!

20

Tip: Never underestimate the power of modeling behaviour for the children. Modeling patience, understanding and respect are crucial to creating an inclusive environment.

21

Some additional questions to keep asking yourself throughout the activity include: How can I make the instructions clearer so that I can ensure all of the children completely understand the task at hand?

22

They may also need more specific skill instruction than children without disabilities.

23

An inclusive physical education program, whether it is in a school, community centre or sport and recreation facility, includes: activities that are modified to ensure all participants experience success.

24

16-11-08

When working with a child with a cognitive or intellectual disability, it is important to recognize that *each person's disability is unique*. It is crucial to find the strategies needed to safely and inclusively adapt the program or activity to meet the needs of these children.

25

Allowing other children in the group to understand that the child with autism is challenged in these developmental domains helps to create a supportive, inclusive environment. Modeling patience and kindness for children in the group is imperative for inclusion to be successful.

26

Observation, assessment and dialogue with parents/guardians, previous teachers and/or community leaders will increase the odds that the child with autism will experience success.

27

Teachers or community leaders may provide differentiation for children on the autism spectrum by: Using patience: be patient, consistent and understanding while integrating the child into physical activities.

28

Tip: Modifications can be made to the equipment, skill complexity, distance, space and rules of a game/activity.

29

Children with a physical disability will need to have their physical activity program modified so that they can succeed.

30

16-11-08

Fact: You should speak using the same tone you would use for any child, unless the child has a hearing impairment.

31

Children with physical disabilities may need support in the following areas: moving around the gymnasium and outdoors, manipulating equipment such as balls, hoops or rings, self management (e.g. toileting and changing for physical activity).

32

As the children are active, ask yourself: "What does my group...look like? Sound like? Feel like?"

33

If your group does not look, sound or feel the way you would ideally like, assess the problem so you can try to rectify it.

34

Strategies, modifications and accommodations to help guide you through the process of determining the best supports for the child can be found on:  
REFERENCE CARD E

35

Ensure you touch base with parents/ guardians before discussing their child with the group. Parents/guardians appreciate being informed.

36

16-11-08

Teach using inclusive strategies and start with activities that will encourage full participation, cooperation and community. Sample icebreaker activities can be found on: REFERENCE CARD F

37

Some additional questions to keep asking yourself throughout the activity include: How can I use visual aids for the hearing impaired?

38

Parents/guardians, community partners, teachers and support organizations are all key stakeholders in the process.

39

This resource is a great first step in building an inclusive physical activity program.

40

Rest assured that if you introduce yourself as someone who wants to help their child achieve maximum enjoyment in his or her physical activity program, they will usually be more than happy to help you help their child.

41

Ophea has adapted its existing Health & Physical Education lesson plans to provide teachers and community leaders with activity-specific accommodations for children with different disabilities. Visit the Ophea website ([ophea.net](http://ophea.net)) for free access to these lesson plans.

42

16-11-08

**The following are suggested modifications and/or accommodations in the physical activity setting. Equipment Modification and/or Accommodations:** Use lighter, larger, or slower moving equipment (e.g., discs, balloons, deflated balls, beanbags). Shorten sticks (for hockey). Lower goals (for basketball).

43

Using a tethered ball (attached to wrist) for a visually impaired child or a child in a wheelchair. Move target closer to the child who is visually impaired or in a wheelchair. Use brightly coloured balls or balls that make sound.

44

These activities are designed for children to build teamwork and assist in the early stages of inclusion. Modifications are noted for older children (where applicable).

