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Taiwanese Preschool and Elementary Teacher's Beliefs about Discipline, Students, and Teaching Practices

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Abstract

East Asian children are among the top academically performing students in the world (OECD, 2010), yet research examining teaching that leads to this success has just begun to identify beliefs. The present study investigated Taiwanese teachers' beliefs about discipline, students, and teaching practices in preschool (N=98) and elementary school (N=251). Results indicated two-three dominant viewpoints on each topic within each sample and emphasized beliefs about the importance of controlling behaviors, caring about students, and role modeling. In most cases, teachers' background and classroom characteristics did not relate to beliefs. We discuss findings within and between samples, as well as implications.

Keywords: Q methodology; Taiwan; Teacher beliefs; Discipline; Students; Teaching practices

Introduction

According to international achievement tests, East Asian children are among the top academically performing students in the world [1,2]. Previous research has examined a broad range of aspects of teaching that may lead to this success, ranging from the relatively large amount of time spent on academic activities during and after school hours [3,4] "What the numbers say," 1998), to teaching practices such as whole group instruction with limited rote drills and an emphasis on self-discipline [5-8]. Interestingly, however, observations of classrooms in high performing countries found that no single teaching practice was common across all of the countries (National Center for Educational Statistics (NCES), 2003), suggesting that factors other than practices may be behind this success. Although investigating teaching practices adds to our understanding of the drivers of East Asian children's academic success, it leaves the processes underlying these practices, such as teacher beliefs, as another possible explanation for students' high success. The present study investigates these beliefs to further understand processes behind East Asian teaching.

Teaching beliefs serve as the compass that direct decisions teachers make every day, such as which practices to use and how to respond to student behaviors and questions [9]. In fact, in some cases, beliefs about teaching, optimal learning environments, and the abilities of students have been related to teaching practices and children's academic achievement [10-12]. In other cases, however, this relation has not been as straightforward [13]. To ground our investigation of teaching beliefs in Taiwan, we drew from two main sources of previous work. First, we turned to an existing, culturally-specific framework. The framework was developed in a previous study that examined the teaching beliefs of almost 300 Taiwanese preservice teachers [14].

Second, we drew from another main framework for understanding teacher beliefs proposed by Fives and Buehl [15] in their review of the beliefs literature which has some overlap with Linet et al., [14] Taiwanese framework. One aspect of beliefs that Fives and Buehl [15] include that is not part of Lin et al's framework is beliefs about students. Beliefs about students have related to teachers' interactions with students in research outside of Taiwan [16].

Lin et al., [14] culturally-specific framework laid the foundation for understanding teacher beliefs in Taiwan, and we aim to build on this foundation in two ways. First, this framework was limited in its focus on preservice teachers and we examine the beliefs of inservice Taiwanese teachers. Since beliefs may change once preservice teachers move into the field [17], research is needed that examines the nature of Taiwanese teaching beliefs for inservice teachers. In fact, it seems likely that inservice teachers' beliefs are most likely to have direct implications for teachers' interactions with students and choices about teaching practices because inservice teachers have contact with students every day. Second, due to its potential relevance for student achievement, we aim to examine one additional type of teaching beliefs that Fives and Buehl [15] suggested as important, beliefs about students, that was not initially part of Lin et al., [14] framework. Although research on teacher practices in high-achieving countries has not illuminated many common practices that may be effective across settings (National Center for Educational Statistics (NCES), 2003), it is possible that research on teacher beliefs may shed light on common viewpoints that characterize effective teaching. The present study takes the next step in this work in Taiwan, one country that has shown high academic achievement among its students. Ultimately, understanding the beliefs of teachers who are actively teaching some of the highest-performing students in the world may further the conversation of which beliefs may relate to better achievement. Understanding these beliefs may also suggest ways to improve teacher preparation programs.

