

A Dissertation

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Attitudes of Preschool Teachers in South Korea toward Inclusion: Using the Rasch

Model to Construct a Teacher Attitude Measure

by

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Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Doctor of Philosophy Degree in Special Education

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Implementation of preschool inclusion is a global trend and preschool teachers' attitudes toward inclusion play a significant role in supporting effective inclusion for children with disabilities. While many early childhood studies have reported attitudes of teachers toward early childhood inclusion, there has been lack of information about South Korean preschool teachers' attitudes toward inclusion. Measuring teachers' attitudes is a complex process that involves many different variables, so choosing a rigorous measurement model to construct a valid teacher attitude measure is crucial. For this study, the Rasch model was chosen to develop the attitude measure to obtain more useful information about attitudes of preschool teachers in South Korea toward inclusion.

The purpose of this study was to a) investigate attitudes of preschool teachers in South Korea toward inclusion and b) to construct a valid teacher attitude measure by using the Rasch model. Data was collected using an online survey.

The results indicated that 64% of teachers generally had positive thoughts about a) the necessity of in-service training, b) the overall concept of access to a general classroom for a child with disability, c) full participation in a preschool classroom for a child with disability, d) inclusion for a child with a moderate disability, and e) access to a

general classroom regardless of the child's type of disability. Also, the results indicated that the majority of teachers were strongly opposed to including a child with EBD and had strong negative feelings about including a child with a severe disability. Also, they were more unwilling to have a child with a severe disability than a child with a mild and a moderate disability.

To implement more effective inclusion, professional development programs need to provide more extensive and specialized knowledge and instructional skills to general preschool teachers.

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Chapter One

Introduction

Research has demonstrated that an inclusive educational environment in early childhood education contributes to the developmental growth and learning success of preschool children with and without disabilities (Buysse, Goldman, & Skinner, 2002; Diamond & Carpenter, 2000; Frea, Craig-Unkefer, Odom, & Johnson, 1999; Guarlnick, Connor, Hammond, Gottman, & Kinnish, 1996; Holahan & Costenbader, 2000; Killoran, Tymon, & Frempong, 2007; Macy & Bricker, 2007; Odom, 2000; Odom, Schwartz, & ECRH Investigators, 2002; Rafferty, Piscitelli, & Boettcher, 2003; Vakil, Freeman, & Swim, 2003; Walker & Berthelsen, 2008). These findings extend beyond the United States. A significant number of studies have evaluated the success of preschool inclusion implemented in early educational settings internationally. The majority of these studies have indicated that teachers' attitudes are one of the significant factors that influence effective implementation of preschool inclusion (Aguiar, Moiteiro, & Pimentel, 2010; Cheuk & Hatch, 2007; Cross, Traub, Hutter-Pishgahi, & Shelton, 2004; Frankel, Gold, & Ajodhia-Andrews, 2010; Gal, Schreur & Engel-Yeger, 2010; Seçer, 2010). Specifically, teachers' positive attitudes play an important role in improving developmental and educational advantages for children with and without disabilities in inclusive classrooms (Bruns & Mogharreban, 2007; Cross et al., 2004; Leatherman & Niemeyer, 2005; Seçer, 2010). Therefore, it is important to fully assess teachers' current attitudes toward working with young children who have special needs in general early childhood classrooms in order to understand how to best support early childhood inclusion. To

accurately describe teachers' attitudes, it is important that the measure used to collect data produces valid outcomes. Measuring teachers' attitudes is a complex process that involves many different variables, so great care must be taken to design a measure that focuses on the appropriate constructs and yields useful results.

In South Korea, special education for children with disabilities has progressed since the enactment of the Special Education Promotion Act (SEPA) of 1977 (Seo & Oakland, 1991; Park, 2002). For example, elementary and middle school education has been free and compulsory for children with disabilities since 1953 and 1985 respectively. In addition, the entire amendment of the SEPA of 1994 introduced inclusive and individualized education for children with disabilities into educational settings. This amendment also included a requirement to create individualized special education support committees similar to Individualized Education Program teams in the U. S. that help children with disabilities to be placed in the most appropriate educational settings available. Therefore, children with disabilities, who are elementary- and middle school-aged, have had more learning opportunities in inclusive educational settings after the amendment of the SEPA of 1994.

Free and compulsory education have been extended to preschool children and high school students, who have disabilities according to the Act on Special Education for Disabled Persons, Etc. (ASEDP, 2008; Ministry of Education, Science and Technology, 2011a). The ASEDP is an alternative special education law for the SEPA to maximize educational benefits for preschool children with disabilities to high school students with disabilities. Specifically, preschool education for children with disabilities from three-to five-year-old will be compulsory by the school year of 2012 based on the ASEDP: five-

year-old children by 2010, four-year-old children by 2011, and three-year-old children by 2012. According to the ASED, it is recommended that preschool children with disabilities be placed in general preschool classrooms. This is consistent with the principle of “least restrictive environment” which is included in the U.S. Department of Education’s Individuals with Disabilities Education Act (IDEA, 2004). While free education for preschool children with disabilities in South Korea has been provided by the amendment of the SEPA of 1994, compulsory education of preschool children with disabilities will give them more educational opportunities to learn alongside of their typically developing peers. As more preschool children with disabilities are included in inclusive classrooms, South Korea will need additional well-designed professional programs for general preschool teachers so they can work effectively with young children who have special needs.

Statement of the Problem

Implementation of inclusion in early childhood is a global trend (Aguiar et al., 2010; Bradshaw, 2009; Cheuk & Hatch, 2007; Clough & Nutbrown, 2004; Frankel et al., 2010; Gal et al., 2010; Geerdina & van der Aalsvoort, 2007; Kemp & Carter, 2005; Killoran et al., 2007; Nonis, 2006; Odom, 2000; Seçer, 2010). For this study, the joint position statement proposed by the Division for Early Childhood and the National Association for the Education of Young Children of 2009 was used as the definition of inclusion. The joint position statement includes three major characteristics such as access, participation, and supports that may have effects on quality inclusion for preschool children with disabilities. Similar major principles and challenges to implement inclusion into early educational settings exist among different countries (Frankel et al., 2010).

Numerous early childhood researchers have reported teachers' attitudes toward inclusion, and the results of their research has provided guidance to educators and policymakers about how to best implement inclusion successfully into community-based preschools. Understanding the attitudes of general preschool teachers in South Korea toward inclusion may help early childhood professionals, including teacher educators and administrators prepare preschool teachers to work effectively with preschool children with diverse needs. Currently, however, there is little known about general preschool South Korean teachers' attitudes toward inclusion.

Using the Rasch measurement model. The quality of an attitude measure can influence the quality of the information obtained by using it. Choosing a rigorous measurement model is important in constructing a valid attitude measure. The usefulness of the Rasch measurement model has been widely recognized to develop objective measurement to obtain valid data in early childhood educational studies across different countries (Absoud, Parr, Salt, & Dale, 2011; Banerji, Smith, & Dedrick, 1997; Chien, Brown, & McDonald, 2011; DiStefano & Morgan, 2010; Harkness& Bundy, 2001; Heo, Squires, Yovanoff, 2008; Joosten & Bundy, 2008; Kim & Smith, 2010; Lai, Fisher, Magalhaes, & Bundy, 1996; Lautamo& Heikkilä, 2011; Leung & Lang, 2009; Leung, Mak, Lau, Cheung, & Lam, 2010; Lim, Rodger, & Brown, 2010a; Lim et al., 2010b; Mok & Lam, 2011; Tedman, 2005; Wuang, & Su, 2009; Yim, Abd-El-Fattach, & Lee, 2007). However, no current research has yet applied the principles of the Rasch model to attitude surveys of early childhood educators in South Korea.

Purpose of the Study

This study has two purposes: (a) to describe attitudes of general preschool South Korean teachers about inclusion and (b) to construct a valid teacher attitude measure by using the Rasch measurement model. These goals are important for two reasons. First, there is a lack of information about general preschool South Korean teachers' attitudes toward inclusion. The increased inclusion of preschool children with disabilities in South Korea demands more well-prepared teachers to support both children with disabilities and their typically developing peers in single classrooms. Therefore, understanding the attitudes of general preschool South Korean teachers is fundamental to develop professional programs that support the ability of individual teachers to work more effectively with young children who have special needs. Second, there are no attitude surveys for general preschool South Korean teachers validated using the advanced Rasch measurement model. While there are several studies about general preschool South Korean teachers' attitudes toward early educational issues in South Korea (Kim, Stormont, & Espinosa, 2009), most of these studies have concentrated on applying classical models to analyze collected data instead of focusing on the precision of attitude instruments used for the studies. Using a robust measurement model such as Rasch will make a significant contribution to the literature about the attitudes of general preschool South Korean teachers toward inclusion. For this study, therefore, the Rasch measurement model was chosen to construct a valid attitude measure.

Significance of the Study

This study will provide information helpful in understanding general preschool South Korean teachers' attitudes toward inclusion. The Rasch measurement model will

be used to validate resultant measures obtained from the instrument designed to assess general preschool South Korean teachers' attitudes toward inclusion. By using the Rasch measurement model, this study will provide information that early childhood teacher educators could use to develop effective professional development programs. The importance and the necessity of providing professional development programs to general early childhood teachers has been mentioned to implement more effective early childhood inclusion (Bruns & Mogharreban, 2007, 2008; Dinnebeil, Rush, Gallagher, & Rhodes, 2003; Rush, Sheldon, & Hanft, 2003; Saad & Lindsay, 2010). Specifically, in-service training on special education issues such as curriculum adaptations, specialized teaching strategies, knowledge of children with disabilities and/or experience working with children with disabilities has been indicated to improve general preschool teachers' confidence and/or comfort levels and teaching in inclusive classrooms (Bruns & Mogharreban, 2007, 2008; Cross et al., 2004; Dinnebeil, McInerney, Fox, & Juchartz-Pendry, 1998; Leatherman & Niemeyer, 2005; Mitchell & Hegde, 2007; Vakil et al., 2003). As the knowledge and comfort levels of preschool teachers increase, so will their positive attitudes about working with young children with disabilities, the more the attitudes of the teachers will favor including children with special needs into their general classrooms (Mitchell & Hegde, 2007). Therefore, if some teachers have less than positive attitudes towards the inclusion of young children with special needs in general education classrooms, additional training provided by professional developmental programs could improve their attitudes; if some teachers already have positive attitudes, the training could enhance their current positive attitudes.

Research Questions

To achieve the purposes stated above, this study examined 13 research questions:

1. Is the attitude instrument constructed for the study a valid measure for identifying general preschool South Korean teachers' attitudes toward inclusion?
2. Does the rating scale function effectively to measure teacher attitudes?
3. Do the items measure a single variable of attitude?
4. Do the items function effectively to measure teacher attitudes?
5. Do teachers respond to the items measuring their attitudes in a serious manner?
6. What are general preschool South Korean teachers' attitudes about early childhood inclusion as measured by a self-report attitude scale?
7. Are there differences between teachers' positive or negative attitudes that may be associated with specific demographic characteristics?
8. Is there a difference in teachers' attitude scores between those who completed college course(s) related to special education and those who did not?
9. Is there a difference in teachers' attitude scores between those who received in-service training on special education issues and those who did not?
10. Is there a difference in teachers' attitude scores between those who have had experiences of teaching children with special needs and those who have not?
11. Is there a difference in teachers' attitude scores according to their years of teaching preschool children?
12. Is there a difference in teachers' attitudes scores according to their highest professional degrees?
13. Is there a difference in teachers' attitudes scores according to their school districts where they are working?

Definitions of Terminology

Access means that a child with a disability can take part in any learning opportunities, activities, and environments that typically developing peers have in general educational settings. The child's disability does not prevent her or him from taking part in general learning opportunities, activities, and environments. Modification of activities and environments may be made to facilitate the disabled child's approach to general educational settings. For example, a child who uses a wheelchair can take part in outdoor activities and/or playgrounds because ramps eliminate barriers to participation.

A child with disability means one who is approved to receive special education services (ASEDP, 2008; Ministry of Education, Science, and Technology, South Korea).

Participation means that a child with disability is fully involved with learning activities with typically developing peers. Additional individualized accommodations may be made to support the child with disability to play and complete learning activities with typically developing peers. For example, a child with voice impairment fully participates in a circle time with typically developing peers by using picture communication boards to support meaningful involvement in the activity.

Chapter Two

Review of the Literature

The literature review focuses on five major topics: (a) inclusion, (b) attitude, (c) teacher attitudes toward inclusion, (d) attitude measures, and (e) the Rasch measurement model.

Inclusion in Early Childhood

The term *inclusion* has been used in educational fields since the middle of 1980's (Thomazet, 2009). Although related the concept of inclusion is different from the concepts of mainstreaming and integration that were often used in special educational fields in the past. For example, mainstreaming refers to a child with disability that a child with disability is removed from the child's special education classroom and is placed in general classroom for a part of the day (McLean & Hanline, 1990; Rafferty et al., 2003). In mainstreaming, access to general education classrooms is allowed to children with disabilities who have the same functional level as their typically developing peers. Also, within a framework of mainstreaming, there are no instructional modifications or support services for these children with disabilities who need different help to learn compared to their typically developing peers (Rafferty et al., 2003).

Integration means that children with and without disabilities are put into a same classroom (Odom & McEvoy, 1990; Rafferty et al., 2003). However, physically integrating children with disabilities in general classrooms does not always guarantee their full membership in the general classrooms (Ferguson, 1996). That is, simply placing children with disabilities in general classrooms does not mean that they will learn effectively with typically developing children in the same classrooms (Vakil, Welton,

O'Connor, & Kline, 2009). Limited access to general preschool classrooms and a lack of instructional modifications and support services may restrict the learning opportunities of children with disabilities in general educational settings. Children with disabilities and their teachers need more support in general education classrooms.

Definition of inclusion. In the past, there was a lack of agreement about how to best define early childhood inclusion (Lieber et al., 1998; Odom, 2000; Odom & Diamond, 1998). Recently, however, the Division for Early Childhood (DEC) and the National Association for the Education of Young Children (NAEYC), two nationally recognized professional organizations, jointly proposed a definition of early childhood inclusion (2009). The definition is as follows:

Early childhood inclusion embodies the values, policies, and practices that support the right of every infant and young child and his or her family, regardless of ability, to participate in a broad range of activities and contexts as full members of families, communities, and society. The desired results of inclusive experiences and their families include a sense of belonging and membership, positive social relationships and friendships, and development and learning to reach their full potential. The defining features of inclusion that can be used to identify high quality early childhood programs and services are access, participation, and supports (p. 2).

Specifically, a high quality inclusive environment can be identified (a) when preschool children with disabilities can access various learning opportunities and appropriate activities in different types of educational settings, (b) when preschool children with disabilities can participate in play and learning activities with the child's

typically developing peers through individualized accommodations and supports meeting their special needs, and (c) when providing ongoing professional development and support to family members, practitioners, specialists, and administrators for effective inclusive practices (DEC & NAEYC, 2009).

In this study, the term preschool inclusion means that preschool children with disabilities can access the same learning opportunities, activities, and environments that typically developing peers have in general educational settings. Modified instructions and specialized support are provided to children with disabilities in general preschool classrooms. Also, preschool inclusion means that preschool children with disabilities fully participate in play and learning activities with typically developing peers.

Importance of inclusion in early childhood. Early childhood professionals including teachers and administrators have made great efforts to implement quality inclusion to general preschool classrooms (Aguilar et al., 2010; Bradshaw, 2009; Cheuk & Hatch, 2007; Clough & Nutbrown, 2004; Frankel et al., 2010; Gal et al., 2010; Geerdina & van der Aalsvoort, 2007; Killoran et al., 2007; Nonis, 2006; Odom, 2000; Odom et al., 2002; Seçer, 2010). Developmental and social benefits through more educational opportunities for children with disabilities are major reasons why leaders in the field support implementation of inclusion in early childhood.

Benefits of early childhood inclusion. Over the past 30 years, many researchers have provided evidence to support the developmental and social benefits of inclusive classrooms for preschool children with different types of disabilities and different degrees of severity of disabilities (Buysse & Bailey, 1993; Buysse et al., 2002; Diamond & Carpenter, 2000; Garfinkle & Schwartz, 2002; Guarlnick et al., 1996; Holahan &

Costenbader, 2000; Hundert, Mahoney, Mundy, & Vernon, 1998; Kohler, Anthony, Steighner, & Hyson, 2001; Macy & Bricker, 2007; Nelson, McDonnell, Johnston, Crompton, & Nelson, 2007; Odom & Diamond, 1998; Rafferty et al., 2003; Walker & Berthelsen, 2008). Several studies were conducted about benefits of early childhood inclusion from 1980 to 1991. These studies suggest that inclusive educational settings facilitate social interactions of preschool aged children with disabilities and help these children obtain developmental outcomes (Buysse & Bailey, 1993).

More recently, Macy and Bricker (2007) reported that three preschool-aged children with developmental delays showed increased social skills such as cooperation, turn taking, and following directions when they participated in the routine activities in inclusive preschool classrooms. These children had different targeted social goals including initiating cooperative activity, taking turns with others during conversation, and responding appropriately to routines and expectations during group activities. Three student teachers were paired to each child and these teachers provided their paired children with embedding learning and practice opportunities, which is regarded as an evidence-based naturalistic intervention (Rule, Losardo, Dinnebeil, Kaiser, & Rowland, 1998), into the routine activities such as circle time or free play. The teachers addressed their paired children's target social goals during circle time or free play at least 10 times during each of total 14 sessions to help the disabled children to meet their individual social goals. After the intervention of embedding learning and practice opportunities in inclusive classrooms, all three children showed improvement on their targeted social goals during the routine activities.

Nelson and her colleagues (Nelson et al., 2007) reported that four preschool-aged children with autism showed an increase in play initiations, engagement time, and play skills when they were involved in play activities in different inclusive preschool programs including Head Start, a community-based preschool, and an integrated special education program. Each child had different degrees of severity of autism spectrum disorder (ASD), from mild to severe. Also, each child had difficulties in language and communication including initiating and sustaining conversations with peers. In addition, each child typically engaged in different types of play such as solitary play and/or onlooker behavior. While most of the children showed interest in peers' play, some children did not attempt to interact with other children in play groups and some children failed to interact with peers. A visual intervention strategy was used to support these children to initiate play with their typically developing peers. Typically developing peers received instructions about how to ask a child with autism to play or how to show the child with autism play materials. Play initiations, engagement time, and play skills were compared between before and after visual intervention. As a result of these interventions, all of the children with mild to severe autism showed improvements in play interaction behaviors with typically developing peers. Nelson et al. (2007) indicated that opportunities to interact with their typically developing peers in inclusive educational environments may increase social and communication development of the children who already had difficulties in both developmental domains. Garfinkle and Schwartz (2002) also reported results similar to those of Nelson et al.'s study. Preschool children with autism showed the increase of social behavior as well as nonsocial engagement during small group activity and free play with typically developing peers.