45



- f. Do you have any other diplomas? \_\_\_\_\_ Yes \_\_\_\_\_ No  
If yes, please list:
- 
- g. In what province did you receive your teaching certification?
- 
- h. Do you have any Additional Qualifications (AQ)? \_\_\_\_\_ Yes \_\_\_\_\_ No  
If yes, please list:
- 
- i. Have you taken any Adapted PE courses? \_\_\_\_\_ Yes \_\_\_\_\_ No
- j. How many courses? \_\_\_\_\_ # of courses \_\_\_\_\_ None
- k. Have you taken any Special Education courses? \_\_\_\_\_ Yes \_\_\_\_\_ No
- l. How many courses? \_\_\_\_\_ # of courses \_\_\_\_\_ None
- m. Have you had any experience teaching individuals with disabilities? \_\_\_\_\_ Yes \_\_\_\_\_ No
- n. How many years have you taught individuals with disabilities?  
\_\_\_\_\_ Number of years \_\_\_\_\_ None
- o. Do you have any family members with a disability? \_\_\_\_\_ Yes \_\_\_\_\_ No
- p. Do you have any close personal friends with a disability? \_\_\_\_\_ Yes \_\_\_\_\_ No
- q. Do you have a disability? \_\_\_\_\_ Yes \_\_\_\_\_ No
- r. Rate the quality of most of your typical experiences teaching children/students with disabilities.  
disabilities. \_\_\_\_\_ No experience  
\_\_\_\_\_ Not good  
\_\_\_\_\_ Satisfactory  
\_\_\_\_\_ Very good
- s. How competent do you feel teaching a child/student with disabilities?  
\_\_\_\_\_ Not at All  
\_\_\_\_\_ A Little  
\_\_\_\_\_ Somewhat competent  
\_\_\_\_\_ Very Competent  
\_\_\_\_\_ Extremely Competent

*Tell us your opinion about teaching these students in your general PE class.*

1. For me, to teach one or more of these students in my general PE class in the next month is:

Very good \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ Very bad

2. Teaching one or more of these students in my general PE class in the next month is:

Very unwise \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ Very wise

3. Teaching one or more of these students in my general PE class in the next month is:

Very satisfying \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ Very unsatisfying

Thank you!

September 2016

## Appendix D

### Questionnaire Vignette

Please read the following description about the following hypothetical students. After you read the information please respond to the following questions using the rating scale. Mark a response that best describes your **opinions** about teaching one or more of these students in your physical education (PE) class.

Assume for a moment that you have just been told that one or more of the following students will be attending your physical education class starting next week: Hannah who has **Attention Deficit Hyperactivity Disorder** (ADHD), Andrew who is **Hearing Impaired**, Rita who has **Down Syndrome**, Ahad who has a **Physical Disability** (Spina Bifida), or Lanny who is **Visually Impaired**. Last year your school system began a countywide physical education policy stating that all students with and without disabilities must enroll and participate in physical education classes. You have been provided an Individual Education Plan for each of the above students, as well as their respective Ontario Student Records

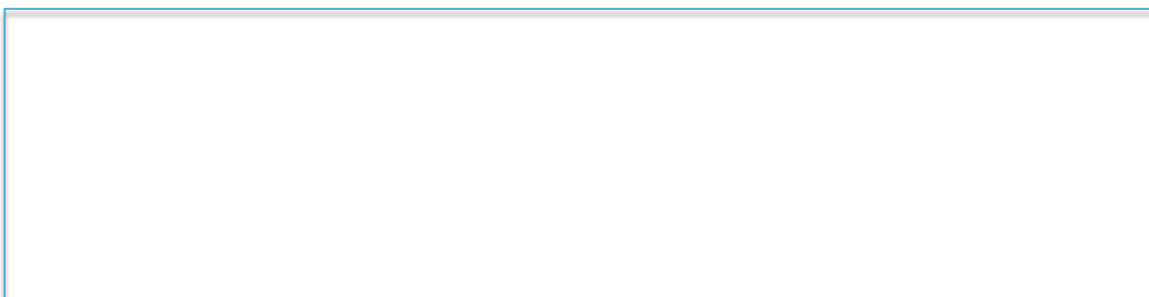
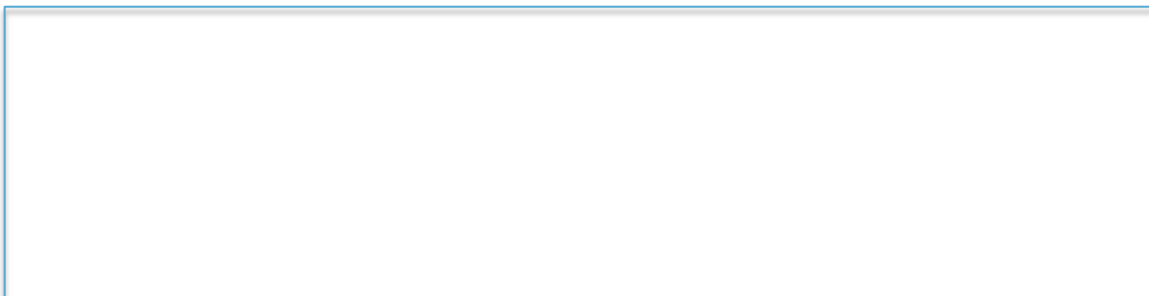
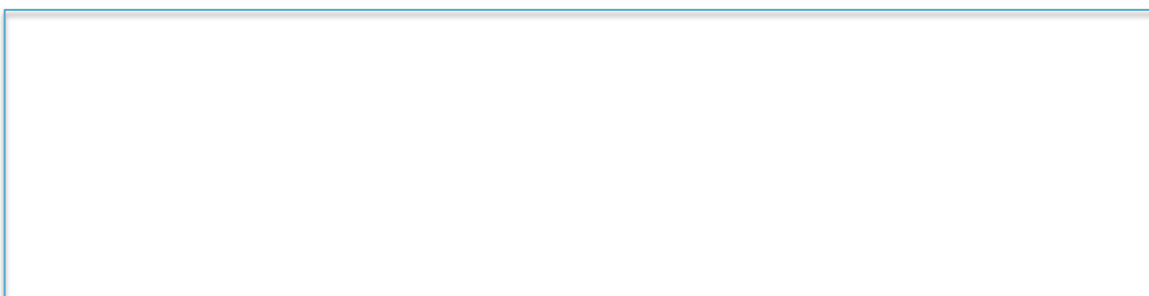
## Appendix E