The Taiwanese teaching context

Cultural values shape the objectives of education and inform beliefs about what is important to teach children and how to teach children to be successful in society [18]. Shifts in cultural beliefs and education reforms made in recent years in Taiwan, however, suggest that teachers may develop differing beliefs based on their attempts to come to terms with both traditional and contemporary Taiwanese values. In fact, McMullen et al. [19] found that Taiwanese teachers could be divided into two groups: those who endorsed contemporary child-centered, holistic, constructivist beliefs and practices, and those who endorsed traditional teacher-directed, content-centered, highly structured, and didactic beliefs and practices.

Traditional Taiwanese education is firmly rooted in Confucianism, which stresses social hierarchy, collectivism, self-control for group harmony, and attaining academic achievement through effort rather than innate ability [20-22]. In education, these values are seen in the importance of complete respect for the authority of teachers and the view that students are passive learners. Teachers are towards the top of the social hierarchy, and students respect the authority of the teacher [23] and students are viewed as passive vessels into which teachers espouse their knowledge. These cultural views suggest that teachers may take a more traditional, authoritarian approach to their teaching style, such as dispensing knowledge through lectures or teacher-directed instruction.

In recent years, however, Taiwanese beliefs have been shifting. In contemporary Taiwanese society, academic achievement is viewed as social advancement, and preschool is viewed as preparation for elementary school. Entrance into high school and college is highly competitive in Taiwan, and parents begin training their children for entrance exams at a very early age [6]. Thus, preschools often emphasize academic instruction [18] and elementary education is rigorous. In addition, a contemporary Taiwanese belief is that one of the main goals of education is to teach social mores. It is important to teach young children social manners and morals so that they can successfully participate in the classroom group and, eventually, society. The shift from traditional to contemporary values in Taiwanese society likely affects the beliefs teachers hold about teaching.

The importance of beliefs

Beliefs refer to mental frameworks that inform day-to-day actions and interactions. Teachers have sets of beliefs that pertain to different aspects of teaching, including their instruction and interactions with students, and researchers are still coming to consensus about the intra-individual consistency of beliefs, within and across categories [24]. In general, adults' beliefs, like culturally-specific values, are highly stable [15], yet may be altered if experiences directly challenge them [9,25]. Examining beliefs within separate categories, such as related to a discipline/behavior management, an approach to teaching practices, or about students, may help to increase our ability to see more distinct and potentially congruous patterns.

Although some research suggests that teacher beliefs relate to student outcomes via their influence on teachers' behaviors, practices, and daily decisions [26,27], there is great inconsistency in previous findings in the beliefs literature regarding the degree to which beliefs influence actions. As an example, a recent study in early childhood education examined the theory of change of a professional development intervention, specifically, whether the intervention related to a change in teacher practices mediated by changes in teachers' beliefs and knowledge. Although the researchers found that beliefs were not a significant mediator between the professional

development and the teaching practices, they suggest that this may be the result of their use of newly developed measures of beliefs that had somewhat limited psychometric properties [28]. A large reason for this kind of uncertainty and inconsistency regarding previous findings is the lack of consensus around definitions and measures of teacher beliefs. To contribute to consistency, we use a measure of beliefs, the Teacher Beliefs Q-Sort (TBQ), which has been used in previous research [17]. Rimm-Kaufman et al. [17] developed the TBQ to include beliefs on these three topics because these are three distinct areas which affect teachers' day-to-day functioning in the classroom and may contribute to classroom quality and students' achievement.

Examining teachers' beliefs about discipline, teaching practices, and students may provide a comprehensive view that reflects a range of issues that preschool and elementary teachers grapple with in their profession. It is important to note, however, that the translation of beliefs to practices is still unclear. In previous literature, that shows a link between beliefs and practices, it is possible that this relation may be indirect, or moderated by teacher background or classroom characteristics. As an example, in classroom intervention studies, coaches often attempt to change teachers' beliefs about the new intervention teaching practices before they expect to see teachers' actual implementation of the practices. They seem to know, however, that teachers may take different paths to get from beliefs to practices. In one study, coaches clearly described ways that they individualized their coaching efforts based on teachers' buy-in to the new intervention, teaching experience, level of stress in the school, and the effectiveness of the principal's leadership in the school. They used their understanding of these characteristics to shift their coaching practices and make it more likely that beliefs would translate into implementation of new intervention practices for all teachers, regardless of their personal or contextual characteristics [29]. By understanding that multiple factors interact to influence the translation of beliefs to practices, and coaching needs to be responsive to those factors, intervention coaches are often more successful. Although many potential moderators may be influential, we aim to understand Taiwanese teachers' beliefs because they are one piece in a puzzle of factors that may contribute to the quality of teaching, and ultimately student academic achievement, that occur in this high-performing country.