Holahan and Costenbader (2000) compared the outcomes of social and emotional development between two groups of preschool children with developmental delays: one group from inclusive and the other group from self-contained classrooms. Each group consisted of 15 preschool children who had delays in three developmental domains such as self-help skills, general knowledge/comprehension, and social and emotional development. There were no differences between the children in inclusive classrooms and self-contained classrooms on the initial level of functioning in self-help skills, general knowledge/comprehension, and social and emotional development. Related to social and emotional development, the children who were initially functioning at a higher level showed more progress in inclusive settings than in self-contained classrooms. However, the children who were initially functioning at a lower level showed no differences in terms of progress on social and emotional development between inclusive and self-contained classrooms.

Rafferty and her colleagues (Rafferty et al., 2003) also compared children's progress related to auditory comprehension, expressive language, and social skills between two groups of preschool children with developmental disabilities in inclusive and segregated classrooms: 68 preschool children with disabilities from inclusive classrooms and 28 preschool children with disabilities from segregated classrooms. In inclusive classrooms, 26 children had severe disabilities and 42 children had less severe disabilities. In segregated classrooms, 21 children showed severe disabilities and 7 children show less severe disabilities. These children had difficulties in language development and social skills. Pre- and post-tests were administered by using the Preschool Language Scale-3 (Zimmerman, Steiner, & Pond, 1992), the Social Skills

Rating System-Teacher Version (Gresham & Elliott, 1990), and the Wechsler Preschool and Primary Scale of Intelligence-Revised (Wechsler, 1989) in October and May respectively. The results indicated that children with severe disabilities in inclusive classrooms showed greater progress in auditory comprehension, expressive language, and social skills than children with severe disabilities in segregated classrooms. While children with severe disabilities in segregated classrooms showed fewer problem behaviors than children with severe disabilities in inclusive classrooms, children with less severe disabilities in inclusive classrooms did not show greater language development and social competence than children with less severe disabilities in segregated classrooms.

Hundert and his colleagues (Hundert et al., 1998) described changes of developmental and social gains of 48 children with severe disabilities in segregated and 46 children with severe disabilities in inclusive preschool classrooms over a school period. The targeted developmental domains included preacademic, communication, social/self-help, gross motor, behavior, daily living, socialization, and motor skills and were evaluated using the Uniform Performance Assessment System (White et al., 1981), the Vineland Adaptive Behavior Scale (Sparrow, Balla, & Cicchetti, 1984), and the Vineland Adaptive Behavior Scale –Classroom Edition (Sparrow et al., 1984) respectively. In addition, developmental and social gains of children with severe disabilities in segregated and inclusive preschool classrooms were compared with developmental and social gains of 66 children with mild/moderate disabilities and 63 typically developing children in inclusive preschool settings. The results of the study indicated that children with severe disabilities in inclusive settings showed more

developmental gains than children with severe disabilities in segregated settings. Specifically, children with severe disabilities in inclusive preschool classrooms showed greater improvement in communication and social/self-help domains than children with severe disabilities in segregated settings. Also, children with severe disabilities in inclusive settings showed similar developmental gains when compared to children with mild/moderate disabilities in inclusive classrooms. While children with different severity of disabilities did not show any improvement in peer interaction during free play, typically developing children did show increases in their rates of peer interaction.

As described above, preschool children, who had different types and severities of disabilities showed social and developmental benefits from being enrolled in general educational environments. In addition, general educational settings that provided diverse intervention strategies supported individual children with different special needs. Therefore, preschool children with disabilities should have access to opportunities for various intervention strategies as well as opportunities to play and interact with typically developing peers.

Typically developing preschool children also benefited from early childhood inclusion. For example, Diamond and Carpenter (2000) demonstrated that typically developing children increase their prosocial behaviors such as using strategies for helping peers with disabilities. Odom and his colleagues (Odom et al., 2002) have also conducted studies that show that inclusion facilitates understanding and acceptance of their peers with disabilities by typically developing children.

Attitude

Attitude is a significant factor that may contribute to effective inclusion for young children with disabilities (Bricker, 1995). Specifically, teachers' attitudes play an important role in implementing inclusion effectively in educational settings (Avramidis & Norwich, 2002; Burke & Sutherland, 2004).

Definition of attitude. Since the early 19th century, the concept of attitude has been defined in various ways. For example, an attitude is “a complex of feelings, desires, fears, convictions, prejudices or other tendencies that have given a set or readiness to act to a person because of varied experiences” (Chave, 1928, p. 364). Bogardus (1931) defined an attitude as “a tendency to act toward or against something in the environment which becomes thereby a positive or negative value” (p.52). Allport (1935) defined an attitude as “a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related” (p. 810). According to Triandis (1971), an attitude is “an idea charged with emotion which predispose a class of actions to a particular class of social situations” (p.2). Also, Eagly and Chaiken (1993) stated that an attitude is “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (p.1). Based on these definitions, for this study, I define an attitude as a multifaceted concept including human's emotions, ideas, and tendency to act. Therefore, people's emotions, ideas, and tendency to act should be investigated together to understand their attitudes toward an object and/or a specific situation.

According to Triandis (1971), the construct “attitude” consists of three components, and the components are interrelated: (a) ‘A cognitive component, that is, the

idea which is generally some category used by humans in thinking’; (b) ‘An affective component, that is, the emotion which charges the idea’; (c) ‘A behavioral component, that is, a predisposition to action’ (p. 3). Triandis’ definition provides a useful framework for the present study. Specifically, survey questions related to attitude consisted of three parts, South Korean preschool teachers’ (a) thoughts about, (b) feelings about, and (3) willingness to act toward inclusion.

Attitudes can be measured by using different verbal statements that reference affection, belief, and behavior (Triandis, 1971). According to Thurstone (1928), “The verbal expression is the opinion....An opinion symbolizes an attitude” (p. 531). Therefore, asking about attitudes by using the term ‘opinion’ when surveying general preschool South Korean teachers about their feelings, thinking, and willingness to act toward inclusion allows researchers to measure the teachers’ attitudes toward inclusion.

The term ‘attitude’ has been used alone or mutually with different terms such as feelings, views, opinions, beliefs, willingness, perspective(s), and perceptions in the studies about general preschool teachers’ attitudes toward inclusion (Bruns & Mogharreban, 2007, 2008; Clough & Nutbrown, 2004; Cross et al., 2004; Gal et al., 2010; Huang & Diamond, 2009; Leatherman, 2007; Leatherman & Niemeyer, 2005; Mitchell & Hegde, 2007; Nonis, 2006; Seçer, 2010). Therefore, in this literature review, the terms of feelings, views, opinions, beliefs, willingness, perspective(s), and perceptions are used interchangeably with the term attitude.

Teacher Attitudes

The effectiveness of early childhood inclusion depends primarily on the action of teachers (Avramidis & Norwich, 2002). The quality of a general preschool environment

for children with and without disabilities affects their positive developmental and learning outcomes (Hollingsworth et al., 2009). Preschool teachers support quality inclusion in early childhood (Clough & Nutbrown, 2004). Moreover, teachers' positive attitudes toward disability and children with disabilities are crucial to successful inclusion (Bricker, 1995). Specifically, preschool teachers' attitudes toward inclusion play an important role in supporting effective inclusion for children with disabilities (Gal et al., 2010) including children with severe disabilities (Cross et al., 2004). Moreover, preschool teachers played an important role in successfully including the children with significant disabilities in the community early childhood educational settings (Cross et al., 2004).

Recently, early childhood researchers across different countries reported on the attitudes of early childhood professionals including classroom teachers and administrators towards preschool inclusion (Bradshaw, 2009; Bruns & Mogharreban, 2007, 2008; Clough & Nutbrown, 2004; Cross et al., 2004; Eiserman, Shisler, & Healey, 1995; Gemell-Crosby & Hanzlik, 1994; Gal et al., 2010; Huang & Diamond, 2009; Killoran et al., 2007; Leatherman, 2007; Leatherman & Niemeyer, 2005; Mitchell & Hegde, 2007; Nonis, 2006; Seer, 2010). These researchers also identified attitudes of preschool teachers and discussed implications that might improve the quality of early childhood inclusion were suggested.

Teachers' attitudes toward inclusion. Several researchers have reported positive or mixed attitudes of early childhood teachers toward inclusion (Bruns & Mogharreban, 2008; Buysse, Wesley, Keyes, & Bailey, 1996; Eiserman et al., 1995; Gal et al., 2010; Huang & Diamond, 2009; Leatherman, 2007; Mitchell & Hegde, 2007; Nonis, 2006;

Seçer, 2010). For example, Mitchell and Hegde (2007) reported beliefs of 35 inclusive preschool teachers in the United States about developmentally appropriate practices for inclusive settings and the relationship between the teachers' beliefs and their attitudes toward, knowledge of, and comfort levels in working with children with disabilities. They used three surveys for this study: (a) Teacher Belief Scale (Charlesworth, Hart, & Burts, 1991; Charlesworth et al., 1993); (b) Instructional Activities Scale (Hart et al., 1990); (c) In-service Teacher Self-Report Survey (Mitchell, 2002). The results indicated that the teachers have an overall positive view of inclusion. Specifically, teachers with more knowledge and positive attitude were more comfortable with inclusion than their peers who lacked knowledge and possessed a less favorable attitude towards it. In this study, 76% of teachers favored inclusion and believed that it enhanced the development for children with disabilities. However, the teachers identified two prerequisites to support effective inclusion: (a) improvement of early childhood personnel preparation by increasing their knowledge about disabilities, hands-on training, workshops, program visitations, and additional special education coursework and (b) personnel support such as qualified assistants, external support, resources, and connection to specialists. Several researchers supported the results of Mitchell's and Hegde's study (Gal et al., 2010; Leatherman, 2007; Nonis, 2006). They reported early childhood teachers showed positive attitude toward and feelings about inclusion and welcomed children with disabilities to general classrooms including typically developing children

Bruns and Mogharreban (2008), however, reported that 83 Head Start teachers had both positive and negative perceptions about including young children with disabilities in general educational settings. Specifically, 61 Head Start teachers believed

that children with and without disabilities were able to learn. In addition, 57 Head Start teachers felt that there was more similarity than difference among children with and without disabilities. However, only 37 Head Start teachers perceived that children with disabilities should *always* learn with their typically developing peers. In addition, Seçer (2010) reported differences regarding beliefs about inclusion and teaching competences among 66 Turkish preschool teachers before and after in-service teacher training. Specifically, the Turkish preschool teachers did not show significant differences regarding beliefs about inclusive classroom management and competences of teaching before and after in-service teacher training. For example, the Turkish preschool teachers believed that they could manage their inclusive classrooms both before and after the training. Also, the teachers believed that they were competent to work with children with disabilities in their inclusive classrooms both before and after the training. The teachers, however, showed significant differences regarding beliefs about the advantages of inclusion, competencies of children with disabilities in inclusive classrooms, and the negative effects of inclusion before and after the training. For example, the teachers' beliefs about the advantage of inclusion and competencies of children with disabilities in inclusive classrooms were more positive after the training. In addition, the teachers believed that inclusion did not have a negative effect on children's development in inclusive classrooms.

Factors that influence teachers' attitudes. The results of studies about the attitudes of general early childhood teachers toward inclusion indicated that certain factors that had an effect on teachers' attitudes (Burke & Sutherland, 2004; Frankel, 2004; Gal et al., 2010; Leatherman & Niemeyer, 2005; Vakil et al., 2003). For example,

teacher-related factors included training and knowledge and child-related factors included types and severities of disabilities that influenced preschool teachers' attitudes toward inclusion. These factors are discussed in more detail below.

Teacher: Training and knowledge. Attitudes of teachers toward inclusion may be influenced by the training they have received on working with children with disabilities and information about children with disabilities that they have obtained (Burke & Sutherland, 2004). According to Leatherman and Niemeyer (2005), teachers with positive attitudes toward inclusion had obtained specific knowledge of strategies for working with children with disabilities from in-service training. Also, teachers with positive attitudes toward inclusion indicated that they had previous experiences working with children with disabilities. By enhancing their knowledge about working with children with disabilities, teachers might be able to adapt classroom activities and play materials to meet the needs individual children with differing abilities. Vakil et al., (2003) also indicated that understanding the need of children with speech, language, and/or communication disabilities better allowed teachers to meet their needs. Also, Mitchell and Hegde (2007) reported that teachers' knowledge, comfort levels, and attitudes related to inclusion were significantly correlated with each other. Teachers with more knowledge about inclusion may be more comfortable with including children with disabilities into the general classrooms.

Bradshaw (2009) reported 63 % of teachers indicated that they had experiences teaching children with disabilities, even though they had received little training related to special educational issues. While a majority of teachers viewed inclusion as an opportunity to work with children with disabilities, some teachers did not want to learn

more about the children with disabilities. Because of a lack of the training, teachers might have limited information about how to implement inclusive practices effectively for children with disabilities. Due to limited information, the teachers might have little awareness of the significance of learning about children with disabilities for working with them in inclusive classrooms. When teachers have more training opportunities associated with special education issues, they may have more knowledge about working with children with disabilities, and they will work with children with disabilities more effectively in inclusive classrooms.

Child: Types and severities of disabilities. The types and severity of children's disabilities may pose challenges to teachers who work with them. For example, Gal et al. (2010) reported the relationships between 53 preschool teachers' attitudes and children with different types of disabilities such as learning disabilities, Attention Deficit Hyperactivity Disabilities (ADHD), emotional regulation disabilities, and sensory/motor disabilities. The teachers felt that learning disabilities, ADHD, or emotional disabilities were more challenging than sensory/motor disabilities, probably because they believed that children with learning disabilities, ADHD, and emotional regulation disabilities needed more accommodations than children with sensory/motor disabilities.

Huang and Diamond (2009) also reported information about the feelings of 155 preschool teachers about including children with disabilities in general preschool programs. Specifically, they investigated the relationships between children's types of disability and teachers' comfort level, classroom adaptations, or need for support. They asked teachers how comfortable they would be if children with different kinds of disabilities were included in their classrooms. The results indicated that teachers had

more positive feelings about including a child with a physical disability such as cerebral palsy than a child with difficulties in learning, language and/or behavior such as ADHD, Down syndrome, or severe intellectual disabilities. Also, teachers showed the least level of comfort about including a child with severe intellectual disabilities. While teachers felt the need for more classroom adaptations and support when including a child with ADHD than a child with cerebral palsy or Down syndrome, teachers indicated that they needed more adaptations and support when including a child with severe intellectual disabilities than any children with ADHD, Down syndrome, and cerebral palsy.

While some teachers had positive feelings about including children with motor or physical disabilities (Gal et al., 2010; Huang & Diamond, 2009), some teachers had a negative perception about including children with physical disabilities into the general classroom (Bradshaw, 2009). That is, teachers were more willing to include children with mild disabilities than children with severe disabilities (Buysse et al., 1996; Dinnebeil et al., 1998; Huang & Diamond, 2009). Also, early childhood teachers might have more difficulty in working with children with more significant disabilities (Mitchell & Hegde, 2007).

Demographic characteristics of teachers. Researchers have reported that several demographic characteristics of teachers are related to teachers' attitudes toward inclusion. These include: (a) years of teaching experience, (b) experience teaching children with disabilities, (c) completion of a course(s) related to special education, (d) in-service training, and (e) possession of advanced professional degrees (Bradshaw, 2009; Burke & Sutherland, 2004; Cross et al., 2004; Gal et al., 2010; Huang & Dimond, 2009; Leatherman & Niemeyer, 2005). For example, Gal and her colleagues (2010) reported

preschool teachers who had have more years of teaching experience had more negative beliefs about children with disabilities than preschool teachers with few years of teaching experience. Also, preschool teachers with more years of teaching experience indicated that children with disabilities were rarely friendly compared to typically developing peers. In addition, preschool teachers with more years of teaching experience believed that children with disabilities did not show success in the classroom compared to typically developing children, and they easily gave up.

Experience teaching children with disabilities also affected teachers' attitudes toward inclusion. Specifically, several researchers have reported that teachers with positive experiences working with children with disabilities had positive attitudes toward inclusion (Cross et al., 2004; Leatherman & Niemeyer, 2005). For example, general early childhood teachers who worked with children with significant disabilities stated that they wanted to work with children with mild and moderate disabilities because of their successful experiences working with children with significant disabilities (Cross et al., 2004).

Support for general education teachers in inclusive classrooms. Teachers' attitudes have been indicated as one of determinants for quality inclusion (Cheuk & Hatch, 2007; Cross et al., 2004; Frankel et al., 2010; Gal et al., 2010; Leatherman, 2007; Seçer, 2010). Specifically, positive attitudes of teachers played a significant role in implementing preschool inclusion effectively to improve developmental and educational benefits for children with and without disabilities (Bruns & Mogharreban, 2007; Cross et al., 2004; Leatherman & Niemeyer, 2005; Seçer, 2010). Results from these studies suggested that professional development such as in-service training and availability of

resources such as special therapists and classroom materials could positively impact teachers' attitudes about early childhood inclusion.

Professional development. According to Nonis (2006) and Clough and Nutbrown (2004), while the majority of early childhood educators had positive attitudes toward including children with disabilities in their classrooms with typically developing peers, they indicated several concerns such as the lack of professional training and knowledge of disabilities that negatively impact teachers' attitudes. Frankel (2004) and Bradshaw (2009) also identified a lack of training related to special educational issues for general early childhood teachers as a challenge to successful inclusion. Because the lack of training might limit general classroom teachers' knowledge and experiences about children with disabilities, a lack of special education training would be a barrier to implement effective inclusion into general educational settings (Frankel, 2004).

Mitchell and Hegde (2007) mentioned that sufficient knowledge and skills played a significant role in helping early childhood educators to work effectively with children with disabilities in inclusive classrooms. In their study, in-service teachers indicated that they had a lack of knowledge about disabilities, and they needed to have more courses or workshops related to special education for more preparation for working with children with disabilities in inclusive classrooms. In addition, some teachers with positive feelings about inclusion believed that more training or workshops are necessary to provide more effective inclusive education to children with different needs (Leatherman, 2007). Seçer (2010) pointed out the importance of professional development to support preschool teachers' positive attitudes toward inclusion as well.