## Cognitive Processing Activities

Thought-Listing Activity

In each of the boxes below record one thought that you had while reading the SI information in the slideshow. You have five minutes to record your general thoughts related to the topic of inclusive PE and how you were feeling while reading information from the SI.

Please record one thought per box and write only in the space provided to you.



Message-Recall Activity

For the following statements, please indicate if you think they were included (verbatim) in the slideshow you just watched.

Please indicate by placing a checkmark (✓) on the line at the end of the statement IF THE TEXT SELECTION WAS INCLUDED in the slideshow.

If the statement was NOT included, please place an X on the line at the end of the statement blank.

1. In an inclusive community the child feels that s/he is part of the community. \_\_\_\_\_

2. Talk to the children in the group and explain the child's disability. \_\_\_\_\_

3. Connect with the child's parents/guardians and start to build a partnership. \_\_\_\_\_

4. Some children with autism find earphones help to eliminate the echoing that can occur within a gymnasium. \_\_\_\_\_

5. For each activity that you plan, ensure that the child will be actively participating. Soon it will become second nature to plan for all! \_\_\_\_\_

6. Fact: You should speak using the same tone you would use for any child, unless the child has a hearing impairment. \_\_\_\_\_

Answers:

Statements 1, 5, and 6 were all included in the slideshow.

Statements 2, 3, and 4 were all NOT included in the slideshow

## Appendix F

## Perceived Message Relevance Measure

In the questionnaire you are about to complete we ask questions that make use of rating scales with 5 or 7 places; you are to make a mark (X) in the place that best represents your perception of the personal relevance of the information from the Steps to Inclusion (SI).

For example, if you were asked about “The weather in Southern Ontario” on such a scale, the seven place would appear as follows:

The weather in Southern Ontario is good

*Strongly Disagree* \_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.*Strongly Agree*

If you strongly agree that the “Weather in Southern California is good” then you would place your mark as follows.

The weather in Southern Ontario is good

*Strongly Disagree* X\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.*Strongly Agree*

This survey is numbered for data processing; your responses will remain confidential.

1. The information from the SI seemed to be written personally for me.

*Strongly Disagree* \_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.*Strongly Agree*

2. The information from the SI was very relevant to my situation.

*Strongly Disagree* \_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.*Strongly Agree*

3. The information from the SI was primarily general information that wasn't applicable to me.

*Strongly Disagree* \_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.*Strongly Agree*

4. The information from the SI was not customized at all.

*Strongly Disagree* \_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.\_\_\_\_\_.*Strongly Agree*

*Thank you!*

## Appendix G

## Consent Form

**Date: October 2016**



## **Informed Consent Form**

**Teachers' attitudes towards inclusion in physical education:  
An eye-tracking study  
York University**

**Primary Researchers:** \_\_\_\_\_

**Purpose of the research:** The primary purpose of this study is to examine teachers' response to Ophea's Steps to Inclusion document regarding inclusive PE. The secondary purpose is to use eye-tracking technology to further understand teachers' uptake of the document.