Beliefs about discipline

Beliefs about discipline include the amount of control a teacher believes he or she should have over the classroom, and the proactive strategies that the teacher believes are ideal to prevent behavior problems. Examples are efforts to engage students in the learning material, use of rewards and punishments, and building relationships with students. Previous research on Taiwanese preservice teachers found they believed it was important to consistently use rules to maintain order in the classroom and create an environment where students can learn [14]. Proactive strategies can be described on a continuum ranging from child driven to teacher driven. Teachers who use engaging activities as an approach to minimizing challenging behaviors minimize the need for children to regulate themselves [29,30].

Cultural values may shape teachers' beliefs about discipline. The Taiwanese culture values harmony and expects people to adjust their behavior to be in harmony with society [31]. On one hand, since Taiwanese culture values behavior that is controlled and regulated, teachers may place an expectation to create a controlled environment on themselves, more than on the children [14]. Since adult control of student behavior is not related to negative student outcomes in Asia, as

it often is in the U.S., teacher-driven control is not necessarily problematic [32,33]. These teachers may adjust their approaches to elicit more child engagement, thereby leading to fewer child behavior problems. On the other hand, children need to learn social skills and self-regulation to function as part of the larger society, and Taiwanese culture views the role of school to teach children social rules and manners [18]. Thus, teachers may emphasize children's own control over their behavior and step aside so children are able to learn this skill themselves. This child-driven approach aligns more with western philosophies such as Developmentally Appropriate Practice [34] that are increasingly influential in Taiwan [18], than with traditional Taiwanese beliefs.

Beliefs about students

Teachers' beliefs about children's capabilities and approaches to learning may affect the ways teachers interact with students in the classroom [16]. Prior research has conceptualized teachers' beliefs about students into two broad categories: (1) interpersonal relations and (2) how children learn [17]. Teachers' expectations of the student-teacher relationship may to contribute to the quality of the interpersonal relations between teachers and children, which may in turn contribute to children's behavior and achievement in the classroom [35]. Prior research in Taiwan found that some teachers believed they should establish their authority and respect in the classroom to teach their students most effectively, while other teachers believed it was important to care for and be close to their students, like a friend or family member [18,36]. These two categories, although not mutually exclusive, may indicate the tension between traditional Taiwanese culture, which emphasizes respect for authority, and the influence of child-centered Western educational philosophies.

In addition to interpersonal relations, the second component of teachers' beliefs about students is their beliefs about how children learn. In the present study, this included the kind of classroom environment and the amount of instruction that teachers believed they should provide. Prior research indicates that both the psychological and academic environment that teachers create are important for student success [37]. Teachers who believe that a psychologically-supportive classroom facilitates student learning may be more likely to support students' emotional security. Students' feelings of being "known" by their teacher and classmates and a valued member of the group has related to U.S. students' fewer behavior problems and more positive attitudes [38].

Teachers' beliefs about the learning needs of their students are also important to their instruction. Specifically, beliefs about the individual needs of each student, as well as the particular abilities, interests, and family context they bring to the classroom, likely contributes to the methods of instruction teachers choose to use. The importance of this belief was prevalent among Taiwanese preservice teachers, who emphasized knowing students' backgrounds and families, including their interests, capabilities, and learning styles as a key to help students' actively construct their own learning [14].