Some researchers suggested that providing in-service training helped general classroom teachers to be more effective in inclusive classrooms (Leatherman, 2007). Cheuk and Hatch (2007) reported that early childhood teachers believed that training related to special education supports effective inclusion for children with disabilities. Bruns and Mogharreban (2007) also suggested that continuing professional development opportunities, follow-up activities, and specialized training had to be provided to teachers who work with children with disabilities in inclusive classrooms. Specialized training focused on challenging behavior issues that some children had as well as adaptations of classroom and instructional materials. Placement alone in typical preschool settings without coordinated support to teachers cannot guarantee effective learning opportunities for preschool children with disabilities (Vakil et al., 2009). Differentiations and making accommodations to learning environments for children with disabilities helped children to achieve their learning potential and development (Leatherman, 2007). Moreover, additional teaching staff, sufficient resources, and additional teacher training were recommended to support inclusive classrooms (Mitchell & Hegde, 2007). It is clear that professional development has a strong, positive role in supporting successful early childhood inclusion. General early childhood teachers and their special education colleagues who participated in professional development programs supported children with disabilities to learn effectively in inclusive classrooms (Buysse & Hollingsworth, 2009).

As stated above, numerous researchers in the U.S. and other countries have conducted studies of teachers' attitudes toward inclusion in early childhood. Understanding teachers' attitudes toward inclusion across different countries with various

cultural backgrounds plays a significant role in implementing early childhood inclusion effectively for children with diverse educational and developmental needs. However, there is a lack of information about general preschool South Korean teachers' attitudes toward inclusion. Therefore, investigating attitudes of the South Korean teachers about inclusion gives early childhood professionals, including teacher educators and administrators in the U.S. and other countries, information about attitude of the South Korean teachers toward inclusion. Furthermore, this information can be used to support the early childhood professionals to expand an effective and efficient implication of teacher preparation for working with preschool children with diverse needs.

Attitude Measures

Researchers have primarily used surveys to collect the data of teachers' attitudes toward inclusion in early childhood (Bradshaw, 2009; Bruns & Mogharreban, 2008; Clough & Nutbrown, 2004; Gal et al., 2010; Huang & Diamond, 2009; Mitchell & Hegde, 2007; Nonis, 2006; Seçer, 2010). The majority of these attitude studies have focused on applying classical statistical models to their data. While using appropriate statistical analysis is an important part of understanding data they collected, it does not ensure to obtain useful information from the data unless strong measurement models such as the Rasch measurement models are applied (Gable, Ludlow, & Wolf, 1990).

The Rasch Measurement Model

The Rasch measurement model has fundamental characteristics including unidimensionality, linear relation, and objectivity for measurement (Snyder & Sheehan, 1992; Wright, 1999; Wright & Masters, 1982; Wright & Stone, 1979; Yates, 2005). Also, the Rasch measurement model plays a significant role in the process of instrument

development when ensuring content and construct validity of the instrument (Gable et al., 1990). Specifically, unidimensionality, linear relation, and objectivity associated with developing a teacher attitude measure are described below.

Unidimensionality. Measurement begins with an idea of a variable and should measure a single variable at a time. According to Thurstone (1931),

The measurement of any object or entity describes only one attribute of the object measured. This is a universal characteristic of all measurement. When the height of a table is measured, the whole table has not been described but only that attribute which was measured. Similarly, in the measurement of attitudes, only one characteristics of the attitude is described by a measurement of it. (p.259)

While attitude is an abstract concept, attitudes can be measured (Thurston, 1928).

Attitude must be defined properly as a measurable variable at the beginning of attitude measure development. After defining attitude, items that ask persons about their attitudes have to be written by using operational terms. When an attitude measure with unidimensional construct is used, researchers can obtain more useful information about people's attitudes.

Linear relation. Snyder and Sheehan (1992) introduced the Rasch model to early childhood educators who work with children with special needs and typically developing children as follows:

The Rasch model assumes that the consequence of any encounter between a person and an item is governed by the difference between the ability of the respondent and the difficulty of the item on the same latent trait dimension. A latent trait dimension is the abstract continuum associated with a construct or

variable (e. g., length, reading ability, intelligence, object permanence, receptive language competence) (p. 88)

Attitude is a latent trait in humans. People's attitudes can be located on an abstract continuum as a linear continuum from less to more positive to be measured. For example, items, as the instrument of observation, are calibrated and teachers, as the objects of measurement, are measured on the same line of attitude measure. Calibrated items are positioned on the line of attitude measure that stands for an abstract continuum from more to less difficult. Measured teachers are located on the same line of attitude measure that represents the abstract continuum from more to less positive.

A line with equal units is also essential to measure a variable of attitude. Using equal units allows for comparing distances between points where each person is located on the line of measure. In addition, Wright and Masters (1982) mentioned "A measurement is always a process of some kind which can be repeated without modification in the different parts of the measurement continuum" (p. 2). If individual units of a teacher attitude measure are changed whenever teachers' attitudes are measured, their attitudes cannot be compared with each other on the same linear continuum.

Objectivity. According to Wright (1999), "Objective measurement depends on measuring instruments which function independently of the objects measured" (p.85). Two conditions related to items and persons ensure objectivity of measurement: the calibration of items should be independent of the persons who respond to items; the measurement of persons also should be independent of the items which are used for measurement. Specifically, using the Rasch model to analyze attitude scales allows

researchers to calibrate items and measure persons independently (Wright & Stone, 1979; Yates, 2005).

The Rasch measurement model in early childhood research. The Rasch measurement model has been applied to developmental and educational research related to young children with and without disabilities (Absoud et al., 2011; Banerji et al., 1997; Chien et al., 2011; Dinnebeil, Fox, & Rule, 1998; DiStefano & Morgan, 2010; Heo et al., 2008; Harkness & Bundy, 2001; Kim & Smith, 2010; Lautamo & Heikkilä, 2011; Leung & Lang, 2009; Leung et al., 2010; Lim et al., 2010a, 2010b; Mok & Lam, 2011; Wuang, & Su, 2009). The majority of the studies has examined children's potential developmental difficulties and/or has assessed their current special needs. Specifically, researchers have used the Rasch measurement model to examine if their instruments can precisely to measure children's abilities in different developmental domains including language (Leung & Lang, 2009; Mok & Lam, 2011), gross and fine motor skills (Chien et al., 2011; Harkness & Bundy, 2001), and social and emotional (Absoud et al., 2011; Lim et al., 2010a; DiStefano & Morgan, 2010) as well as learning (Kim & Smith, 2010).

For example, DiStefano and Morgan (2010) used the Rasch rating scale model to examine the structure of a screening test and functioning of the rating scale. Developmental screening is initial step of determining which child is eligible for an early intervention (Zehrabach, 1975). Also, screening tests played an important role in providing proper early intervention services that meet a child with special needs (Greenspan & Meisels, 1996). If screening results show that a child's development might be deviating from the typical development process, the child is referred for further diagnostic assessment.

DiStefano and Morgan (2010) used the Behavioral and Emotional Screening System Teacher Rating System for Children and Adolescents (BESS TRS-CA; Kamphaus & Reynolds, 2007) in their study. To obtain accurate information about children's emotional and behavioral status, they investigated the validity of each item in the BESS TRS-CA. After applying the Rasch analysis, these researchers discovered that the majority of the items functioned well to identify children with potential emotional and behavioral issues. Also, the rating scale worked properly to measure children's maladaptive behaviors. The results of Rasch analysis, however, identified four items that failed to identify children's internalizing behavioral problems. Without Rasch analysis, the qualities of these items would have gone undetected.

Benefits of using the Rasch measurement model. Numerous researchers have described benefits of using the Rasch measurement model over the classical test model (Gable et al., 1990; Keeves & Alagumalai, 1999; Snyder & Sheehan, 1992; Wright, 1999). For example, Gable et al., (1990) described the usefulness of a Rasch rating scale model by comparing classical statistical methods with the Rasch analysis that examine content and construct validity of the School Situation Survey (SSS; Helms & Gable, 1989). Factor analysis, correlation, and alpha reliability as classical statistical methods and item fit and person fit as the Rasch analysis were applied to investigate the psychometric qualities of the School Situation Survey (SSS; Helms & Gable, 1989). The SSS consisted of 34 items by using a 5-point attitude scale. The SSS evaluated four sources of school related stress including (a) Teacher Interactions, (b) Academic Stress, (c) Peer Interactions, and (d) Academic self-concept and three manifestations including emotional, behavioral, and physiological stress. They reported that the Rasch analysis

gave more useful information about the participants' stress related to school than the classical statistical methods did. The Rasch analysis allowed researchers to identify the items that yielded ambiguous results. In defending the use of the Rasch model, Gable and his colleagues (1990) emphasized that the classical statistical techniques were insufficient to develop a valid measure and could lead to false information about the participants' stress related to school. Also, classical test construction mathematically confounded estimates of item difficulty, item discrimination, item quality, and person's ability levels associated with raw scores (Snyder & Sheehan, 1992) so that incomplete interpretations about the scores could be obtained (Gable et al., 1990).

While raw scores have been used to report a person's ability in classical test statistics, raw scores cannot be used to represent the person's ability because of their two weaknesses (Keeves & Alagumalai, 1999; Wright, 1999). First, raw scores rely on item difficulties. If a person responds to an easier item, the person will have higher raw scores. If the same person responds to a harder item, the person will have lower raw scores. It means that the person's ability cannot be compared by the items with different levels of difficulties. Second, raw scores cannot be considered to develop an interval scale. However, using the Rasch scaling procedures may overcome the weaknesses of use of raw scores (Snyder & Sheehan, 1992; Wright, 1999; Yates, 2005). Specifically, Wright (1999) mentioned that the Rasch model may solve these issues by following two steps: (a) transforming raw scores onto an interval scale by using the logistic transformation and (b) removing the influence of the mean and standard deviation of the item difficulties.

As shown above, using the Rasch measurement model with fundamental characteristics of measurement and strengths over the classical statistical methods allows

early childhood educators and practitioners to understand attitudes of general preschool South Korean teachers toward inclusion. The reason is that more accurate information about attitudes can be obtained by utilizing a valid teacher attitude measure developed by using the Rasch measurement model.

Chapter Three

Methodology

This study investigated attitudes of general preschool teachers in South Korea toward inclusion by using a valid attitude instrument. The Rasch measurement model was applied to develop the attitude instrument. The investigation was carried out in three phases: (a) developing an initial attitude instrument, (b) a pilot study, and (c) the primary study. The Social Behavioral Institutional Review Board (IRB)'s approval at the University of Toledo was obtained before conducting a pilot and the primary study.

In phase 1, an initial attitude instrument was developed based on the review of literature on general preschool teachers' attitudes toward inclusion as well as definitions of inclusion and attitude. In phase 2, the Rasch measurement model was used to examine the validity of the initial attitude instrument. In phase 3, by using a refined attitude instrument from the pilot study, general preschool South Korean teachers' attitudes about early childhood inclusion were investigated. Also, the relationship between teachers' demographic characteristics and their responses was explored to see if there were any differences among individual teachers' attitudes related to their demographic characteristics. The items and demographic questions were developed in English and they were translated into Korean. Early childhood professionals in the United States and South Korea reviewed the contents of the survey for readability and accuracy of translation.

Phase 1. Developing an Initial Attitude Instrument

To measure the teachers' attitudes, an initial attitude instrument was developed by the following: (a) defining attitude toward inclusion and (b) developing items based on the review of the literature.

Defining attitudes toward inclusion. In this study "attitudes toward inclusion" were defined as 'thoughts about, feelings about, and a willingness to act toward including children with disabilities in general preschool classrooms with typically developing peers'. This definition was based on the review of literature related to definitions of attitude (Allport, 1935; Bogardus, 1931; Chave, 1928; Eagly & Chaiken, 1993; Triandis, 1971) and inclusion (DEC & NAEYC, 2009).

Developing items. Forty-two items were initially developed based on the definition of attitudes toward inclusion and teacher- and child-related demographic variables that may have effects on teachers' attitudes toward inclusion. Specifically, the teacher-related variables included the completion of in-service training and knowledge of special education that teachers have received or obtained. The child-related variables included children's types and severities of disabilities. For developing the initial attitude instrument, types of disabilities included developmental delay, communication disorder, physical disability, intellectual disability, and emotional disturbance or behavioral disorder. There were two reasons to choose these five types of disabilities. First, developmental delay, communication disorder, physical disability, and intellectual disability were reported as having the highest incidences of the disabilities among preschool children with disabilities in general classrooms in South Korea (Ministry of Education, Science and Technology, 2011b). Also, the increase in the prevalence of emotional disturbance/behavioral disorders was higher than any other disabilities except

health impairment when young South Korean children with disabilities were transitioning from general preschools to general elementary schools (Ministry of Education, Science and Technology, 2011b). The definitions of these disabilities were provided to the teachers in a preface to the questionnaire to ensure that they understood all of the terms used in the questionnaire. Also, development of the questionnaire items was guided by Thurstone's suggestions (1928):

(a) The statement should be as brief as possible so as not to fatigue the subjects who are asked to read the whole list. (b) The statement should be such that they can be indorsed or rejected in accordance with their agreement or disagreement with the attitude of the reader....(c) Every statement should be such that acceptance or rejection of the statement does indicate something regarding the reader's attitude about the issue in question...(d) Double-barreled statements should be avoided except possibly as examples of neutrality when better neutral statements do not seem to be readily available. Double-barreled statements tend to have a high ambiguity.... (p. 544-545)

The initial questionnaire consisted of 42 items that were divided into three components (i.e., thoughts, feelings, and willingness to act). Each item is presented below:

Thoughts about early childhood inclusion.

1. I think that a child with disability should have access to a general classroom that provides learning opportunities with typically developing peers.
2. I think that a child with a disability should fully participate in play and learning activities with typically developing peers.

3. I think I need additional in-service training about special education issues.
4. I think that a child with a disability should have access to a general classroom regardless of the child's type of disability.
5. I think that a child with a developmental delay should participate in a general classroom but not a child with another type of disability.
6. I think that a child with a communication disorder should participate in a general classroom but not a child with another type of disability.
7. I think that a child with a physical disability should participate in a general classroom but not a child with another type of disability.
8. I think that a child with an intellectual disability should participate in a general classroom but not a child with another type of disability.
9. I think that a child with an emotional disturbance/behavioral disorder should participate in a general classroom but not a child with another type of disability.
10. I think that a child with a disability should have access to a general classroom regardless of the child's degree of disability.
11. I think that a child with a mild disability should participate in a general classroom but not a child with a moderate and a child with a severe disability.
12. I think that a child with a moderate disability should participate in a general classroom but not a child with a severe disability.
13. I think that a child with a severe disability should participate in a general classroom.
14. I think that I have sufficient knowledge about how children with different disabilities learn.

Feelings about early childhood inclusion.

15. I would feel comfortable if a child with a disability is placed in my classroom.
16. I would feel confident that I can adapt play materials and activities to help a child with a disability participate in my classroom.
17. I would welcome additional opportunities for in-service training on special education issues.
18. I would feel comfortable if a child with a disability is placed in my classroom regardless of the child's type of disability.
19. I would feel comfortable if a child with a developmental delay participates in my classroom but not a child with another type of disability.
20. I would feel comfortable if a child with a communication disorder participates in my classroom but not a child with another type of disability.
21. I would feel comfortable if a child with a physical disability participates in my classroom but not a child with another type of disability.
22. I would feel comfortable if a child with an intellectual disability participates in my classroom but not a child with another type of disability.
23. I would feel comfortable if a child with an emotional disturbance/behavioral disorder participates in my classroom but not a child with another type of disability.
24. I would feel comfortable if a child with disability is placed in my classroom regardless of the child's degree of disability.
25. I would feel comfortable if a child with a mild disability participates in my classroom but not a child with a moderate and a child with a severe disability.
26. I would feel comfortable if a child with a moderate disability participates in my classroom but not a child with a severe disability.

27. I would feel comfortable if a child with a severe disability participates in my classroom.
28. I would feel confident about including a child with disability in my classroom if I had more knowledge related to accommodations and adaptations of learning environments and activities.

Willingness to act toward early childhood inclusion.

29. I am willing to have a child with a disability enrolled in my classroom.
30. I am willing to adapt play materials and activities to help children with disabilities participate in the same play and activities as typically developing peers.
31. I am willing to receive additional in-service training when opportunities of in-service training are provided.
32. I am willing to include a child with a disability in my classroom regardless of the child's type of disability.
33. I am willing to include a child with a developmental delay in my classroom but not a child with another type of disability.
34. I am willing to include a child with a communication disorder in my classroom but not a child with another type of disability.
35. I am willing to include a child with a physical disability in my classroom but not a child with another type of disability.
36. I am willing to include a child with an intellectual disability in my classroom but not a child with another type of disability.
37. I am willing to include a child with an emotional disturbance/behavioral disorder in my classroom but not a child with another type of disability.

38. I am willing to include a child with a disability in my classroom regardless of the child's degree of disability.
39. I am willing to include a child with a mild disability in my classroom but not a child with a moderate and a child with a severe disability.
40. I am willing to include a child with a moderate disability in my classroom but not a child with a severe disability.
41. I am willing to include a child with a severe disability in my classroom.
42. I am willing to obtain knowledge about how to make accommodations and adapt learning environments and activities for children with different disabilities.

Choosing a rating scale. A 4-point rating scale was chosen for this study. There was no neutral point. According to Bogardus (1931), "An attitude is either positive or negative, never neutral" (p. 54). The 4-point rating scale consisted of 'strongly disagree' for '1', 'disagree' for '2', 'agree' for '3', and 'Strongly agree' for '4'. The teachers will be asked to respond to each question by endorsing one of the 4-point rating scale.

Phase 2. Pilot Study

The purpose of the pilot study was to examine if the initial attitude instrument was valid to measure general preschool South Korean teachers' attitudes toward inclusion prior to using the instrument for the primary study. To obtain practical and meaningful information from data collected, a decision on the best measurement model is crucial. For this study, the Rasch measurement model was chosen to develop a valid attitude instrument. Applying the Rasch measurement model determined the quality of information from this study.

The rationale for choosing the Rasch measurement model. The Rasch measurement has two major strengths for measuring general preschool South Korean teachers' attitudes toward inclusion: a) the development of explicit constructs and b) sample-free and item-free measures. First, the concept of attitude is abstract and this concept must be defined as a measurable variable. To measure attitudes of teachers only instead of other possible variables, the attitude measure should be a unidimensional construct. When a multi-dimensional attitude measure is used, the results of the study can be contaminated by other concepts. Therefore, the information about teachers' attitudes will be blurred.

A linear relationship between item difficulty and teacher ability on the line of attitude measure should be secured. Linear relationships explain the relation between teacher ability and item difficulty related to attitude: A teacher with a more positive attitude responds to a more difficult item; a teacher with a more negative attitude responds to an easier item. If this linearity direction is not observed through calibrated items and measured teachers, it means that teacher and item parameters do not work together to effectively measure attitude. A lack of linearity does not allow effective comparisons of item and teacher parameters and a useful prediction cannot be made to what will help general preschool teachers in South Korea work effectively with children with disabilities in inclusive educational settings.