**What you will be asked to do in the research:** Today you will be asked to view a slideshow that contains information from Ophea's Steps to Inclusion document regarding teaching inclusive physical education. You will view this slideshow on a computer, which uses eye-tracking technology to record your eye movements. Before and after you view the slideshow, you will complete two questionnaires regarding inclusive physical education and the information included in the document. The session today will take no more than one hour and a half. Two weeks from today, you will receive a questionnaire via email to complete online. The online questionnaires will take approximately 20 minutes to complete.

You will receive \$20 and full parking reimbursement (if applicable) for your participation.

**Risks and discomforts:** We do not foresee any risks or discomfort from your participation in the research.

**Benefits of the research:** No direct benefits are anticipated for the participants.

**Voluntary participation:** Your participation in this research is completely voluntary and you may choose to stop participating at any time. Your decision to cease your participation in this study will not influence your relationship or the nature of your relationship with researcher or the staff of York University either now or in the future.

**Withdrawal from the study:** You may stop participating in this study at any time, for any reason, if you so decide. Your decision to stop participating, or to refuse to

answer particular questions, will not affect your relationship with the researchers, York University, or any other group associated with this project. In the event that you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

If you stop participating, you will still be eligible to receive the promised pay for agreeing to be in the project.

**Confidentiality:** All information you supply during the research will be held in confidence and your name, school and school board will not appear in any report or publication of the research. Eye-movement and questionnaire data will be collected using online software that is password protected. Your data will be stripped of any identifying information and safely stored in a locked facility on a password-protected computer and only research staff will have access to this information. Data will be stored for 6 months following the publication of the study and will subsequently be destroyed. Confidentiality will be provided to the fullest extent possible by law.

**Questions about the Research?** If you have questions about the research in general or about your role in the study, please feel free to contact \_\_\_\_\_. This research has been reviewed and approved by the Human Participants Review Sub-Committee of York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, please contact the Senior Manager and Policy Advisor for the Office of Research Ethics, 5<sup>th</sup> Floor, York Research Tower, York University.

**Legal Rights and Signatures:**

I \_\_\_\_\_ (first, last name) consent to participate in *Teachers' attitudes towards inclusion in physical education: An eye-tracking study* by \_\_\_\_\_. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. By signing below, I indicate my consent to participate in this study.

**Participant Name:** \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Principal Investigator:**

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

## Appendix H

## Tests of Normality

Baseline (Pre-attitude) &amp; Post-information (Post-Att)

**Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre Attitude Mean	.20	50	.001	.91	50	.001
Post Att Mean	.15	50	.01	.94	50	.01

a. Lilliefors Significance Correction

Two-week Follow up (Post2 Attitude)

**Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Post2 Attitude Mean	.18	42	.001	.91	42	.001

a. Lilliefors Significance Correction

## Appendix I

## Tests of Multicollinearity

*Predictors of Post-information Attitudes*

<b>Variable</b>	<b>VIF</b>
Average Fixation Duration	1.02
Message Recall	1.02
Thought List	1.00
Relevance	1.04