Beliefs about teaching practices

Teachers' beliefs about teaching practices refers to the value they place on role modeling, having classroom routines, using instructional formats such as whole group or small groups, facilitating discussions to reflect on classroom experiences, and embedding efforts to personalize teaching such as welcoming each student to class each day. As with all types of beliefs, Taiwanese teachers' beliefs about teaching practices stem in part from their culturally-specific value system. For example,

Taiwanese society particularly values social hierarchy, and as such, certain teaching practices may be emphasized [39]. Previous research has suggested that role modeling may be more prevalent in Taiwanese culture because it is an indirect way for a person who has a higher status in the social hierarchy (teacher) to convey a message to someone with lower status (student) [40]. In Taiwan, this teaching practice may allow the student to "save face" as the teacher demonstrates a positive way to behave or use a new skill, without having to point out the student's struggle in front of classmates. Other literature, moreover, has pointed to role modeling as one of Asian parents' duties in raising successful children [41]. This duty may also extend to teachers, as adults who also care about children's development.

In contrast, in a previous study, Taiwanese teachers reported the purpose of schooling is to make children a part of the community, expressing that "an ideal person is built through membership in society" [36]. Teachers reported that it is important for schools to ensure that children learn to fit into society, and may reflect Taiwan's collectivist culture, which emphasizes community over the individual. Whole group instruction, then, may be seen as a way to create a sense of group membership in the classroom.

Relation between teacher background, classroom characteristics, and beliefs

Aspects of the teacher's previous experiences or training background that may influence beliefs include the amount of education teachers have had, whether that education was focused on an area related to child development or education, and the number of years a teacher has been teaching. In fact, previous research suggests that some teachers' beliefs may change during higher education [42]. For example, a study of Taiwanese preservice teachers' beliefs about teaching and learning (including beliefs about discipline, students, and their role as teachers) showed a change in beliefs after participation in a higher education program, with increasing alignment of teachers' beliefs with the values expressed in the program [43]. Teachers not trained in early education programs, in contrast, may have beliefs that are completely shaped by their experiences in the classroom. It is important to note, however, that adults typically do not change their beliefs when confronted with new experiences. Instead, they interpret their experience in a way that aligns with their existing belief system [9].

In addition to training in early education, years of experience in the classroom may also influence teachers' beliefs, although previous literature in this area is somewhat mixed. Lin et al. [43,44] found that Taiwanese teachers' beliefs about their efficacy tended to change with increasing experience in the classroom. Additionally, several studies have shown that teachers' views on teaching, classroom management, and reading instruction changed as they went from preservice to full-time teacher [45,46]. However, other studies conducted with teachers in the US and South Korea have indicated that teachers' views on classroom behavior management do not change with years of experience [47]. Although research is mixed on the degree to which teacher beliefs about self-efficacy, teaching, and classroom management are based on their background characteristics, there is enough initial research in Taiwan to suggest that background characteristics should be considered.

Classroom factors, such as class size and student age, may also be associated with teachers' beliefs. Teachers with fewer students in the classroom may be better able to keep their students regulated and under control, individualize instruction to each of their students, and allow more opportunities for each child to engage in lessons [48]. In

fact, research in the US has found that smaller class size is associated with students' greater achievement, fewer behavioral problems, and more engaged learning [49]. However, class size in Taiwan tends to be relatively large. The average preschool class size is 24 students [50] and the average elementary class size is 30 students [51]. Although beliefs may vary by class size, they may not vary based on the age of the students a teacher has in his or her classroom [14]. Grade level or age of students, therefore, may not be related to teacher beliefs, which may be constructed on broad ideas about students and instruction that span age and developmental levels.

Research Aims

The overall goal of this study is to paint a broad picture of Taiwanese educators' beliefs, to set the stage for future, more specific inquiries. Our first research aim was to describe Taiwanese educators' beliefs about discipline, students, and teaching practices in two groups of educators: preschool and elementary educators. Our second research aim was to determine whether educator and classroom characteristics were related to these beliefs. Previous research has addressed these questions with preservice teachers in Taiwan by using open-ended interview questions [14]. We used a QSort, however, because of its forced choice design to highlight the priorities that distinguish teacher viewpoints.