Second, outcomes of teacher attitudes should be free from any biases that can occur during communication between a teacher who responds to items and items that measure attitudes of the teacher. Teachers might respond differently to different items at different times and places. When the teacher attitude is independent of teachers as

respondents and items as questions, objectivity of the teacher attitude that might be influenced by the teachers and the items will be ensured: The calibration of items should be independent of the teachers who respond to items; the measurement of teachers should be independent of the items which are used for teacher measure. If the two conditions are not satisfied, the attitude measure will lose power of general application over different times and places. Consequently, the Rasch measurement model supports the researcher to construct a unidimensional, linear, and objective teacher attitude measure that can obtain applicable information to develop professional developmental program for general preschool teachers in South Korea.

Participants. For the pilot study, 20 general preschool Korean teachers were recruited by using a professional network in Seoul, South Korea. General brief information including the purpose of the study and the rights of participants was provided to potential participants when they were recruited. Eligible participants for the pilot study were teachers who were teaching children at general preschools in Seoul, South Korea when they participated in the study. The teachers who participated in the pilot study were excluded from recruitment for the primary study. The teachers who agreed to participate in the study provided their email addresses to the researcher. The teachers received a link of the survey through their email addresses provided.

Data collection. SurveyMonkey™, an online survey tool, was utilized to deliver attitude surveys and collect the responses from the teachers. The teachers were asked to complete the survey by using individual computers to avoid duplicating individual teachers' Internet Protocol (IP) addresses. The teachers completed the survey within 23 days after receiving the link to the survey. The teachers received three reminders: the first

reminder two days after receiving the link, the second reminder six days after the first reminder, and the third reminder two day before ending the survey. Every teacher's IP address was deleted to protect identifiable personal information right after the survey ends. Random numbers were assigned to individual teachers while deleting their IP addresses. The teachers were encouraged to make any suggestions to improve the survey at the end.

Data analysis. A Rasch 4-step analysis was used to see if the attitude instrument was valid: (a) rating scale analysis, (b) dimensionality analysis, (c) item analysis, and (d) person analysis. Winsteps®, the Rasch measurement software (Linacre, 2006), was used for the analysis.

Review of the 4-step Rasch analysis. The validity of the attitude instrument that was developed for general preschool South Korean teachers was examined by following the 4-step Rasch analysis.

Step1. Rating scale analysis. The rating scale analysis was used to make a decision whether or not the rating scale allowed general preschool South Korean teachers to accurately describe their thinking, feelings, and tendencies to act about early childhood inclusion. Separation statistics, step calibration, and scale distribution were investigated. Separation statistics shows accuracy of the attitude instrument. Greater separation means increased clarity of the attitude instrument. Over two levels of separation should be represented in measured teachers and calibrated items. If not, qualitative differences cannot be observed on the attitude continuum. Step calibration indicates whether or not general preschool South Korean teachers use the rating scale in a consistently hierarchical manner from less to more. When using a 4-point rating scale, the calibration value should

be in order: The calibration value of rating '0' is less than the calibration value of rating '1'; the calibration value of rating '1' is less than the calibration value rating '2'; the calibration value '2' is less than the calibration value '3'. If not, there is no differentiation from one rating to another. Scale distribution also shows whether or not general preschool South Korean teachers use the rating scale meaningfully and effectively. If the teachers do, each rating scale category will peak above 50% of the probability line. When the step calibration is out of order, some rating scale categories that do not work should be collapsed. Collapsing rating scale categories may result in losses of some data and some rating scale categories. However, more reliable data can be obtained by using a more functional rating scale.

Step2. Dimensionality analysis. The dimensionality analysis was carried out to determine whether or not all of the items in attitude instrument were working together to measure the single variable of attitude. If the items measure more than one variable of attitude, they should not be used for collecting data from general preschool South Korean teachers. Flawed items that are unrelated to the variable of attitude can produce irrelevant information about attitudes of general preschool South Korean teachers about early childhood inclusion. The variance explained by measures is examined and should be over 60%. Over 60% of the variance indicates that the attitude instrument is a unidimensional construct, and can measure a single variable of attitude.

Step3. Item analysis. An item analysis was conducted to see the items function as expected. The role of the items is to collect information about teacher attitude. To collect trustworthy data, general preschool South Korean teachers have to understand the items as the researcher intended, and the items must measure the teachers' attitudes toward

inclusion as the researcher expected. Therefore, the items should be analyzed to identify poorly written items and items unrelated to attitude. Item measures, fit statistics, the point-biserial correlation coefficient, and answer patterns will be used to assess the function of the items. If an item measure exceeds +1 or -1 point, the item is problematic to measure attitude. Fit statistics show whether or not the items on the attitude instrument function as expected. Fit statistics include infit and outfit statistics. Wilczenski (1995) describes infit and outfit as followings:

Infit is the standardized information weighted mean-square statistic sensitive to unexpected responses near a person's ability level; outfit is the outlier mean-square statistic sensitive to unexpected responses far from a person's ability level.

Both fit statistics have an expectation of 1. Values near 1.0 indicate satisfactory functioning of the item. (p. 294)

Specifically, Wright and Stone (1999) describe the degree of the item infit and outfit mean square statistics as followings:

Mean square statistics greater than 1.4 imply noise in item use, outbreaks of guessing or carelessness, or the presence of secondary variables correlated negatively with the intended variable. Mean square statistics less than 0.6 imply inter-item dependencies or the presence of secondary variables correlated positively with the intended variable. (p.116)

The point-biserial correlation coefficient shows if the items on the attitude instrument function as a whole to measure teacher attitude. A low and a high point-biserial correlation coefficient indicate item misfit (Wright & Stone, 1999). According to Wright (1992), the point-biserial correlation coefficient is "useful in detecting miscoded

data” and negative point-biserial correlation coefficient means that “the observed responses to that item contradict the general meaning of the test” (p.174). A range from 0.30 to 0.70 of point-biserial correlation coefficient is recommended for items (Allen & Yen, 2002). Answer patterns represent how many teachers respond to a specific item with a specific rating scale category. The decisions on the poor items are made by the overall outcomes from item measures, fit statistics, the point-biserial correlation coefficient, and answer patterns. The misfit items are deleted through an iterative approach that finds poor quality items. By deleting misfit items as appropriately as possible, the separations and reliabilities of teachers and items and the variance are increased. Therefore, the item analysis allows the researcher to have a clear and unidimensional attitude construct.

Step4. Person analysis. The person analysis was conducted to determine whether or not general preschool South Korean teachers participated in the survey as expected. The expectation is that the teachers answer the items in a serious manner. Also, the expectation is that more positive teachers answer more difficult items. If the teachers do not answer the items seriously or as expected, false information about attitude is produced. Thus, person analysis should be utilized to detect which teachers answered the items seriously or as expected and which did not. Person measures, fit statistics, the point-biserial correlation coefficient, and answer patterns can be used to evaluate the quality of the teachers’ participation. The way of the person analysis is the same way of the item analysis as described above. Specifically, Wright (1996) stated the advantage of using outfit statistics as following:

Outfit detects anomalies like lucky guessing on hard items and unlucky carelessness on easy ones. The advantage of person outfit statistics is that they

redirect the attempt to control guessing away from local sample-dependent parameterizations of the many items that might provoke an occasional lucky guess to the few lucky gamblers who actually do some guessing. (p. 6)

Phase 3. Primary Study

The purpose of the primary study is to investigate general preschool South Korean teachers' attitudes toward inclusion by using the refined attitude instrument from the pilot study. The refined attitude instrument consists of 34 items as described above.

Demographic characteristics that may be associated with these teachers' attitudes were explored as well.

Demographic characteristics. Six demographic questions were asked at the end of the attitude instrument. The demographic questions are related to a) completion of college course(s) related to special education, b) in-service training on special education issue, c) experiences of working with preschool children with disabilities, d) years of teaching, e) the highest professional degree, and f) school districts where they are working.

Participants. For the primary study, 120 general preschool Korean teachers from Seoul, South Korea were recruited. Potential participants should satisfy two qualification criteria to be recruited: (a) currently teach children aged from three to five years in community-based general preschools when participating in the study and (b) have major responsibilities in their classrooms. When recruiting the participants, a short description of the study including the purpose of study and their rights as participants were provided via email. The teachers who agreed to participate in the study received a link to the

survey. After the completion of the survey, individual teachers received a five US-dollar value of gift as compensation for their participations. The gifts were delivered to the teachers within four weeks after ending the survey.

Data Collection. The procedure of the data collection for the primary study was the same as the pilot study. SurveyMonkey™ was used to deliver the survey and collect the responses of the survey from the teachers. A link to the survey was emailed to the teachers. The teachers were asked to complete the survey within seven days after receiving the link to the survey. One reminder was sent to the teachers three days before ending the survey. After completion of the survey, the researcher assigned a random number to individual teachers and deleted their IP addresses that might recognize each participant's identity.

Data Analysis. For the primary study, the Rasch analysis including 4-step analysis was used to answer the following research questions from one to six:

1. Is the attitude instrument constructed for the study a valid measure for identifying general preschool South Korean teachers' attitudes toward inclusion?
2. Does the rating scale function effectively to measure teacher attitudes?
3. Do the items measure a single variable of attitude?
4. Do the items function effectively to measure teacher attitudes?
5. Do teachers respond to the items measuring their attitudes in a serious manner?
6. What are general preschool South Korean teachers' attitudes about early childhood inclusion as measured by a self-report attitude scale?

To answer the research questions from 7 to 13, a one-way analysis of variance (ANOVA) was utilized. The one-way ANOVA showed if there are any differences between demographic characteristics and teachers' attitudes toward inclusion.

7. Are there differences between teachers' positive or negative attitudes that may be associated with specific demographic characteristics?
8. Is there a difference in teachers' attitude scores between those who completed college course(s) related to special education and those who did not?
9. Is there a difference in teachers' attitude scores between those who received in-service training on special education issues and those who did not?
10. Is there a difference in teachers' attitude scores between those who have had experiences of teaching children with special needs and those who have not?
11. Is there a difference in teachers' attitude scores according to their years of teaching preschool children?
12. Is there a difference in teachers' attitudes scores according to their highest professional degrees?
13. Is there a difference in teachers' attitudes scores according to their school districts where they are working?

Chapter Four

Results

Pilot Study

Participants. Twenty general preschool teachers in Seoul, South Korea were initially recruited for the pilot study. All participations were voluntary. One additional preschool South Korean teacher was recruited to participate in the study because one teacher of the 20 teachers did not respond to the survey at the end of data collection. It took 23 days to collect data from these teachers. The teachers received three reminders to complete their surveys.

Data analysis. A Rasch 4-step analysis using Winsteps®, the Rasch measurement software (Linacre, 2006) was utilized to examine if the initial attitude instrument was valid to measure attitudes of general preschool teachers in South Korea toward inclusion before using it for the primary study.

Step1. Rating scale analysis. The results of the rating scale analysis indicated that a 4-point rating scale was functional to obtain information about the attitudes of the South Korean teachers toward inclusion. Step calibration suggested that the South Korean teachers used the rating scale in a consistently hierarchical manner from less to more: the calibration value of rating '1' was less than the calibration value of rating '2'; the calibration value of rating '2' is less than the calibration value rating '3' (See Table 1).

Table 1

Summary of category structure. Model="R"

CATEGORY LABEL	OBSERVED SCORE	OBSVD COUNT	SAMPLE %	INFIT AVRGE	OUTFIT EXPECT	STRUCTURE MNSQ	CATEGORY CALIBRATN	MEASURE
0	0	64	8	-2.39	-2.41	1.02	1.01	NONE (-4.96)
1	1	457	54	-1.29	-1.28	.93	.93	-3.85 -1.76
2	2	216	26	.62	.61	1.00	1.00	.35 1.93
3	3	33	4	2.53	2.55	1.03	1.07	3.51 (4.64)
MISSING		70	8	-.75				

OBSERVED AVERAGE is mean of measures in category. It is not a parameter estimate.

Each rating scale category peaked above 50% of the probability line (See Figure 1). This means that the South Korean teachers used the rating scale meaningfully and effectively to describe their attitudes toward early childhood inclusion.

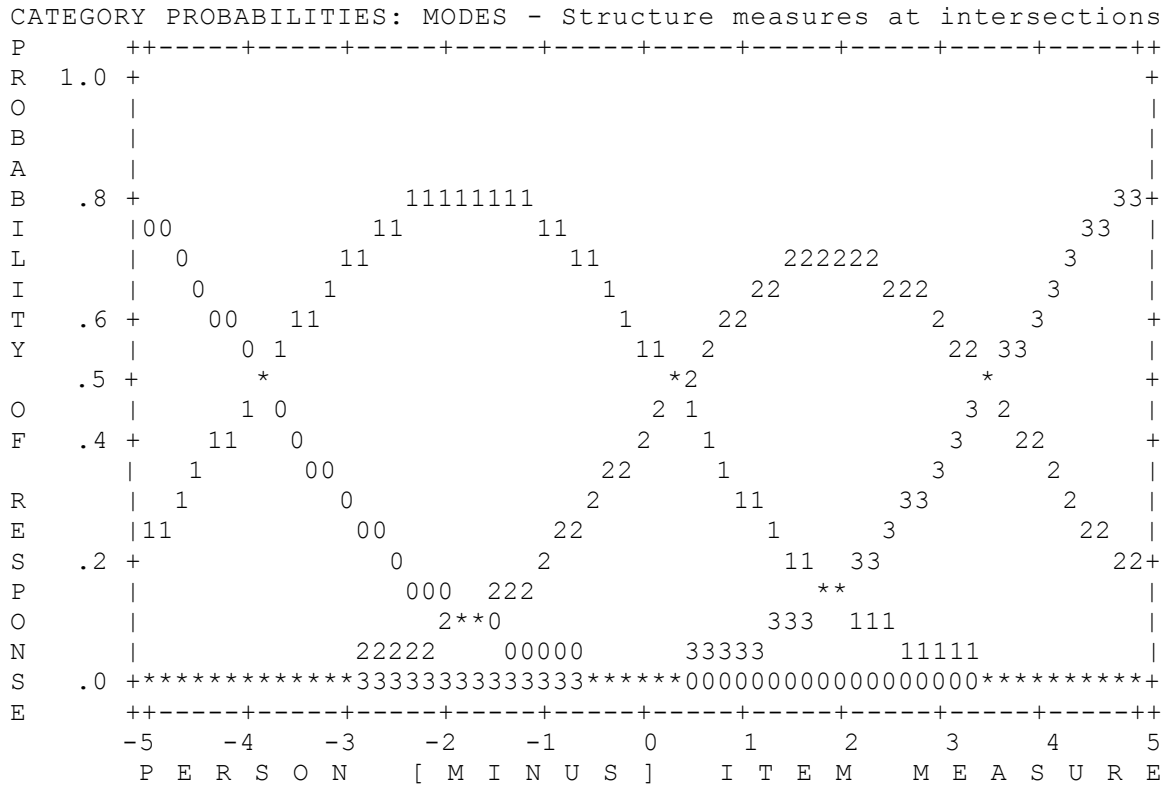


Figure 1. Rating scale category

Step2. Dimensionality analysis. The variance explained by measures was under 60% (See Table 2). This means that the attitude instrument was not a unidimensional construct that could measure a single variable of attitude.

Table 2

Standardized residual variance (in Eigenvalue units)

		Empirical		Modeled
Total variance in observations	=	76.0	100.0%	100.0%
Variance explained by measures	=	34.0	44.7%	44.3%
Unexplained variance (total)	=	42.0	55.3%	55.7%
Unexplned variance in 1st contrast	=	10.2	13.5%	24.4%
Unexplned variance in 2nd contrast	=	6.0	7.9%	14.4%
Unexplned variance in 3rd contrast	=	4.4	5.7%	10.4%
Unexplned variance in 4th contrast	=	4.1	5.4%	9.8%
Unexplned variance in 5th contrast	=	2.8	3.7%	6.7%

To satisfy a criterion of over 60% of the variance, misfitting items needed to be deleted by iterating Rasch item analysis. The decisions about misfitting items were made by following the rationale below.

A rationale for item deletion and retainment. Misfitting items were screened by following two criteria: a) negative point bi-serial correlation coefficient (r_{pb}) and b) outfit mean square statistics (MNSQ). First, the negative point-biserial correlation coefficient means that “the observed responses to that item contradict the general meaning of the test” (Wright, 1992, p. 174). When an item has a value of negative point bi-serial correlation coefficient, the item does not function with other valid items to measure teacher attitude. Thus, the item with the value of negative point bi-serial correlation coefficient needs to be deleted. Second, outfit statistics have the advantage that “outfit

detects anomalies like lucky guessing on hard items and unlucky carelessness on easy ones” (Wright, 1996, p. 6). Also, “mean square statistics greater than 1.4 imply noise in item use, outbreaks of guessing or carelessness, or the presence of secondary variables correlated negatively with the intended variable” (Wright & Stone, 1999, p. 116). To obtain precise information about teachers’ attitudes toward inclusion, items with mean square statistics greater than 1.4 need to be deleted. For this study, after screening misfitting items, decisions about deleting or retaining these misfitting items were made based on the logic of including them as a series of items measuring a particular aspects of a construct.

Fourteen items were identified as misfitting items after using the Rasch calibration iteration on 42 items in the step of unidimensionality analysis. Specifically, eight items with the values of negative point bi-serial correlation coefficient were identified through the initial, 1st and 2nd iterations of the Rasch calibration. Also, 6 items with the outfit values of greater than 1.4 were identified through the 3rd and 4th iterations of the Rasch calibration. A ‘PItem’ represents an item which was used in the pilot study. Each Rasch calibration iteration on the items is described in more detail below:

Initial identification. Five items with negative point bi-serial correlation coefficient were initially identified:

- a) I think that a child with a developmental delay should participate in a general classroom but not a child with another type of disability (PItem 5; $r_{pb} = -.03$).
- b) I think that a child with a physical disability should participate in a general classroom but not a child with another type of disability (PItem 7; $r_{pb} = -.11$).

- c) I think that a child with a mild disability should participate in a general classroom but not a child with a moderate or a severe disability (PItem 11; $r_{pb} = -.18$).
- d) I am willing to include a child with a communication disorder in my classroom but not a child with another type of disability (PItem 34; $r_{pb} = -.06$).
- e) I am willing to include a child with a severe disability in my classroom (PItem 41; $r_{pb} = -.12$).

The 1st iteration. Two items with negative point bi-serial correlation coefficient were identified during the 1st iteration of the Rasch calibration:

- a) I think that a child with a communication disorder should participate in a general classroom but not a child with another type of disability (PItem 6; $r_{pb} = -.11$).
- b) I think that a child with an emotional disturbance/behavioral disorder should participate in a general classroom but not a child with another type of disability (PItem 9; $r_{pb} = -.05$).

The 2nd iteration. One item with negative point-biserial correlation coefficient was identified during the 2nd iteration of the Rasch calibration:

- a) I think that a child with an intellectual disability should participate in a general classroom but not a child with another type of disability (PItem 8; $r_{pb} = -.06$).