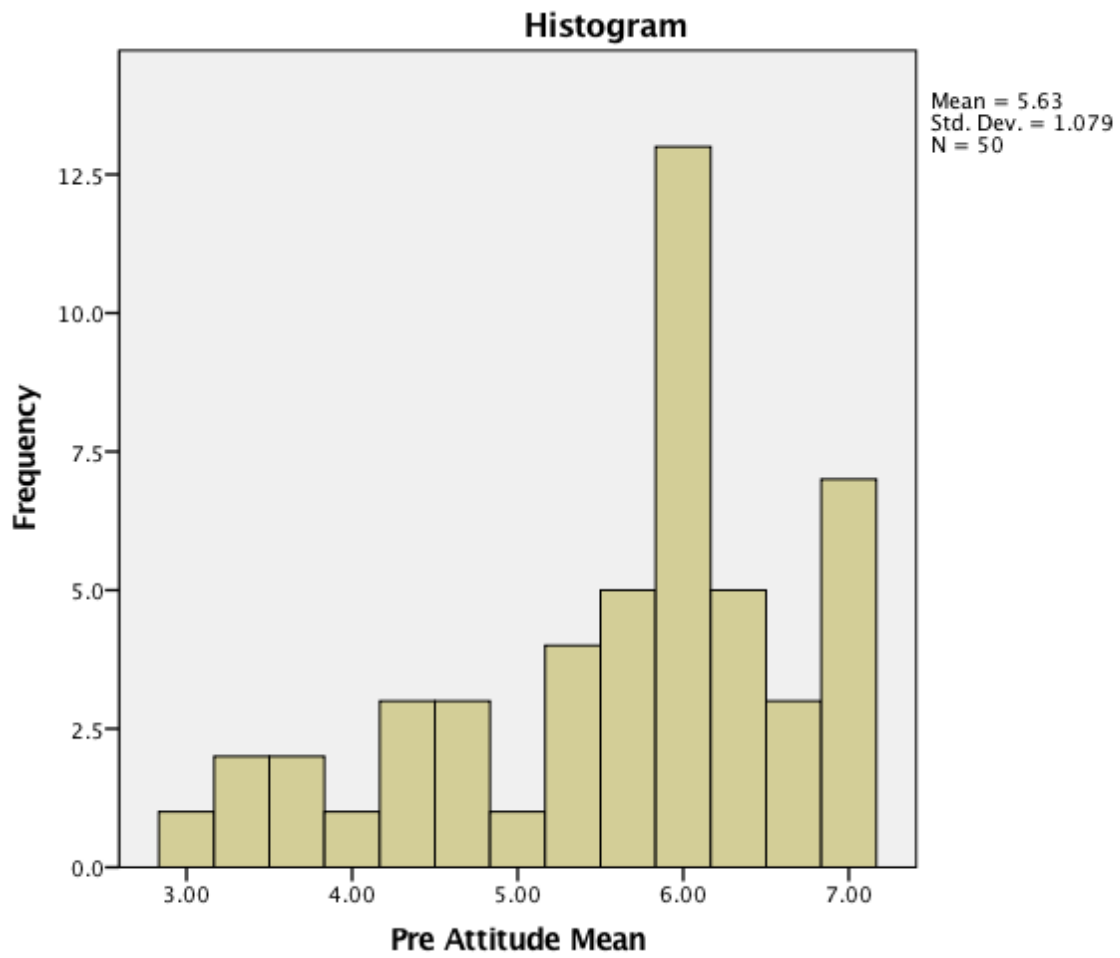
*Predictors of Two-week Follow up Attitudes*

<b>Variable</b>	<b>VIF</b>
Average Fixation Duration	1.01
Message Recall	1.01
Thought List	1.01
Relevance	1.02