Method

Participants

Participants included both preschool and elementary school teachers. In the preschool sample, ninety-eight educators from schools in Taipei City (the capital of Taiwan) and New Taipei City (suburban area outside of Taipei) were recruited through the Taiwan Social Skill Development Study of preschoolers in 2007. These participants taught children ranging in age from two- to six-years-old, with an average of 13 years of experience. Most of the educators were teachers (85%), and some were school administrators (14%). For simplicity, however, we refer to this sample as preschool teachers. We decided to include administrators in this analysis because, in preschool settings in particular, administrators often directly interact with children and are present in the classroom. In other words, the fluid nature of the role of a preschool administrator made their beliefs seem like a similarly relevant part of the teaching system in these schools. As an example of this fluidity, we noticed that administrators in this sample attended professional development training alongside their teachers to grapple with new practices they might add to their program. Previous research in Taiwan echoes this experience, by finding that preschool teachers were mentored by their directors, held similar beliefs, and saw their directors as more focused on teaching issues than on administrative tasks (Shiou-Ping, 2002). In terms of educational background, 57% had a high school degree, 39% had a Bachelor's degree, and 3% had a Master's degree. The majority of the participants were female (97%).

In the elementary sample, two-hundred and fifty-one educators from seven schools in a rural community in central Taiwan completed the Teacher Belief Qsort in 2005. The educators were recruited for a study on teacher beliefs among teachers of elementary-aged children. They taught children in grades first through sixth, with the majority of children in 2nd to 6th grades, and had an average of 11 years of experience. Eighty-seven percent of the participants were full-time teachers, 4% had a high school degree, 87% had a Bachelor's degree, and 9% had a Master's degree. A majority of the participants were female (75%).

Measures

In the present study, we used an existing measure of teacher beliefs developed by Rimm-Kaufman et al. [17] to capture three relevant aspects of a teachers' belief system. The Teacher Belief Qsort (TBQ) was used to assess teachers' priorities and beliefs regarding discipline, students, and teaching practices. The TBQ was developed in the U.S. and has been used to distinguish teachers' classroom practices in treatment and control groups in an intervention study [17]. The three subscales in the TBQ are related to the main teaching belief constructs highlighted in the Lin, Gorrell, and Silvern's [36] Taiwanese conceptual framework and Five and Buehls' [15] review of beliefs.

In the present study, the paper version of the TBQ was administered to teachers in Taiwan. In both samples, the TBQ was translated into Mandarin Chinese by Taiwanese professionals that also spoke English, and checked for face validity. The TBQ contains three subscales, each of which contains 20 statements or beliefs. The first subscale measures teachers' beliefs regarding Discipline and Behavior Management. The second subscale measures teachers' beliefs regarding Students. The third subscale measures teachers' beliefs about Teaching Practices. Refer to the Appendix for the full measure. For each subscale, there are five anchor cards by which to sort the 20 statement cards. The Q-sort task asks teachers to sort the cards among the anchor cards, which range from "least characteristic of my beliefs" (-2) to "most characteristic of my beliefs" (+2). Four statement cards are placed under each of the five anchors. Teachers recorded their sorts on a paper form and returned them to the researcher.

After completing the Qsort task, teachers completed a questionnaire in which they reported their background and classroom characteristics.

Analytic strategy

Q methodology was used to determine the viewpoints of each sample of educators. Qsorts are unique in that participants must prioritize only a set number of beliefs that are their highest priority, high priority, mid-priority, low priority, and lowest priority. Compared to a Likert scale, which is traditionally used to assess beliefs, a Qsort forces participants to make distinctions among beliefs by evaluating each statement relative to other statements and sorting statements into a fixed distribution [52]. Q methodology is an approach to quantitatively analyzing qualitative data. It offers a way to explore the viewpoints of groups of people, allowing sets of beliefs (viewpoints) to emerge from the data. Qsort data was entered into PQMethod [53], a program designed to analyze Qsorts. Each subscale of the Teacher Belief Qsort was entered in a separate Qsort analysis. Although the majority of teachers had complete data, a small number of teachers (4-12% per subscale) in the preschool sample reported one statement twice, thereby excluding another statement from their Qsort. In Qsorts with missing data, the statement teachers reported in the most extreme position of the Qsort was recorded, and the missing statement was recorded in the more neutral position [53]. In addition, in two of the subscales, one teacher (a different teacher in each subscale) reported more than one statement twice and thus was excluded from analyses in that subscale. In the elementary sample, two teachers reported five statements in one column and three in another column (as opposed to following the "forced choice" distribution of four statements per column). For these teachers, one of the statements reported in the column of five statements was randomly chosen and placed in the column containing only three statements. In addition, a small number of teachers (4-5% per subscale) excluded one statement in their Qsort.