The 3rd iteration deletion. Five items with mean square statistics greater than 1.4 were identified during the 3rd iteration of the Rasch calibration:

- a) I think that a child with a severe disability should participate in a general classroom (PItem 13; outfit MNSQ = 1.91).
- b) I feel comfortable if a child with a mild disability participates in my classroom but not a child with a moderate and a severe disability (PItem 25; outfit MNSQ = 1.74).

- c) I feel comfortable if a child with a severe disability participates in my classroom (PItem 27; outfit MNSQ = 1.55).
- d) I am willing to include a child with a disability in my classroom regardless of the child's type of disability (PItem 32; outfit MNSQ = 1.86).
- e) I am willing to include a child with a disability in my classroom regardless of the child's degree of disability (PItem 38; outfit MNSQ = 1.67).

The 4th iteration deletion. One item with mean square statistics greater than 1.4 was identified during the 4th iteration of the Rasch calibration:

- a) I think that a child with a disability should have access to general classroom regardless of the child's degree of disability (PItem 10; outfit MNSQ = 1.68).

Step3. Item analysis. Four items with mean square statistics higher than but close to 1.4 were identified in the step of item analysis. The following 4 items are:

- a) I feel comfortable if a child with a developmental delay participates in my classroom but not a child with another type of disability (PItem 19; outfit MNSQ = 1.47).
- b) I feel comfortable if a child with a communication disorder participates in my classroom but not a child with another type of disability (PItem 20; outfit MNSQ = 1.49).
- c) I feel comfortable if a child with disability is placed in my classroom regardless of the child's degree of disability (PItem 24; outfit MNSQ = 1.45).
- d) I feel comfortable if a child with a moderate disability participates in my classroom but not a child with a severe disability (PItem 26; outfit MNSQ = 1.42).

Among these 18 misfitting items that were identified through unidimensionality and item analysis, following eight misfitting items were deleted from the initial attitude instrument:

- a) I think that a child with a developmental delay should participate in a general classroom but not a child with another type of disability (PItem 5; $r_{pb} = -.03$).
- b) I think that a child with a communication disorder should participate in a general classroom but not a child with another type of disability (PItem 6; $r_{pb} = -.11$).
- c) I think that a child with a physical disability should participate in a general classroom but not a child with another type of disability (PItem 7; $r_{pb} = -.11$).
- d) I think that a child with an intellectual disability should participate in a general classroom but not a child with another type of disability (PItem 8; $r_{pb} = -.06$).
- e) I think that a child with an emotional disturbance/behavioral disorder should participate in a general classroom but not a child with another type of disability (PItem 9; $r_{pb} = -.05$).
- f) I think that a child with a disability should have access to general classroom regardless of the child's degree of disability (PItem 10; outfit MNSQ = 1.68).
- g) I am willing to include a child with a disability in my classroom regardless of the child's type of disability (PItem 32; outfit MNSQ = 1.86).
- h) I am willing to include a child with a disability in my classroom regardless of the child's degree of disability (PItem 38; outfit MNSQ = 1.67).

While another 10 misfitting items were retained in the attitude instrument, more definitions related to these items were included into the attitude instrument. The decision about retaining misfitting items was made based on the logic of including them as a series

of items measuring the construct related to disability. Specifically, the 10 misfitting items included PItem 11, PItem 13, PItem 25, PItem 27, and PItem 41. These 5 items were expected to measure the teachers' attitudes toward a child with mild and a child with severe disability. By retaining these 5 items along with other items related to moderate disability, a series of items that might measure the teachers' attitudes toward children with mild, moderate, and severe disabilities was constructed.

Also, 10 misfitting items included PItem 34 that was expected to measure the teachers' attitudes toward a child with communication disorder. By retaining this item along with other items related to developmental delay, communication disorder, physical disability, intellectual disability, and emotional disturbance/behavioral disorder, a series of items that might measure the teachers' attitudes toward children with different types of disabilities was constructed. Therefore, the refined instrument consisted of 34 items for the primary study.

Primary Study

Participants. One hundred twenty general preschool Korean teachers from Seoul, South Korea were recruited to participate in the study and satisfied the following two qualification criteria for the participation: a) currently teach children aged from three to five years in community-based general preschools when participating in the study and b) have major responsibilities including classroom managements in their classrooms. The teachers who participated in the pilot study were excluded from recruitment for the primary study. When recruiting the participants, a short description of the study including the purpose of study and their rights as participants were provided via email. One

hundred six teachers responded to the survey and two out of 106 teachers did not complete their survey. The teachers who agreed to participate in the study received a link to the survey. After the completion of the survey, individual teachers received a gift valued at five US-dollars as compensation for the participation. The gifts were delivered to the teachers within four weeks after ending the survey.

Data analysis. To answer the 13 research questions, the Rasch 4-step analysis and a one-way ANOVA were used. The Rasch 4-step analysis was applied to research questions from 1 to 6 to investigate if the attitude instrument was valid to measure the teachers' attitudes toward inclusion. The same rationale for item deletion and retainment that was used in the pilot study was applied to the steps of unidimensionality, item, and person analysis.

A one-way ANOVA was applied to research questions from 7 to 13 to examine if there are differences between the teachers' attitudes and demographic characteristics. The .05 level of statistical significance was applied to answer research questions related to these demographic characteristics. Estimated effect size ranged from 0 to 1. When an estimated effect size value was 0, it meant that there were no differences in the mean scores between or among the groups. When an estimated effect size value was 1, it meant that there were differences between at least two of the means on the dependent variable. Also, estimated effect size was interpreted by a value of .01 as small, a value of .06 as medium, and a value of .14 as large effect size (Green & Salkind, 2004).

Research question 1: Is the attitude instrument constructed for the study a valid measure for identifying general preschool South Korean teachers' attitudes toward inclusion?

The attitude instrument constructed for the study was a valid measure for identifying general preschool South Korean teachers' attitudes toward inclusion. Specifically, the variance explained by measures increased from 54.4% to 61.6% when deleted two misfitting items in the step of unidimensionality analysis. This means that the attitude instrument excluding two misfitting items measured the teachers' attitudes toward inclusion that the researcher intended to measure.

Research question 2: Does the rating scale function effectively to measure teacher attitudes?

The results of the rating scale analysis indicated that a 4-point rating scale was functional to obtain information about the attitudes of the South Korean teachers toward inclusion. Separation statistics, step calibration, and scale distribution were used to decide if the rating scale allowed general preschool South Korean teachers to describe their thoughts about, feelings about, and willingness to act toward early childhood inclusion. A detailed rating scale analysis is as follows.

Separation statistics for 106 measured persons showed three levels of separation (See Table 3). This means there was certain qualitative difference among the South Korean teachers on their attitudes toward early childhood inclusion. Separation statistics for 34 measured items were greater than two levels of separation (See Table 4). This means that there were qualitative differences among the items that were measuring attitudes of the South Korean teachers toward inclusion.

Table 3

Summary of 106 measured persons

	RAW		MODEL		INFIT		OUTFIT	
	SCORE	COUNT	MEASURE	ERROR	MNSQ	ZSTD	MNSQ	ZSTD
MEAN	45.6	33.5	-.37	.35	1.01	-.3	.98	-.4
S.D.	9.6	3.0	1.13	.04	.62	2.2	.62	2.1
MAX.	69.0	34.0	2.37	.68	3.28	6.8	3.37	6.8
MIN.	10.0	8.0	-5.34	.33	.20	- 4.4	.17	-4.4
REAL RMSE	.40	ADJ.SD	1.06	SEPARATION		2.66	PERSON RELIABILITY	.88
MODEL RMSE	.36	ADJ.SD	1.08	SEPARATION		3.01	PERSON RELIABILITY	.90
S.E. OF PERSON MEAN = .11								

VALID RESPONSES: 98.6%

PERSON RAW SCORE-TO-MEASURE CORRELATION = .87 (approximate due to missing data)

CRONBACH ALPHA (KR-20) PERSON RAW SCORE RELIABILITY = .91 (approximate due to missing data)

Table 4

Summary of 34 measured items

	RAW		MODEL		INFIT		OUTFIT	
	SCORE	COUNT	MEASURE	ERROR	MNSQ	ZSTD	MNSQ	ZSTD
MEAN	142.1	104.5	.00	.20	1.00	-.1	.98	-.2
S.D.	41.6	.8	1.54	.01	.36	2.2	.37	2.2
MAX.	247.0	106.0	2.41	.22	2.16	7.1	2.18	7.1
MIN.	84.0	103.0	-3.58	.18	.55	-3.0	.50	-3.3
REAL RMSE	.21	ADJ.SD 1.53	SEPARATION		7.20	ITEM RELIABILITY	.98	
MODEL RMSE	.20	ADJ.SD 1.53	SEPARATION		7.63	ITEM RELIABILITY	.98	
S.E. OF ITEM MEAN = .27								

UMEAN=.000 USCALE=1.000

ITEM RAW SCORE-TO-MEASURE CORRELATION = -1.00 (approximate due to missing data)

3552 DATA POINTS. APPROXIMATE LOG-LIKELIHOOD CHI-SQUARE: 4992.94

Step calibration suggested that the South Korean teachers used the rating scale in a consistently hierarchical manner from less to more: the calibration value of rating '1' was less than the calibration value of rating '2'; the calibration value of rating '2' is less than the calibration value rating '3' (See Table 5).

Table 5

Summary of category structure Model="R"

CATEGORY		OBSERVED	OBSVD	SAMPLE	INFIT	OUTFIT	STRUCTURE	CATEGORY	
LABEL	SCORE	COUNT	%	AVRGE	EXPECT	MNSQ	MNSQ	CALIBRATN	MEASURE
0	0	242	7	-3.18	-3.11	1.03	.98	NONE	(-5.17)
1	1	1971	55	-1.10	-1.07	.89	.87	-4.07	-1.85
2	2	1156	32	.99	.85	.90	.87	.38	2.04
3	3	183	5	2.26	2.74	1.42	1.51	3.68	(4.81)
MISSING		52	1	.45					

OBSERVED AVERAGE is mean of measures in category. It is not a parameter estimate.

Related to scale distribution, each rating scale category peaked above 50% of the probability line (See Figure 2). This means that the South Korean teachers used the rating scale meaningfully and effectively to describe their attitudes toward early childhood inclusion.

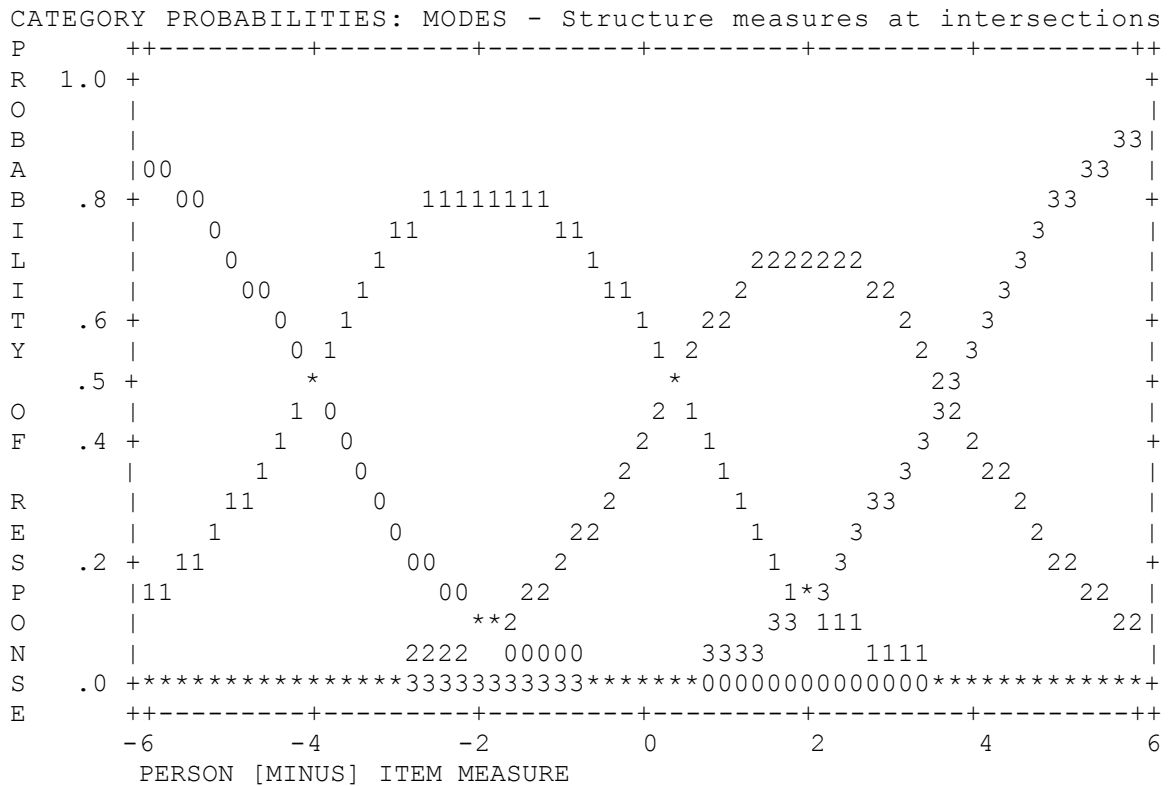


Figure 2. Rating scale category

Research question 3: Do the items measure a single variable of attitude?

The items measured a single variable of attitude after deleting two misfitting items. The variance explained by measures was under 60% within 34 items (See Table 6). This means that the attitude instrument was not a unidimensional construct to measure a single variable of attitude.

Table 6

Standardized residual variance (in Eigenvalue units)

	Empirical			Modeled
Total variance in observations =	74.5	100.0%		100.0%
Variance explained by measures =	40.5	54.4%		53.6%
Unexplained variance (total) =	34.0	45.6%	100.0%	46.4%
Unexplned variance in 1st contrast =	4.3	5.8%	12.7%	
Unexplned variance in 2nd contrast =	3.2	4.3%	9.5%	
Unexplned variance in 3rd contrast =	3.0	4.1%	8.9%	
Unexplned variance in 4th contrast =	2.4	3.2%	7.1%	
Unexplned variance in 5th contrast =	1.9	2.6%	5.7%	

To satisfy a criterion of over 60% of the variance, 2 misfitting items were deleted from 34 items. Two misfitting items were below:

- a) I think that a child with a mild disability should participate in a general classroom but not a child with a moderate and a child with a severe disability (Item 5; $r_{pb}=-.14$; Outfit MNSQ=2.18).
- b) I think that a child with a severe disability should participate in a general classroom (Item 7; Outfit MNSQ=1.93).

After deleting these two misfitting items, the variance explained by measures was increased from 54.4% to 61.6% (See Table 7). This means that the attitude instrument with 61.6% variance explained by measures is a unidimensional construct to measure a single variable of attitude.

Table 7

Table of standardized residual variance (in Eigenvalue units)

		Empirical			Modeled
Total variance in observations	=	83.2	100.0%		100.0%
Variance explained by measures	=	51.2	61.6%		60.9%
Unexplained variance (total)	=	32.0	38.4%	100.0%	9.1%
Unexplned variance in 1st contrast	=	4.0	4.8%	12.5%	
Unexplned variance in 2nd contrast	=	3.2	3.8%	10.0%	
Unexplned variance in 3rd contrast	=	3.0	3.7%	9.5%	
Unexplned variance in 4th contrast	=	2.3	2.7%	7.1%	
Unexplned variance in 5th contrast	=	1.9	2.3%	5.9%	

Research question 4: Do the items function effectively to measure teacher attitudes?

The items functioned effectively to measure teacher attitudes. The following item was deleted from the set of 32 items that retained in the step of unidimensionality analysis:

- a) I think that I have sufficient knowledge about how children with different disabilities learn (Item 8; Outfit MNSQ=1.99).

The 31 retained 31 items had the values of positive r_{pb} , ranged from .22 to .68. This means that these 31 items function together to measure teacher attitudes. Also, the retained 31 items had the values of outfit MNSQ that ranged from .53 to 1.58. This means that these items might result in no guessing or careless responses from the teachers.

Research question 5: Do teachers respond to the items measuring their attitudes in a serious manner?

After iterating the Rasch person analysis, 81 out of 106 teachers were identified as persons who responded to 31 items in a serious manner. The values of these 81 teachers' outfit MNSQ were lesser than 2.01 throughout 4 iterations of the Rasch person analysis. In the first person analysis, 11 teachers were deleted from 106 teachers because they had outfit MNSQ greater than 1.4. The range of outfit MNSQ was from 2.05 to 3.53. In the second person analysis, 6 teachers were deleted from 95 teachers because they had outfit MNSQ greater than 1.4. The range of outfit MNSQ was from 2.11 to 2.77. In the third person analysis, 4 teachers were deleted from 89 teachers because they had outfit MNSQ greater than 1.4. The range of outfit MNSQ was from 2.02 to 2.24. In the fourth person analysis, 3 teachers were deleted from 85 teachers because they had outfit MNSQ greater than 1.4. The range of outfit MNSQ was from 2.04 to 2.26. In the fifth person analysis, 1 teacher with the value of 2.03 outfit MNSQ was deleted from 82 teachers.

Research question 6: What are general preschool South Korean teachers' attitudes about early childhood inclusion as measured by a self-report attitude scale?

Some teachers' attitudes toward early childhood inclusion were more positive when they responded to the items that most teachers agreed with. Some teachers' attitudes toward early childhood inclusion were less positive when they responded to the items that most teachers disagreed with (See Figure 3). Specifically, 11 out of 81 teachers have estimated measures at the zero point as do three items: 'I think that a child with disability should have access to a general classroom that provides learning opportunities with typically developing peers (Item 1)'; 'I would feel comfortable if a child with a developmental delay participates in my classroom but not a child with another type of

disability (Item 13)'; 'I would feel comfortable if a child with a physical disability participates in my classroom but not a child with another type of disability (Item 15)'.

Because these 11 teachers and three items are aligned on the person-item variable map, the following prediction can be made: these 11 teachers may have a 50% chance of responding to one of three items (Item 1, Item 13, and Item 15) positively.

Also, these 11 teachers may have less than a 50% chance of positive responses to two items (Item 16 and Item 26), five items (Item 14, Item 10, Item 27, Item 29, and Item 31), three items (Item 17, Item 20, and Item 28), two items (Item 9 and Item 30), one item (Item 33), two items (Item 18 and Item 21), and one item (Item 12) in hierarchy, less to more difficult items. The more difficult items showed the lesser positive responses. In addition, these 11 teachers may have more than a 50% chance of positive responses to two items (Item 19 and Item 23), three items (Item 24, Item 31, and Item 6), two items (Item 22 and Item 2), three items (Item 34, Item 25, and Item 11), one item (Item 1), and one item (Item 3) in hierarchy, less to more easy items. The easier items showed the more positive responses.