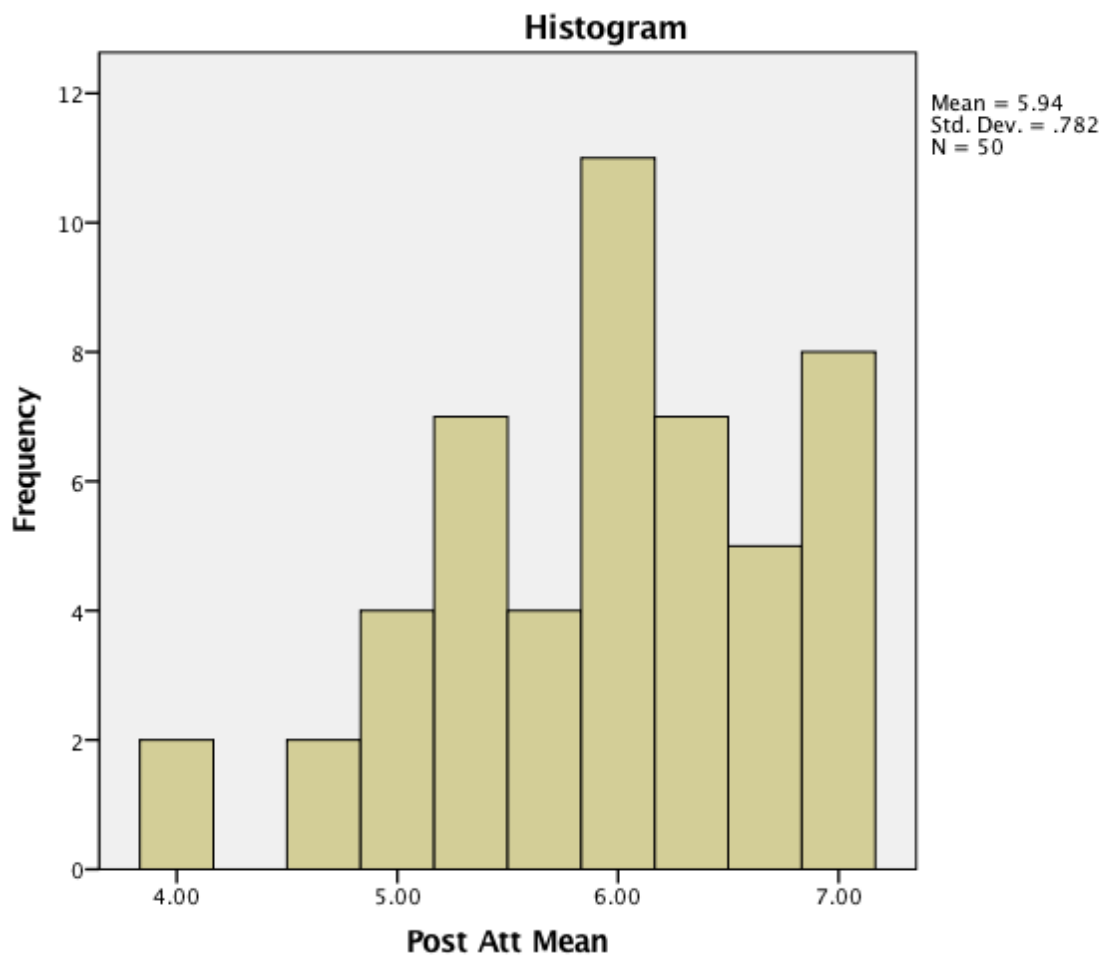
## Appendix J

## Attitude Histograms

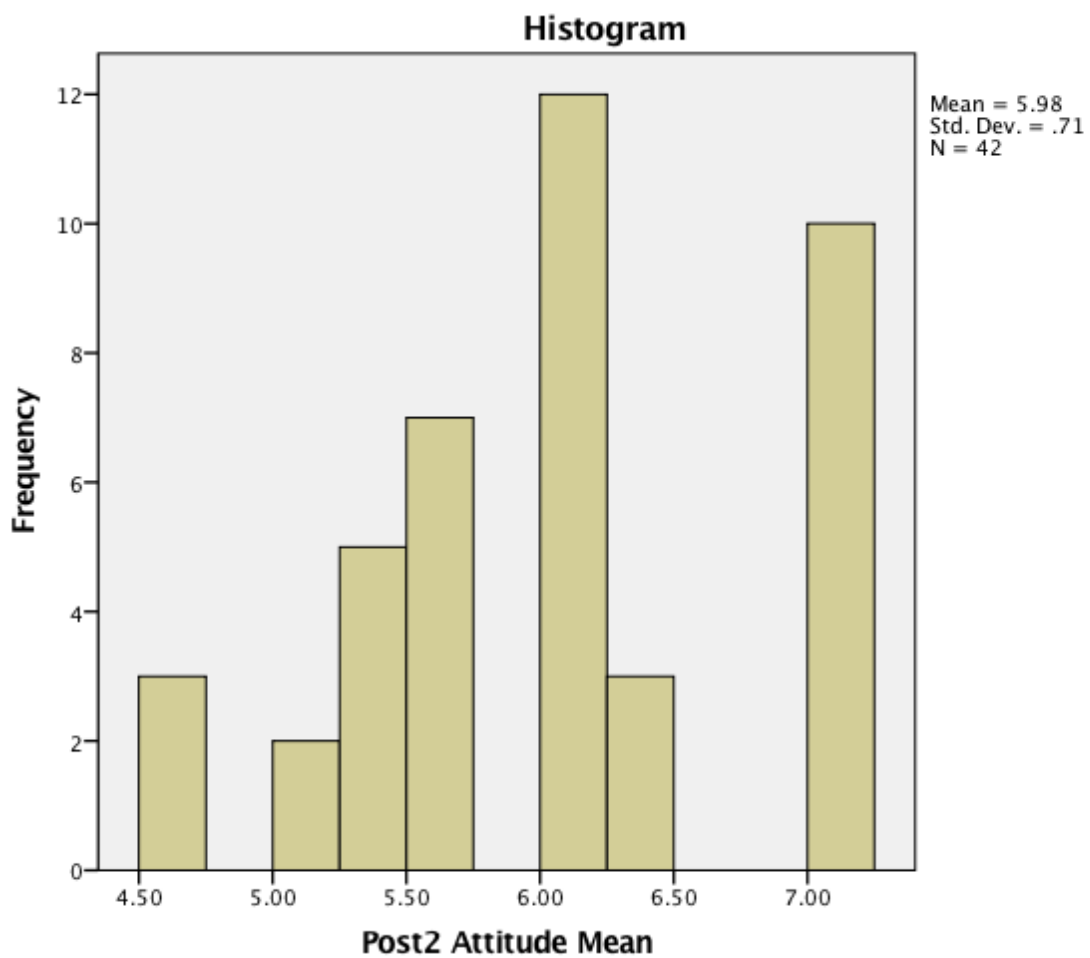
Baseline Attitude Histogram



Post-information Attitude Histogram



## Two-week Follow up Attitude Histogram



## Appendix K

## Exploratory Analyses for Attention and Message Relevance

*Comparing Attention Across Teacher-Level Factors (N=50)*

Pair	N	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
<b>Attention</b>						
Male	13	11.34	1.35	.58	45	.57
Female	34	11.11	1.22			
AQ Earned Yes	27	11.34	1.26	1.10	46	.28
AQ Earned No	21	10.94	1.20			
APE Course Yes	24	11.26	1.14	.52	46	.61
APE Course No	24	11.07	1.34			
SpecEd Course Yes	25	11.45	1.26	1.68	46	.10
SpecEd Course No	23	10.86	1.15			
Experience SWD Yes	40	11.24	1.25	.89	46	.38
Experience SWD No	8	10.81	1.15			

*Comparing Relevance Across Teacher-Level Factors (N=50)*

Pair	N	M	SD	t	df	p
<b>Relevance</b>						
Male	13	14.14	2.11	-.46	47	.66
Female	35	14.51	2.78			
AQ Earned Yes	29	14.28	2.85	-.33	48	.74
AQ Earned No	21	14.52	2.18			
APE Course Yes	25	14.32	2.90	-.16	48	.87
APE Course No	25	14.44	2.26			
SpecEd Course Yes	26	13.81	2.40	-1.67	48	.10
SpecEd Course No	24	15.00	2.65			
Experience SWD Yes	42	14.21	2.63	-1.05	48	.30
Experience SWD No	8	15.25	2.19			