In these cases, the missing statement was assigned to the column missing a statement.

Data were analyzed by principal components factor analysis, and 2-, 3-, 4-, and 5-factor solutions were extracted and rotated using varimax rotation. The two samples were analyzed separately to represent the beliefs held specifically by the teachers in each sample.

To address the first research aim, the different factor solutions for each subscale were compared to determine the best representation of viewpoints held by teachers in the study. For each subscale, we chose the number of factors that maximized representation across statements while maintaining parsimony. To address the second research aim, ANOVAs and Chi-Square analyses were performed to examine whether demographic or classroom characteristics differed for teachers holding different viewpoints.

Results

Research aim 1: Describing beliefs

Before we describe each viewpoint and the name that we assigned to it, it is important to note that the grouping of items in each viewpoint did not naturally point to an all-encompassing theme. Therefore, the names of each factor reflect general patterns of items, but should be considered as rough descriptors. In addition, the most positively endorsed items (+2) for each viewpoint are listed in the tables, but items at other locations (-2, -1, 0, and +1) were also considered when assigning viewpoint names.

In the preschool sample, a 3-factor solution was determined for the Discipline and Students subscales and a 2-factor solution was determined for the Teaching Practices subscale. In the elementary sample, a 3-factor solution was determined for all three subscales. To better understand the beliefs teachers hold, we focused interpretation on the most extreme statements in the sorts. Specifically, the statements teachers reported as most characteristic (+2) and least characteristic (-2) of their beliefs were examined and compared across the factors for each subscale. Although we examined most and least characteristics statements in each factor, we chose to highlight the most characteristic (+2) statements in the results section for clarity and because of their relevance for practice (i.e., it is easier to tell teachers what to do than what not to do). Moreover, the most characteristic (+2) statements particularly influenced how we decided to name each factor. Within those +2 statements, statements that were unique to each factor were given greatest consideration.

Discipline and behavior management

Preschool: Preschool teachers had three viewpoints, distinguished by their emphasis on who has the onus for managing children's behavior (Table 1): Teacher Managed (n=34%, R2=19%), Child Managed (n=18%, R2=17%), and Co-Managed (n=18%, R2=21%). For each viewpoint, n represents the percentage of the sample of teachers whose beliefs aligned with this viewpoint. R-squared represents the percent of variance in the teachers' beliefs that this viewpoint accounted for. The Teacher Managed viewpoint focused on the importance of actively using strategies such as respect, praise, and engaging activities to improve student behavior. Teachers who held the Child Managed viewpoint also endorsed respect for children and added a new teacher driven strategy: monitoring student behavior. In contrast, however, they emphasized children's responsibility to manage their own behavior, even when the teacher is out of the room, using skills such as self-regulation. The final viewpoint, Co-Managed, represented a combination of the first two viewpoints by highlighting both the teacher's and children's roles in directing classroom behavior, and emphasizing that teachers verbally punishing students was not an acceptable strategy for behavior management.