PERSONS MAP OF ITEMS

		<more> <rare>	
4		+ Comfort/regardless of type of disability	Item 12
		Comfort/regardless of degree/severity	Item 18
		Comfort/severe disability	Item 21
3	X T+		
		Willing to have a child/severe disability	Item 33
2	XXXXX +S	Comfort/child with disability	Item 9
		Willing to have a child/EBD	Item 30
	XXXXXX	Comfort/EBD	Item 17
		Comfort/moderate disability	Item 20
		Confident to adapt	Item 10
		Willing to have a child/ID	Item 29
		Willing to have a child/PD	Item 28
1	XXXXXXXX S+	Comfort/CD	Item 14
		Willing to have a child/CD	Item 27
		Willing to have a child/moderate disabili.	Item 32
	XXXXXXXXXX	Comfort/ID	Item 16
		Willing to have a child/DD	Item 26
0	XXXXXXXXXXXXX +M	Access/regardless of type of disability	Item 4
		Comfort/DD	Item 13
		Comfort/PD	Item 15
	XXXXXXXXXXXXX M	Comfort/mild disability	Item 19
		Willing to have a child/disability	Item 23
		Willing to have a child/mild disability	Item 31
-1	XXXXXXXXXXXXX +	Participate/moderate disability	Item 6
		Willing to adapt	Item 24
	XXXXX		
-2	XXXX S+S		
	XXXXX	Confident/more knowledge	Item 22
		Fully participate	Item 2
-3		+ Welcome/training	Item 11
		Willing to obtain knowledge	Item 42
	XX T	Willing to receive training	Item 25
-4		+ Access	Item 1
	T		
-5		+ Need training	Item 3
-6		+	
-7		+	
-8		+	
		<less> <frequ>	

Figure 3. *Person-item variable map.*

Research question 7: Are there differences between teachers' positive or negative attitudes that may be associated with specific demographic characteristics?

Six types of demographic information were collected to investigate if there were differences between teachers' attitudes that may be related to 6 demographic

characteristics. The demographic questions were about a) completion of college course(s) related to special education, b) in-service training on special education issues, c) experiences of working with preschool children with disabilities, d) years of teaching, e) the highest professional degree, and f) school districts where they are working. A one-way ANOVA was used to answer these questions. There were differences between teachers' positive or negative attitudes related to three demographic characteristics such as b) in-service training on special education issues, d) years of teaching, and e) highest professional degrees. However, there were no differences between teachers' attitudes associated with these four demographic characteristics: a) completion of college course(s) related to special education, c) experiences of working with preschool children with disabilities, and f) school districts where they are working. The results from the data analysis pertaining to research questions 8 to 13 are presented below.

Research question 8: Is there a difference in teachers' attitude scores between those who completed college course(s) related to special education and those who did not?

A one-way ANOVA was conducted to investigate a difference in teachers' attitude scores between those who completed college course(s) related to special education and those who did not. The independent variable, college course (s), included two categories: yes and no. The dependent variable was teachers' attitude scores that added up three sub-scores, thoughts, feelings, and act. The one-way ANOVA, $F(1, 74) = .067$, $p = .796$, demonstrated statistically no significant difference between the two groups, as shown in Table 9. Estimated effect size was .001. This means that there was

practically no significant difference between those who completed college course(s) and those who did not.

Table 8

Descriptive statistics related to college course

College course	Mean	Std. Deviation	N
Yes	74.3396	6.59820	53
No	73.9130	6.60518	23
Total	74.2105	6.55910	76

Table 9

Analysis of variance between teachers' attitudes and college course

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2.919 ^a	1	2.919	.067	.796	.001
Intercept	352529.234	1	352529.234	8092.273	.000	.991
College_course	2.919	1	2.919	.067	.796	.001
Error	3223.713	74	43.564			
Total	421774.000	76				
Corrected Total	3226.632	75				

a. R Squared = .001 (Adjusted R Squared = -.013)

Research question 9: Is there a difference in teachers' attitude scores between those who received in-service training on special education issues and those who did not?

A one-way ANOVA was conducted to investigate a difference in teachers' attitude scores between those who received in-service training on special education issues and those who did not. The independent variable, in-service training, included two categories: yes and no. The dependent variable was teachers' attitude scores that added up

three sub-scores, thoughts, feelings, and actions. The one-way ANOVA, $F(1, 74) = 9.11$, $p = .003$ demonstrated statistically significant difference between two groups, as shown in Table 11. The estimated effect size was .11, which indicates a medium to large effect size (Green & Salkind, 2005). This means that there was large significant difference between those who received in-service training and those who did not. Teachers who had received in-service training related to special education issues had a higher mean score than teachers who had not received in-service training related to special education issues had (See Table 10).

Table 10

Descriptive statistics related to in-service training

In-service training	Mean	Std. Deviation	N
Yes	79.4545	6.34608	11
No	73.3231	6.21266	65
Total	74.2105	6.55910	76

Table 11

Analysis of variance between teachers' attitudes and in-service training

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	353.689 ^a	1	353.689	9.110	.003	.110
Intercept	219589.689	1	219589.689	5656.095	.000	.987
In_service_train	353.689	1	353.689	9.110	.003	.110
Error	2872.943	74	38.824			
Total	421774.000	76				
Corrected Total	3226.632	75				

a. R Squared = .110 (Adjusted R Squared = .098)

Research question 10: Is there a difference in teachers' attitude scores between those who have had experiences of teaching children with special needs and those who have not?

A one-way ANOVA was conducted to investigate a difference in teachers' attitude scores between those who have had experiences of teaching children with special needs and those who have not. The independent variable, experience teaching, included two categories: yes and no. The dependent variable was teachers' attitude scores that added up three sub-scores, thoughts, feelings, and act. The one-way ANOVA, $F(1, 73) = 1.179, p = .281$, demonstrated statistically no significant difference between the two groups, as shown in Table 13. The estimated effect size was .016, indicating a small effect size. This means that there was no difference between those who have had experiences of teaching children with special needs and those who have not.

Table 12

Descriptive statistics related to experiences with child with disability

Experiences/ child/disability	Mean	Std. Deviation	N
Yes	75.2308	6.74868	26
No	73.5102	6.41652	49
Total	74.1067	6.54005	75

Table 13

Analysis of variance between teachers' attitudes and experiences of teaching

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	50.286 ^a	1	50.286	1.179	.281	.016
Intercept	375810.926	1	375810.926	8807.521	.000	.992
Experiences/child	50.286	1	50.286	1.179	.281	.016
Error	3114.860	73	42.669			
Total	415050.000	75				
Corrected Total	3165.147	74				

a. R Squared = .016 (Adjusted R Squared = .002)

Research question 11: Is there a difference in teachers' attitude scores according to their years of teaching preschool children?

A one-way ANOVA was conducted to investigate if there was a difference in teachers' attitude scores that might be related to their years of teaching preschool children. The independent variable, years of teaching, included five categories: less than 1 year, 1 to 2-year, 3 to 4-year, 5 to 6-year, and over 7-year. The dependent variable was teachers' attitude scores that added up three sub-scores, thoughts, feelings, and actions. The one-way ANOVA, $F(4, 71) = 2.527, p = .048$, demonstrated a statistically significant difference between the two groups, as shown in Table 15. The estimated effect size was .125, which is a medium to large effect size (Green & Salkind, 2005). This means that there was a large significant difference in teachers' attitude scores according to their years of teaching preschool children. Specifically, teachers who have taught for less than 1 year had higher mean score than teachers who have taught for 1-2 years, 3-4 years, 5-6years, and over 7 years respectively.

Table 14

Descriptive statistics related to years of teaching

Years of teaching	Mean	Std. Deviation	N
less than 1 year	76.8000	4.76895	15
1-2 years	70.6364	6.53104	11
3-4 yesrs	72.7500	8.34523	8
5-6 years	72.3889	7.08884	18
Over 7 years	76.0833	5.66390	24
Total	74.2105	6.55910	76

Table 15

Analysis of variance between teachers' attitudes and years of teaching

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	402.075 ^a	4	100.519	2.527	.048	.125
Intercept	357845.908	1	357845.908	8995.061	.000	.992
Years_teaching	402.075	4	100.519	2.527	.048	.125
Error	2824.557	71	39.782			
Total	421774.000	76				
Corrected Total	3226.632	75				

a. R Squared = .125 (Adjusted R Squared = .075)

Research question 12: Is there a difference in teachers' attitudes scores according to their highest professional degrees?

A one-way ANOVA was conducted to investigate a difference in teachers' attitude scores that might be related to the highest professional degree that they had earned. The independent variable, highest professional degrees, included five categories: associate (2-year), associate (3-year), bachelor, master, and doctoral. The dependent variable was teachers' attitude scores that added up three sub-scores, thoughts, feelings,

and act. The one-way ANOVA, $F(3, 72) = 2.922, p = .04$, demonstrated a statistically significant difference in teachers' attitude scores according to their highest professional degrees, as shown in Table 17. The estimated effect size was .109, which was a medium to large effect size (Green & Salkind, 2005). This means that there was a large significant difference in teachers' attitude scores according to their highest professional degrees. The teachers, who had a 3-year associate degree, had a higher mean score than teachers who had a 2-year associate degree, a 4-year bachelor's degree, and a master's degree respectively.

Table 16

Descriptive statistics related to the highest professional degrees

Degree	Mean	Std. Deviation	N
Associate (2 yrs)	76.8000	7.59605	5
Associate (3yrs)	79.4286	5.44234	7
Bachelor (4 yrs)	72.9636	6.45487	55
Master	76.3333	5.22015	9
Total	74.2105	6.55910	76

Table 17

Analysis of variance between teachers' attitudes and the highest professional degrees

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	350.190 ^a	3	116.730	2.922	.040	.109
Intercept	197703.785	1	197703.785	4948.709	.000	.986
Degree	350.190	3	116.730	2.922	.040	.109
Error	2876.442	72	39.951			
Total	421774.000	76				
Corrected Total	3226.632	75				

a. R Squared = .109 (Adjusted R Squared = .071)

Research question 13: Is there a difference in teachers' attitudes scores according to their school districts where they are working?

A one-way ANOVA was conducted to investigate a difference in teachers' attitude scores according to their school districts where they are working. The independent variable, school district, was divided by two categories: Gangnam and Gangbuk districts that are geographically divided by the Han River. Gangnam district includes 11 school districts and Gangbuk district includes 14 school districts. Gangnam and Gangbuk districts have frequently been compared to see if there are any differences related to social and educational issues between them. As shown in Table 18, 79 teachers from Gangnam district and 25 teachers from Gangbuk district participated in the study. Two teachers did not provide the information about the school district in which they were working. The dependent variable was teachers' attitude scores that added up three sub-scores, thoughts, feelings, and actions. The one-way ANOVA, $F(1, 74) = .000, p = .995$, demonstrated statistically no significant difference in teachers' attitude scores according to their school district, as shown in Table 20. The estimated effect size was .00. This means that there was no significant difference in teachers' attitude scores that could be related to the school district in which they worked.

Table 18

Numbers of teachers from school districts

School district	District		Total
	Gangnam	Gangbuk	
Gangnam-gu	11	0	11
Gangdong-gu	4	0	4
Gangseo-gu	8	0	8
Gwanak-gu	1	0	1
Dongdaemun-gu	0	2	2
Dongjak-gu	13	0	13
Mapo-gu	0	9	9
Songpa-gu	10	0	10
Seocho-gu	4	0	4
Seongdong-gu	0	8	8
Yangcheon-gu	24	0	24
Yeongdeungpo-gu	4	0	4
Eunpyeong-gu	0	5	5
Jung-gu	0	1	1
Total	79	25	104

Table 19

Descriptive statistics related to school district

School district	Mean	Std. Deviation	N
Gangnam	74.2131	6.58816	61
Gangbuk	74.2000	6.66762	15
Total	74.2105	6.55910	76

Table 20

Analysis of variance between teachers' attitudes and school district

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.002 ^a	1	.002	.000	.995	.000
Intercept	265186.897	1	265186.897	6081.836	.000	.988
School Dis	.002	1	.002	.000	.995	.000
Error	3226.630	74	43.603			
Total	421774.000	76				
Corrected Total	3226.632	75				

a. R Squared = .000 (Adjusted R Squared = -.014)

Chapter Five

Conclusions and implications

Chapter five includes three parts: a) conclusions from results of the study, b) implications for professional development programs, and c) implications for future research. An overview of the study is provided below.

Overview of the study

The purpose of this study was to a) investigate attitudes of preschool teachers in South Korea toward inclusion and b) to construct a valid teacher attitude measure by using the Rasch model that was developed by Danish mathematician George Rasch between 1951 and 1959 (Wright, 1999). To investigate teachers' attitudes, the initial attitude instrument was developed based on the definition of 'attitude toward inclusion' and the existing research literature related to factors that may influence teachers' attitudes toward inclusion (e.g., type of disability, degree of disability, teachers' knowledge, and completion of in-service training related to special education issues). The initial instrument consisted of 42 items that were evenly distributed across 3 sub-categories of attitude: thoughts, feelings, and willingness to act. The validity of the initial instrument was examined by using the Rasch 4-step analysis in the pilot study. Based on the results of the Rasch 4-step analysis and the logic of including misfitting items as a series of items measuring the construct of disability, 34 items out of the set of 42 items were retained for the primary study.

Thirteen research questions were asked to ensure validity of the refined attitude measure and to obtain the information about the teachers' attitudes toward inclusion in the primary study. To answer these research questions, a Rasch 4-step analysis and a one-

way ANOVA analysis were applied. For data collection, SurveyMonkey™, an online survey tool, was utilized in the pilot and the primary study. Participation in the survey was voluntary. Twenty and one hundred six teachers participated in the pilot and primary study respectively.

Conclusions

Conclusions to the first six research questions are discussed related to a Rasch 4-step analysis: a) rating scale analysis, b) dimensionality analysis, c) item analysis, and d) person analysis. Also, some conclusions to the research question 6 are supported by a literature review related to teachers' attitudes toward inclusion.

Research question 1: Is the attitude instrument constructed for the study a valid measure for identifying general preschool South Korean teachers' attitudes toward inclusion?

The dimensionality analysis to data related to the research question 1 concluded that the attitude instrument constructed for the study was a valid measure for identifying general preschool South Korean teachers' attitudes toward inclusion.

To identify South Korean preschool teachers' attitudes toward inclusion, the attitude instrument should be a valid measure that measures a single variable of attitude. When the attitude instrument has a multi-dimensional construct, the results of the study can be contaminated by other concepts (Wright & Stone, 1999). This contaminated information may result in inaccurate information. Relying on inaccurate information about the attitudes may prevent these early childhood professionals from developing quality professional development programs that support preschool teachers to work more effectively with children with disabilities.

To determine if the attitude instrument constructed for the study was a valid measure for identifying general preschool South Korean teachers' attitudes toward inclusion, the Rasch 4-step analysis was used. Specifically, the step of the dimensionality analysis indicated that the initial variance explained by measure was 54.4% and that did not meet the unidimensionality criterion that states a valid measure explains at least 60% of the measure's variance. After deleting two misfitting items in the step of unidimensionality analysis, the variance explained by the measure was 61.6% indicating that a valid measure.

Research question 2: Does the rating scale function effectively to measure teacher attitudes?

The Rasch analysis of the data related to the research question 2 concluded that the rating scale functioned effectively to measure teacher attitudes. A rating scale should be viewed in a consistently hierarchical manner from less to more. For example, when a 4-point rating scale is used, the value of rating '0' is less than the value of rating '1'; the value of rating '1' is less than the value of rating '2'; the value of rating '2' is less than the value of rating '3'. If a teacher does not rate individual items by following this consistent and hierarchical manner, differentiation from one rating to another might not be expected. Therefore, a 4-point rating scale with the lack of differentiation among the ratings may fail to function effectively to measure teacher attitudes that can be described by different values of ratings. Also, the distribution of ratings across the scale provides evidence that the respondent has used the rating scale meaningfully and effectively. If the respondent does, each rating scale category will peak above 50% of the probability line. In this study,

the teachers used a 4-point rating scale in consistent and hierarchical manner and each rating scale category peaked above 50% of probability line.

Research question 3: Do the items measure a single variable of attitude?

The Rasch dimensionality analysis to data related to the research question 3 concluded that the set of 32 items measured a single variable of attitude. The Rasch dimensionality analysis indicates that individual items in the attitude instrument were working together to measure a single variable of attitude. When the items measure a single variable of attitude, the variance explained by measures is over 60%. If the variance explained by measures is under 60%, misfitting items that might be unrelated to the variable of attitude may exist in the attitude instrument. Therefore, these misfitting items have to be identified and deleted.

In this study, initial variance explained by measures was 54.4%. After identifying 2 misfitting items and deleting these 2 misfitting items from the set of 34 items, the variance explained by measures increased from 54.4% to 61.6%.

Research question 4: Do the items function effectively to measure teacher attitudes?

The Rasch item analysis to the data related to the research question 4 concluded that the set of 31 items functioned effectively to measure teacher attitudes.

The Rasch item analysis indicates if the items in attitude instrument function as expected. The expectations include two aspects: a) the items are understood by the teachers; b) the items measure the teachers' attitudes toward inclusion. Any items that might be poorly written or unrelated to attitude should be identified and deleted. In this

study, one item was identified as a misfitting item and this misfitting item was deleted from the set of 32 items.

Research question 5: Do teachers respond to the items measuring their attitudes in a serious manner?

The Rasch person analysis to data related to the research question 5 concluded that 81 out of 106 teachers responded to the items measuring their attitudes in a serious manner. The Rasch person analysis indicates if teachers participated in the survey as expected. The expectations include two aspects: a) the teachers answer the items in a serious manner; b) more positive teachers agree with the items that most teachers disagree with. In this study, 25 teachers were identified as the teachers who failed to respond to the survey in a serious manner. These 25 teachers were excluded from the sample, leaving a total of 106 teachers whose responses were analyzed.

Research question 6: What are general preschool South Korean teachers' attitudes about early childhood inclusion as measured by a self-report attitude scale?

The Rasch analysis concluded that some teachers had positive attitudes that aligned with the items that they frequently agreed with and some teachers had negative attitudes. A person-item variable map (See Figure 3) shows locations of teachers and items on the variable of attitude. Teachers are presented at the left side of the map and from top to bottom. Teachers who agree with many items are located at the top and teachers who agree with few items are located at the bottom. This means that teachers who have more agreements to items have more positive attitudes and teachers who have fewer agreements to items have less positive attitudes.

Items are presented at the right side of the map and from top to bottom. Items that teachers agree with are located at the bottom and items that fewer teachers agree with are located at the top. This means that items at top are more difficult to agree with and items at the bottom are less difficult to agree with.