*Comparing Attention Across Teacher-Level Factors (One-way ANOVAs; N=50)*

Attention	Sum of Squares	df	Mean Square	F	Sig.
<b>Years Teaching</b>					
Between Groups	5.37	3	1.78	1.19	.33
Within Groups	66.26	44	1.51		
Total	71.63	47			
<b>Teaching Contract</b>					
Between Groups	15.30	5	3.06	2.28	.06
Within Groups	56.34	42	1.34		
Total	71.63	47			
<b>Grade Teaching</b>					
Between Groups	7.40	4	1.85	1.22	.32
Within Groups	63.67	42	1.52		
Total	71.07	46			

*Comparing Relevance Across Teacher-Level Factors (One-way ANOVAs; N=50)*

Relevance	Sum of Squares	df	Mean Square	F	Sig.
<b>Years Teaching</b>					
Between Groups	26.31	3	8.77	1.36	.27
Within Groups	297.48	46	6.47		
Total	323.78	49			
<b>Teaching Contract</b>					
Between Groups	23.42	5	4.68	.69	.64
Within Groups	300.36	44	6.83		
Total	323.78	49			
<b>Grade Teaching</b>					
Between Groups	25.16	4	6.29	.95	.45
Within Groups	292.84	44	6.66		
Total	318.00	48			

*Relationship Between Scale Psychological Factors, Attention, and Relevance (N=50)*

Variables	N	M (SD)	1	2	3	4
1. Quality experiences teaching disabilities	50	3.20 (.833)	-			
2. Competence teaching disabilities	50	3.14 (.70)	.23	-		
3. Average Fixation Duration (s)	48	11.17 (1.24)	.04	-.06	-	
4. Relevance	50	14.38 (2.57)	.12	.15	-.03	-