The results of the data analysis suggested that:

- About 64% of the teachers generally had positive thoughts about a) the necessity of in-service training, b) the overall concept of access to a general classroom for a child with disability, c) full participation in a preschool classroom for a child with disability, d) inclusion for a child with a moderate disability, and e) access to a general classroom regardless of the child's type of disability.
- Some teachers indicated more positive feelings about including a child with physical delay than a child with a developmental delay.
- The majority of teachers had positive feelings about the importance of additional opportunities for in-service training on special education issues.
- The majority of teachers would be more confident if they had more knowledge about accommodations and adaptations of learning environments and activities.
- The majority of teachers were willing to receive in-service training.
- The majority of teachers were willing to obtain knowledge about accommodations and adaptations of learning environments and activities.

The data analysis also indicated that some teachers had negative attitudes toward early childhood inclusion:

- The majority of teachers were strongly opposed to including a child with EBD.
- Some teachers had stronger negative feelings about the participation of children with EBD, communication disorder, and intellectual disability than children with developmental delay and physical disability.
- The majority of teachers had strong negative feelings about including a child with a severe disability.
- Some teachers had more negative feelings about including a child with a moderate disability than a child with a mild disability.
- Teachers who indicated their strong negative feelings about including a child with a disability, were unwilling to have a child with any five types of disabilities including developmental delay, communication disorder, physical disability, intellectual disability and EBD. EBD was rated as the most unfavorable.
- The majority of teachers were unwilling to have a child with a severe disability than a child with a mild and a moderate disability.

Conclusions to the research questions from 7 to 13 are consistent with the results of research reported in chapter 2 of this dissertation. A discussion of the relationship between these results and the results of the literature review is included below.

Research question 7: Are there differences between teachers' positive or negative attitudes that may be associated with specific demographic characteristics?

A one-way ANOVA analysis of the data related to the research question 7 concluded that there were differences between teachers' positive attitudes according to

their a) completion of in-service training on special education issues, b) years of teaching, and c) highest professional degrees.

In this study, the teachers who had completed in-service training on special education issues had more positive attitudes than the teachers who had not completed this training.

Also, the teachers who have taught children for less than 1 year and over 7 years had more positive attitudes than the teachers who have taught children for 1 year to 6 years. In addition, the teachers who had a 3-year associate degree had more positive attitudes than the teachers who had different professional degrees including 2-year associate degree, 4-year bachelor, and master degree. However, there were no differences between teachers' attitudes associated with four demographic characteristics including a) completion of college course(s) related to special education, b) experiences working with preschool children with disabilities, and c) school districts where they are working.

Research question 8: Is there a difference in teachers' attitude scores between those who completed college course(s) related to special education and those who did not?

A one-way ANOVA to data related to the research question 8 concluded that there was no difference in teachers' attitudes between those who completed college course (s) and those who did not. The majority of teachers had completed an introductory special education course.

There was no significant difference in teachers' attitude scores between those who completed college course (s) and those who did not. In this study, the college course that the majority of teachers completed was an introductory early childhood special education

course. A few teachers completed the following courses related to special education: a) counseling for children with disabilities, b) art and music therapy, c) child welfare, d) behavior management, e) different types of disabilities including EBD, language disorder, hearing impairments, developmental delay and mental disorder, f) different degrees of disability, and g) individualized education program.

Research question 9: Is there a difference in teachers' attitude scores between those who received in-service training on special education issues and those who did not?

A one-way ANOVA to data related to the research question 9 concluded that the teachers who had received in-service training had more positive attitudes than those who had not. Most in-service training was related to early childhood inclusion.

The teachers who had received in-service training had higher attitude scores than the teachers who had not received. Some training was conducted by their school districts. Some in-service training included the following contents: a) types of disabilities, b) educational approach for children with disabilities, c) necessity of special education, d) current situation of special education, and/or e) introduction and practice of inclusion. Some training was composed of workshops or case studies of inclusion.

Several researchers supported this conclusion: the teachers who had received in-service training had more positive attitudes than the teachers who had not (Seçer, 2010). For example, Turkish preschool teachers had more positive beliefs about a) the advantage of inclusion, b) competencies of children with disabilities, and c) effect on children' development in inclusive classrooms after receiving in-service teacher training (Seçer, 2010).

Bradshaw (2009) found that teachers with a lack of the training related to special education issues were unwilling to learn about how to work with children with disabilities. These teachers who lacked information about how to work effectively with children with disabilities might also lack opportunities to provide high quality inclusion to children with disabilities. By providing more training opportunities associated with special education issues to these teachers, they may be better aware of the significance of learning about children with disabilities for working with them in inclusive classrooms. Therefore, these teachers may then be more willing to learn how to work with children with disabilities and they will implement quality inclusion for children with disabilities.

Research question 10: Is there a difference in teachers' attitude scores between those who have had experiences of teaching children with special needs and those who have not?

A one-way ANOVA to data related to the research question 9 concluded that there was no significant difference in teachers' attitude scores between those who have had experiences of teaching children with special needs and those who have not.

In this study, the experiences of teaching children with disabilities did not appear to influence teachers' positive or negative attitudes towards early childhood inclusion. This result is inconsistent with other studies (Bradshaw, 2009; Leatherman & Niemeyer, 2005). Bradshaw (2009) found that while teachers who experience teaching children with disabilities had a positive view of inclusion, they did not want to learn more about children with disabilities. Also, Leatherman and Niemeyer (2005) reported that teachers with previous experiences working with children with disabilities had more positive attitudes toward inclusion. In this study, the teachers who had experiences

working with children with disabilities were not asked if they had positive or negative experiences. However, it might be assumed that these teachers had more opportunities for positive experiences working with children with disabilities than other teachers who did not have the experiences. Therefore, these teachers with positive experiences would result in more positive attitude scores. Cross et al. (2004) support this assumption that more positive experiences relate to positive attitudes in their study: teachers who had successful experiences working with children with severe disabilities were willing to work with children with mild and moderated disabilities.

Research question 11: Is there a difference in teachers' attitude scores according to their years of teaching preschool children?

A one-way ANOVA to data related to the research question 11 concluded that there was a significant difference in teachers' attitude scores according to their years of teaching preschool children. Teachers who have taught children for less than 1 year and over 7 years had a higher mean score than teacher who have taught children for 1-2 years, 3-4 years, and 5-6 years. This means that the teachers with less than 1 year and over 7 years teaching experiences might have more positive attitudes than the teachers with 1-2 years, 3-4 years, and 5-6 years. The teachers with less than 1 year of teaching experiences might have few chances to work with children with disabilities and they would have less challenging experience working with the children with disabilities. Therefore, these teachers with less than 1 year would have more positive attitudes toward working with children with disabilities. The teachers with over 7 years teaching experiences might have more opportunities to work with children with disabilities and they would have more knowledge and skills about how to work with the children with disabilities effectively.

Therefore, these teachers would have more positive attitudes toward including children with disabilities in their classrooms.

Gal and her colleagues (2010) reported that preschool teachers who had more years of teaching experience had more negative beliefs about children with disabilities than preschool teachers with fewer years of teaching experience. Also, preschool teachers with more years of teaching experience indicated that children with disabilities were rarely friendly compared to typically developing peers. In addition, preschool teachers with more years of teaching experience believed that children with disabilities did not show success in the classroom compared to typically developing children and they easily gave up. The teachers with more years of teaching experiences might have more challenging experiences working with children with disabilities than the teachers with fewer years of teaching. Also, these teachers with more years of teaching experiences might not understand about how children with disabilities communicate and interact differently compared to their typically developing peers. For example, while typically developing peers say 'thank you' to a teacher who helps them, some children with disabilities might not say 'thank you' when they were in the same situation. In addition, these teachers might not have knowledge and specific skills to work with children with disabilities. Children with disabilities might learn more slowly than their typically developing peers and the children with disabilities need different types and levels of support compared to their typical peers. If teachers do not know how children with disabilities learn differently and what support these children need, the teachers let the children with disabilities give up.

Research question 12: Is there a difference in teachers' attitudes scores according to their highest professional degrees?

A one-way ANOVA to data related to the research question 12 concluded that there was significant difference in teachers' attitude scores according to their highest professional degrees. The teachers, who had a 3-year associate degree, had more positive attitudes towards early childhood inclusion than teachers who had a 2-year associate degree, a 4-year bachelor's degree, and master degree respectively. This means that the teacher with a 3-year associate degree might have more positive attitudes than the teachers who had 2-year associate, 4-year bachelor, and master degree. There are two possible explanations about this conclusion in South Korea. First, some 2-year associate early childhood programs and 4-year early childhood programs offer unbalanced course requirements to student teachers when they pursue their professional degrees. While 2-year associate early childhood programs might consist of less theory-related courses including special education issues than 4-year early childhood program, 4-year early childhood programs might be composed of less practice-related courses including special education. Compared to these teachers with 2-year associate degrees and 4-year bachelor degrees, the teachers who had a 3-year associate degree might complete a more balanced program of study which includes coursework in theory and practice. Therefore, these teachers with a 3-year associate degree might have more positive attitudes when they worked with children with disabilities.

Second, the teachers who had a 3-year associate degree might have more confidence than the teachers who had 2-year associate degree because these teachers with 3-year associate degree might have more knowledge related to special education than the

teachers with 2-year associate degree. Also, the teachers who had 3-year associate degree might feel more pressure when they work with children with disabilities than the teachers who had 4-year bachelor degree. Because these teachers with 3-year associate degree might have self expectations that they would work with children with disabilities even more than the teachers with 4-year bachelor degree, the teachers with 3-year associate degree might have more positive attitudes toward inclusion.

Research question 13: Is there a difference in teachers' attitudes scores according to their school districts where they are working?

A one-way ANOVA to data related to the research question 13 concluded that there was no significant difference in teachers' attitude scores according to their school districts where they are working. In this study, school districts were categorized into two geographical areas, Gangnam and Gangbuk which are divided by the Han River. Educational researchers have used these designations to explore the quality of the students' educational environment in South Korea. Specifically, policy makers, education administrators, educators, and parents have made efforts to give quality education opportunities equally to children who were enrolled in both Gangnam and Gangbuk. Common educational support for early childhood inclusion may be developed by collaborated efforts from these Gangnam and Gangbuk districts. While socioeconomic status might differ in Gangnam and Gangbuk, few educational studies reported that the quality differences of educational environment directly resulted from socioeconomic status difference between Gangnam and Gangbuk. Due to the lack of this information, discussion related to the difference in socioeconomic status between Gangnam and Gangbuk is limited in this study.

Limitations

This study has two major limitations: a) the sampling strategy and b) the inclusion of items related to multiple disabilities. First, convenient sampling was used to recruit potential participants. There are 25 school districts in Seoul, but this study only included teachers who were working in 14 of them. The teachers who were working in 11 school districts did not have the chance to provide their thoughts about, feelings about, and willingness to act toward inclusion. Also, unequal numbers of teachers from 14 school districts participated in the study. Therefore, the results of this study have limited generalization about the attitudes of preschool teachers in Seoul, South Korea toward inclusion.

Second, the items about types and degrees of disabilities were limited to a single type and a single degree of disability. In a real classroom, there may be the chance to include children with the same type of disability whose disability varies by degrees. Also, there may be a chance to include a child with multiple disabilities. By limiting the items that asked about a child with a single type of disability and a child with a single degree of disability, this study is unable to provide information about teachers' attitudes toward a child with multiple disabilities. Therefore, more useful information that can help teachers work more effectively with children with diverse needs might be sought.

Implications for Professional Development Programs

Knowledge and instructional skills related to special education can influence teachers' attitudes when they work with children with disabilities in their general classrooms. Teachers who have specific knowledge related to working with children with disabilities could more easily adapt classroom activities and play materials for them

(Leatherman & Niemeyer, 2005). Also, teachers who have various types of specialized instruction could better support these children's development and learning (Buysse, & Hollingsworth, 2009).

In this study, teachers who reported having completed in-service training primarily completed training that focused on a) types of disabilities, b) appropriate educational approaches for children with disabilities, c) the necessity of special education, d) the current state of special education, and/or e) introduction and practice of inclusion. The teachers who received these in-service trainings had more positive attitudes than those who did not complete training. Compared to these in-service training, the college course that most teachers completed was an introductory course in special education. Completion of a college course limited to an introductory course in special education might be a reason why there was no difference in teacher attitudes between the teachers who completed college course (s) related to special education issues and those who did not. Therefore, professional development programs need to provide more extensive and specialized knowledge and instructional skills to teachers. These teachers may then implement more effective inclusionary practices into their general education classrooms for children with and without disabilities.

Implications for Future Research

Three implications are suggested for future research: a) using the Rasch model to construct an attitude measure, b) using an appropriate sampling strategy, and c) the expanding understanding of the construct of disability.

Using the Rasch model to construct an attitude measure. Implementation of preschool inclusion is a global trend and preschool teachers' attitudes toward inclusion

play a significant role in supporting effective inclusion for children with disabilities (Bricker, 1995; Cross et al., 2004; Gal et al., 2010). Understanding the attitudes of South Korean preschool teachers may help early childhood teacher educators better prepare preschool teachers to work more effectively with children with various needs.

While Snyder and Sheehan (1992) introduced the Rasch model to early childhood and early childhood special education, very few studies of teacher attitudes on early childhood inclusion have used the Rasch analysis and so it is difficult to interpret the validity of their results. The quality of an attitude measure has an effect on obtaining the quality of information about attitude. While applying proper statistical analysis to data collected plays an important role in understanding the data, examining the validity of the attitude measure should precede the application of statistical analysis. Specifically, the Rasch model can ensure the content and construct validity of the instrument (Gable et al., 1990). This study showed how the attitude measure was developed by using the Rasch step by step analysis.

The Rasch model develops a yardstick (Wright, 1967) that can measure teachers' attitudes by using equal unit and compare who is more positive or who is less positive. Also, the yardstick shows which items are easier to agree with or more difficult to agree with. When the yardstick presents the locations of each teacher and each item in linear relation, comparisons can be made: a) which teachers have more positive attitude on a specific item related to thoughts about, feelings about, or willingness to act; b) which items are easier to agree with and which items are more difficult to agree with. A person-item variable map can show these relations between teachers and items. Therefore, more precise information about individual teachers' attitudes can be obtained when using the

attitude measure developed by Rasch model. Given that this study produced some results that conflict with results of other studies of teachers' attitudes towards early childhood inclusion, it might be beneficial to conduct additional studies of teachers' attitudes using Rasch analysis.

Using appropriate sampling. The preschool teachers in Seoul, South Korea voluntarily participated in this study and were not randomly selected to participate. Therefore, it is difficult to generalize the results of this study to all preschool teachers working in the Seoul area. To secure more representative participants, probability sampling is suggested for future research (Creswell, 2008). Probability sampling will ensure that participants have equal and independent opportunities to be selected for participation and will increase the odds that the sample more closely represents the actual population of teachers.

Extending the construct of disability. The items related to types and degrees of disabilities were too simplified in this study. By limiting the items that asked about a child with a single disability and a child with a single degree of disability, the information about a child with multiple disabilities was not sought. To obtain more information about teachers' attitudes toward a child with multiple disabilities, the construct of disability needs to include items that ask about a child with multiple disabilities in future research.

The items in this study asked about five types of disabilities including developmental delay, communication disorder, physical disability, intellectual disability, and EBD. These five types of disabilities were chosen because of two reasons: a) developmental delay, communication disorder, physical disability, and intellectual disability were reported as the highest incidences of the disabilities among preschool

children with disabilities in general classrooms in South Korea; b) the increase in the prevalence of EBD was higher than any other disabilities except health impairment when young South Korean children with disabilities were transitioning from general preschools to general elementary schools (Ministry of Education, Science and Technology, 2011b). Different countries may have different prevalence of disabilities among preschool children. In addition, classifications and definitions of disabilities might be different across international countries. Therefore, the items related to disability may be developed by considering prevalence, classifications, and definitions of disabilities in different countries for future research.

References

- Absoud, M., Parr, J. R., Salt, A., & Dale, N. (2011). Developing a schedule to identify social communication difficulties and autism spectrum disorder in young children with visual impairment. *Developmental Medicine and Child Neurology*, 53, 285-288.
- Aguiar, C., Moiteiro, A. R., & Pimentel, J. S. (2010). Classroom quality and social acceptance of preschoolers with disabilities. *Infants and Young Children* 23, 34-41.
- Allen, M. J., & Yen, W. M. (2002). *Introduction to measurement theory*. Prospect Heights, IL: Waveland Press.
- Allport, G. W. (1935). Attitudes. In C. Murchison (Ed.), *A Handbook of Social Psychology* (pp.798-844). Worcester, MA; Clark University Press.
- Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration / inclusion: A review of the literature. *European Journal of Special Needs Education*, 17, 129-147.
- Banerji, M., Smith, R. M., & Dedrick, R. F. (1997). Dimensionality of an early childhood scale using Rasch analysis and conformatory factor analysis. *Journal of Outcome Measurement*, 1, 56-85.
- Bogardus, E. S. (1931). *Fundamentals of social psychology* (2nd ed.). New York, NY: Century.
- Bradshaw, K. (2009). Teachers' attitudes and concerns towards integrating students with special needs in regular classrooms: A United Arab Emirates perspective. *The Journal of the International Association of Special Education*, 10, 49-55.

- Bricker, D. (1995). The challenge of inclusion. *Journal of Early Intervention, 19*, 179-194.
- Bruns, D. A., Mogharreban, C. C. (2007). The Gap between beliefs and practices: early childhood practitioners' perceptions about inclusion. *Journal of Research in Childhood Education, 21*, 229-242.
- Bruns, D. A., & Mogharreban, C. C. (2008). Working with young children with disabilities: Perceptions, skills, and training needs of Head Start teachers. *NHSA Dialog, 11*, 54-66.
- Burke, K., & Sutherland, C. (2004). Attitudes toward inclusion: Knowledge vs. experience, *Education, 125*, 163-171.
- Buyse, V., & Bailey, D. B. (1993). Behavioral and developmental outcomes in young children with disabilities in integrated and segregated settings: A review of comparative studies. *The Journal of Special Education, 26*, 434-461.
- Buyse, V., Goldman, B. D., & Skinner, M. L. (2002). Setting effects on friendship formation among young children with and without disabilities. *Exceptional Children, 68*, 503-517.
- Buyse, V., & Hollingsworth, H. L. (2009). Program quality and early childhood inclusion: Recommendations for professional development. *Topics in Early Childhood Special Education, 29*, 119-128.
- Buyse, V., Wesley, P. W., Keyes, L., & Bailey, D. B. (1996). Assessing the comfort zone of child care teachers in serving young children with disabilities. *Journal of Early Intervention, 20*, 189-203.

- Charlesworth, R., Hart, C. H., & Burts, D. C. (1991). Kindergarten teachers' beliefs and practices. *Early Child Development and Care, 70*, 17-35.
- Charlesworth, R., Hart, C. H., Burts, D. C., Thomasson, R. H., Mosley, J., & Fleege, P. O. (1993). Measuring the developmental appropriateness of kindergarten teachers' beliefs and practices. *Early Childhood Research Quarterly, 8*, 255-276.
- Chave, E. J. (1928). A new type scale for measuring attitudes. *Religious Education, 23*, 364-369.
- Cheuk, J., & Hatch, J. A. (2007). Teachers' perceptions of integrated kindergarten programs in Hong Kong. *Early Child Development and Care, 177*, 417-432.
- Chien, C., Brown, T., & McDonald, R. (2011). Rasch analysis of the assessment of children's hand skills in children with and without disabilities. *Research in Developmental Disabilities: A Multidisciplinary Journal, 32*, 253-261.
- Clough, P., & Nutbrown, C. (2004). Special educational needs and inclusion: multiple perspectives of preschool educators in the UK. *Journal of Early Childhood Research, 2*, 191-211.
- Creswell, J. W. (2008). *Educational research: planning, conducting, and evaluating quantitative and qualitative research (3rd)*. Upper Saddle River, NJ : Pearson/Merrill Prentice Hall.
- Cross, A. F., Traub, E. K., Hutter-Pishgahi, L., & Shelton, G. (2004). Elements of successful inclusion for children with significant disabilities. *Topics in Early Childhood Special Education, 24*, 169-183.
- DEC/NAEYC. (2009). Early childhood inclusion: A joint position statement of the Division for Early Childhood (DEC) and the National Association for the

- Education of Young Children (NAEYC). Chapel Hill, NC: The University of North Carolina, FPG Child Development Institute.
- Diamond, K., & Carpenter, E. (2000). Participation in inclusive preschool programs and sensitivity to the needs of others. *Journal of Early Intervention, 23*, 81-91.
- Dinnebeil, L. A., Fox, C., & Rule, S. (1998). Influences on collaborative relationships: Exploring dimensions of effective communication and shared beliefs. *Infant-Toddler Intervention: The Transdisciplinary Journal, 8*, 263-278.
- Dinnebeil, L. A., McInerney, W., Fox, C., & Juchartz-Pendry, K. (1998). An analysis of the perceptions and characteristics of childcare personnel regarding inclusion of young children with special needs in community-based programs. *Topics in Early Childhood Special Education, 18*, 118-28.
- Dinnebeil, L. A. Rusch, D., Gallagher, P. A., & Rhodes, C. (2003). Design and sequence of professional development activities. In V. D. Stayton, P. S. Miller, & L. A. Dinnebeil (Eds.), *Personnel preparation in early childhood special education: Implementing the DEC recommended practices* (pp. 159-182). Longmont, CO: Sopris West.
- DiStefano, C., & Morgan, G. B. (2010). Evaluation of the Bess TRS-CA using the Rasch rating scale model. *School Psychology Quarterly, 25*, 202-212.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.
- Eiserman, W. D., Shisler, L., & Healey, S. (1995). A Community Assessment of Preschool Providers' Attitudes toward Inclusion. *Journal of Early Intervention, 19*, 149-67.

- Ferguson, D. L. (1996). Is it inclusion yet? Bursting the bubbles. In M. S. Berres, D. L. Ferguson, P. Knoblock, & C. Woods (Eds.), *Creating tomorrow's schools today: stories of inclusion, change, and renewal* (pp. 16-37). New York, NY: Teachers College Press.
- Frankel, E. B. (2004). Supporting inclusive care and education for young children with special needs and their families: An international perspective. *Childhood Education, 80*, 310-316.
- Frankel, E. B., Gold, S., & Ajodhia-Andrews, A. (2010). International preschool inclusion: Bringing the gap between vision and practices. *Young Exceptional Children, 13*, 2-16.
- Frea, W., Craig-Unkefer, L., Odom, S. L., & Johnson, D. (1999). Differential effects of structured social integration and group friendship activities for promoting social interaction with peers. *Journal of Early Intervention, 22*, 230-242.
- Gable, R. K., Ludlow, L. H., & Wolf, M. B. (1990). The use of classical and Rasch latent trait models to enhance the validity of affective measures. *Educational and Psychological Measurement, 50*, 869-878.
- Gal, E., Schreur, N., & Engel-Yeger, B. (2010). Inclusion of Children with Disabilities: Teachers' attitudes and requirements for environmental accommodations. *International Journal of Special Education, 25*, 89-99.
- Garfinkle, A. N., & Schwartz, I. S. (2002). Peer imitation: Increasing social interactions in children with autism and other developmental disabilities in inclusive preschool classrooms. *Topics in Early Childhood Special Education, 22*, 26-38.

- Geerdina, M., & van der Aalsvoort, G. M. (2007). Moving forward? Addressing the needs of young at-risk students in the Dutch education system. *Childhood Education, 84*, 20-23.
- Gemell-Crosby, S., & Hanzlik, J. R. (1994). Preschool Teachers' Perceptions of Including Children with Disabilities. *Education and Training in Mental Retardation and Developmental Disabilities, 29*, 279-90.
- Green, S. B., & Salkind, N. J. (2004). *Using SPSS for windows and macintosh: analyzing and understanding data (4th)*. Upper Saddle River, NJ: Person Prentice Hall.
- Greenspan, S. I., & Meisels, S. J. (1996). Toward a new vision for the developmental assessment of infants and young children. In S. J. Meisels & E. Feniche (Eds.), *New visions for the developmental assessment of infants and young children* (pp. 11-26). Washington: Zero to Three.
- Gresham, F. M., & Elliott, S. N. (1990). *Social skills rating system*. Circle Pines, MN: American Guidance Services.
- Guarlnick, M. J., Connor, R. T., Hammond, M., Gottman, J. M., & Kinnish, K. (1996). Immediate effects of mainstreamed settings on the social interactions and social integration of preschool children. *American Journal on Mental Retardation, 100*, 359-377.
- Harkness, L., & Bundy, A. C. (2001). The test of playfulness and children with physical disabilities. *Occupational Therapy Journal of Research, 21*, 73-89.
- Hart, C.H., Burts, D.C., Charlesworth, R., Fleege, P. O., Ickes, M., & Durland, M. (1990). *The teacher Questionnaire: Preschool Version*. Banton Rouge, LA: Louisiana State University, School of Human Ecology.

- Helms, B. J., & Gable, R. K. (1989). *School Situation Survey*. Palo Alto, CA: Consulting Psychologists Press.
- Heo, K. H., Squires, J., Yovanoff, P. (2008). Cross-cultural adaptation of a pre-school screening instrument: Comparison of Korean and US populations. *Journal of Intellectual Disability Research*, 52, 195-206.
- Holahan, A., & Costenbader, B. (2000). A Comparison of developmental gains for preschool children with disabilities in inclusive and self-contained classrooms. *Topics in Early Childhood Special Education*, 20, 224-235.
- Hollingsworth, H. L., Boone, H. A., & Crais, E. R. (2009). Individualized inclusion plans at work in early childhood classrooms. *Young Exceptional Children*, 13, 19-35.
- Huang, H., & Diamond, K. E. (2009). Early childhood teachers' ideas about including children with disabilities in programmes designed for typically developing children. *International Journal of Disability, Development and Education*, 56, 169-182.
- Hundert, J., Mahoney, B., Mundy, F., & Vernon, M. L. (1998). A descriptive analysis of developmental and social gains of children with severe disabilities in segregated and inclusive preschools in Southern Ontario. *Early Childhood Research Quarterly*, 13, 49-65.
- Joosten, A. V., & Bundy, A. C. (2008). The Motivation of stereotypic and repetitive behavior: Examination of construct validity of the Motivation Assessment Scale. *Journal of Autism & Developmental Disorders*, 38, 1341-1348.
- Kamphaus, R. W., & Reynolds, C. R. (2007). *The behavioral and emotional screening system*. Austin, TX: Pearson Assessment.

- Keeves, J. P., & Alagumalai, S. (1999). New approaches to measurement. In G. N. Masters and J. P. Keeves (Ed.), *Advances in measurement in educational research and assessment* (pp. 23-42). New York: Pergamon.
- Kemp, C., & Carter, M. (2005). Identifying skills for promoting successful inclusion in kindergarten. *Journal of Intellectual and Developmental Disability, 30*, 31-44.
- Killoran, I., Tymon, D., & Frempong, G. (2007). Disabilities and inclusive practices within Toronto preschools. *International Journal of Inclusive Education, 11*, 81-95.
- Kim, D., & Smith, J. (2010). Evaluation of two observational assessment systems for children's development and learning. *NHSA Dialog, 13*, 253-267.
- Kim, Y. H., Stormont, M., & Espinosa, L. (2009). Contributing factors to South Korean early childhood educators' strategies for addressing children's challenging behaviors. *Journal of Early Intervention, 31*, 227-249.
- Kohler, F. W., Anthony, L. J., Steighner, S. A., & Hoyson, M. (2001). Teaching social interaction skills in the integrated preschool: An examination of naturalistic tactics. *Topics in Early Childhood Special Education, 21*, 93-104.
- Lai, J., Fisher, A. G., Magalhaes, L. C., & Bundy, A. C. (1996). Construct validity of the sensory integration and praxis tests. *Occupational Therapy Journal of Research, 16*, 75-97.
- Lautamo, T., & Heikkilä, M. (2011). Inter-rater reliability of the play assessment for group settings. *Scandinavian Journal of Occupational Therapy, 18*, 3-10.
- Leatherman, J. M. (2007). "I just see all children as children": Teachers' perceptions about inclusion. *The Qualitative Report, 12*, 594-611.

- Leatherman, J. M., & Niemeyer, J. A. (2005). Teachers' attitudes toward inclusion: Factors influencing classroom practice. *Journal of Early Childhood Teacher Education, 26*, 23-36.
- Leung, C. B., & Lang, W. S. (2009). A Rasch model prototype for assessing vocabulary learning resulting from different instructional methods: A preschool example. *Journal of Applied Measurement, 10*, 70-83.
- Leung, C., Mak, R., Lau, V., Cheung, J., & Lam, C. (2010). Development of a preschool developmental assessment scale for assessment of developmental disabilities. *Research in Developmental Disabilities: A Multidisciplinary Journal, 31*, 1358-1365.
- Lieber, J., Capell, K., Sandall, S. R., Wolfberg, P. Horn, E., & Beckman, P. (1998). Inclusive preschool programs: Teachers' beliefs and practices. *Early Childhood Research Quarterly, 13*, 87-105.
- Lim, S. M., Rodger, S., & Brown, T. (2010a). Investigation of young children's social skills constructs using Rasch analysis. *Journal of Occupational Therapy, Schools, & Early Intervention, 3*, 207-225.
- Lim, S. M., Rodger, S., & Brown, T. (2010b). Assessments of learning-related skills and interpersonal skills constructs within early childhood environments in Singapore. *Infant and Child Development, 19*, 366-384.
- Linacre, J. M. (2006). Winsteps® Rasch measurement computer program. Beaverton, Oregon: Winsteps.com

- Macy, M. G., & Bricker, D. D. (2007). Embedding individualized social goals into routine activities in inclusive early childhood classrooms. *Early Child Development and Care, 177*, 107-120.
- McLean, M., & Hanline, M. F. (1990). Providing early intervention services in integrated environments: Challenges and opportunities for the future. *Topics in Early Childhood Special Education, 10*, 62-77.
- Ministry of Education, Science and Technology (2011a). *Annual report of special education: Act on Special Education for Disabled Persons, Etc. (ASEDP, 2008)*. Seoul, Korea. Retrieved from <http://www.mest.go.kr/web/993/ko/board/view.do?bbsId=73&&boardSeq=25034&mode=view>
- Ministry of Education, Science and Technology (2011b). *Statistics of special education*. Seoul, Korea. Retrieved from <http://www.mest.go.kr/web/993/ko/board/view.do?bbsId=73&&boardSeq=23707&mode=view>
- Mitchell, L. C. (2002). Blending practices in regular education: A mixed method design study on course practicum and training experiences in relation to preservice teacher attitudes and knowledge about inclusion. *Dissertation Abstracts International, 5*, A63.
- Mitchell, L. C., & Hegde, A. V. (2007). Beliefs and practices of in-service preschool teachers in inclusive settings: Implications for personnel preparation. *Journal of Early Childhood Teacher Education, 28*, 353-366.

- Mok, M., & Lam, H. (2011). Assessment of language development of preschoolers: validating Morrow's checklist for assessing early literacy development. *Early Child Development and Care, 181*, 203-220.
- Nelson, C., McDonnell, A. P., Johnston, S. S., Crompton, A., & Nelson, A. R. (2007). Keys to play: A strategy to increase the social interactions of young children with Autism and their typically developing peers. *Education and Training in Developmental Disabilities, 42*, 165-181.
- Nonis, K. P. (2006). Integrating children with special needs: Singapore preschool teachers share their feelings: A preliminary investigation. *Journal of the International Association of Special Education, 7*, 4-10.
- Odom, S. L. (2000). Preschool inclusion: What we know and where we go from here. *Topics in Early Childhood Special Education, 20*, 20-27.
- Odom, S. L., & Diamond, K. E. (1998). Inclusion of young children with special needs in early childhood education: The research base. *Early Childhood Research Quarterly, 13*, 3-25.
- Odom, S. L., & McEvoy, M. A. (1990). Mainstreaming at the preschool level: Potential barriers and tasks for the field. *Topics in Early Childhood Special Education, 10*, 48-61.
- Odom, S. L., Schwartz, I. S., & ECRII Investigators (2002). So what do we know from all this? Synthesis points of research on preschool inclusion. In S. L. Odom (Ed.), *Widening the circle: Including children with disabilities in preschool programs* (pp. 154-174). New York, NY: Teachers College Press.

- Park, J. (2002). Special education in South Korea. *Teaching Exceptional Children*, 34, 28-33.
- Rafferty, Y., Piscitelli, V., & Boettcher, C. (2003). The impact of inclusion on language development and social competence among preschoolers with disabilities. *Exceptional Children*, 69, 467-479.
- Rule, S., Losardo, A., Dinnebeil, L., Kaiser, A., & Rowland, C. (1998). Translating research on naturalistic instruction into practice. *Journal of Early Intervention*, 21, 283-293.
- Rush, D. D., Shelden, M. L., & Hanft, B. E. (2003). Coaching families and colleagues: A process for collaboration in natural settings. *Infants & Young Children: An Interdisciplinary Journal of Special Care Practices*, 16, 33-47.
- Saad, S., & Lindsay, G. (2010). Preschool children with Attention Deficit Hyperactivity Disorder (ADHD) in inclusive settings: Challenging but not problematic. *Pertanika Journal of Social Sciences & Humanities*, 18, 115-132.
- Seçer, Z. (2010). An analysis of the effects of in-service teacher training on Turkish preschool teachers' attitudes towards inclusion. *International Journal of Early Years Education*, 18, 43-53.
- Seo, G., & Oakland, T. (1991). Special education in South Korea. *Exceptional Children*, 58, 213-218.
- Snyder, S., & Sheehan, R. (1992). The Rasch measurement model: An introduction, *Journal of Early Intervention*, 16, 87-95.
- Sparrow, S. S., Balla, D. A., Cicchetti, D. V. (1984). *Vineland Adaptive Behavior Scales*. Circle Pines, MN: American Guidance Service, Inc.

- Tedman, D. K. (2005).-Science teachers' views on science, technology and society issues. In S. Alagumalai, D. D. Curtis, & N. Hungi (Eds.), *Applied Rasch Measurement: A Book of Exemplars* (pp. 227-249). Norwell, MA: Springer.
- Thomazet, S. (2009). From integration to inclusive education: does changing the terms improve practice? *International Journal of Inclusive Education*, 13, 553-563.
- Thurstone, L. L. (1928). Attitudes can be measured. *American Journal of Sociology*, 33, 529-554.
- Thurstone, L. L. (1931). The measurement of social studies. *Journal of Abnormal and Social Psychology*, 27, 249-269.
- Triandis, H. C. (1971). *Attitude and attitude change*. New York, NY; Wiley.
- Vakil, S., Freeman, R., & Swim, T. J. (2003). The Reggio Emilia approach and inclusive early childhood programs. *Early Childhood Educational Journal*, 30, 187-192.
- Vakil, S., Welton, E., O'Connor, B., & Kline, L. S. (2009). Inclusion means everyone! The role of the early childhood educator when including young children with autism in the classroom. *Early Childhood Education Journal*, 36, 321-326.
- Walker, S., & Berthelsen, D. (2008). Children with Autistic Spectrum Disorder in early childhood education programs: A social constructivist perspective on inclusion, *International Journal of Early Childhood*, 40, 33-51.
- Wechsler, D. (1989). *Wechsler Preschool and Primary Scale of Intelligence-Revised*. San Antonio, TX: The Psychological Corporation.
- Wilczenski, F. L. (1995). Development of a scale to measure attitudes toward inclusive education. *Educational and Psychological Measurement*, 55, 291-299.

- Wright, B. D. (1967). Sample-free test calibration and person measurement. Retrieved from <http://www.rasch.org/memo1.htm>
- Wright, B. (1992). Point-biserials and item fits. *Rasch Measurement Transactions*, 5(4). Retrieved from <http://www.rasch.org/rmt/rmt54a.htm>
- Wright, B. D. (1996). Comparing Rasch measurement and factor analysis. *Structural Equation Modeling*, 3, 3-24.
- Wright, B. D. (1999). Rasch measurement models. In G. N. Maters & J. P. Keeves (Eds.), *Advances in Measurement in Educational Research and Assessment* (pp. 85-97). New York, NY: Pergamon.
- Wright, B. D., & Masters, G. (1982). *Rating Scale Analysis*. Chicago, IL: Mesa Press.
- Wright, B. D., & Stone, M. H. (1979). *Best Test Design*, Chicago, IL: Mesa Press.
- Wright, B. D., & Stone, M. H. (1999). *Measurement Essentials (2nd Ed.)*. Retrieved from <http://www.rasch.org/measess/me-all.pdf>
- Wuang, Y., & Su, C. (2009). Rasch analysis of the developmental test of visual-motor integration in children with intellectual disabilities. *Research in Developmental Disabilities*, 30, 1044-1053.
- Yates, S. M. (2005). Rasch and attitude scales: Explanatory style. In S. Alagumala, D. D. Curtis, & N. Hungi (Eds.), *Applied Rasch Measurement: A book of exemplars*. Retrieved from OhioLINK Electronic Book Center.
- Yim, H. Y. B., Abd-El-Fattach, S., & Lee, L. W. M. (2007). A Rasch analysis of the teachers music confidence scale. *International Educational Journal*, 8, 260-269.
- Zehrbach, R. R. (1975). Determining a Preschool Handicapped Population. *Exceptional Children*, 42, 76-83.

Zimmerman, I. L., Steiner, V. G., & Pond, R. E. (1992). *Preschool Language Scale-Third Edition*. San Antonio, TX: The Psychological Corporation.