Most characteristic statements	Preschool			Elementary School		
	Teacher Managed n=34% R2=19%	Child Managed n=18% R2=17%	Co-Managed n=18% R2=21%	Teacher-Managed via Respect n=35% R2=23%	Teacher-Control n=21% R2=16%	Teacher-Managed via Engagement n=16% R2=15%
It is important to respect students' autonomy and expect them to act in a responsible manner.	X	X		X		X
If I treat students with respect, kindness, and concern, there are fewer behavior problems.	X		X	X		
When students are engaged in interesting problems and challenging activities, they tend to have very few discipline problems.	X				X	X
Proper control of a class is apparent when the students work productively while I am out of the room.		X	X		X	
Self-monitoring (self-regulation) are important skills for students to develop.		X	X	X		X
Monitoring students can prevent problematic situations.		X				

Verbal punishment is an unacceptable means of controlling students' behavior: I believe it is more important to use only positive management techniques.		X			
Praise from me is an effective way to change students' behavior.	X				
A classroom runs smoothly when there are clear expectations for behavior.				X	X	X
The primary goal in dealing with student's behavior is to establish and maintain control.					X	

Table 1: Beliefs about discipline and behavior management.

Elementary: Elementary teachers also had three viewpoints, describing different ways that teachers managed discipline and behavior in the classroom (Table 1): Teacher Managed via Respect (n=35%, R2=23%), Teacher Control (n=21%, R2=16%), and Teacher Managed via Engagement (n=16%, R2=15%). Teacher Managed via Respect was similar to Teacher Managed via Engagement, with both viewpoints prioritizing clear expectations for behavior. The first viewpoint, however, focused on teachers' role of creating a classroom climate of respect, kindness, and concern to promote positive behavior. Teachers with this viewpoint endorsed setting clear expectations for behavior, possibly as another way to respect students' abilities and allow them to develop self-regulation skills. The second had similarities to the first, but added an endorsement of engaging students through teachers' provision of interesting problems and challenging activities. Finally, the Teacher Control viewpoint differed most notably from the other two viewpoints in that teachers felt that establishing and maintaining control in the classroom was a primary goal for managing children's behavior.

Beliefs about students

Preschool: Preschool teachers had three viewpoints based on their beliefs about student needs and the feelings they derive from their students (Table 2): Psychologically Supportive Environment (n=24%, R2=19%), Individualized Approach (n=21%, R2=17%), and Rewarding (n=33%, R2=21%). In the Psychologically Supportive Environment viewpoint, teachers felt that each student taught him/her something, which was somewhat common across viewpoints for both preschool and elementary samples. This viewpoint was distinguished, however by valuing role models for students to learn from in the classroom, and

believing students need a classroom environment that meets their psychological needs (i.e., feeling secure and known in the classroom). Teachers who endorsed the Individualized Approach viewpoint, instead, focused on students needing instruction that meets their developmental level, keeps them actively involved, and knows something about their families. This group of teachers also recognized students' need to feel cared for by teachers. Finally, the Rewarding viewpoint was distinguished by teachers who had rewarding feelings from teaching their students; their students each taught them something, and are equally likeable. Overlapping with other viewpoints, these teachers also felt students needed to be met at their developmental level and have good role models.

Elementary: Elementary teachers also had three viewpoints about students, with relatively high overlap in beliefs (Table 2). Academically Supportive Environment (n=29%, R2=19%), Rewarding, Need Caring (n=32%, R2=19%), and Rewarding, Individuals (n=12%, R2=10%). Teachers in the Academically Supportive Environment viewpoint focused on the importance of children having a safe, caring, and quiet learning environment they could be actively involved in lessons. In the Rewarding, Need Caring viewpoint, the belief that distinguished these teachers from others was that children were equally likable and enjoyable to teach. Overlapping with other viewpoints, these teachers believed that each student taught them something, and needed to be met at their developmental level and cared about by the teacher. Similarly, the Rewarding, Individuals viewpoint also described students as teaching the teacher something and needing to be met at their level, but also reflected children's need for role models and to be known in their individual family context.

	Preschool			Elementary School		
Most characteristic statements	Psychologically supportive environment n=24% R2=19%	Individualized approach n=21% R2=17%	Rewarding n=33% R2=21%	Academically supportive environment n=29% R2=19%	Rewarding, Need Caring n=32% R2=19%	Rewarding, Individuals n=12% R2=10%
Each one of my students teaches me something.	X		X		X	X
Students need to be met where they are in terms of their ability.		X	X		X	X

Students need to feel safe and secure in the classroom.	X			X		
Students learn best when they have good role models for behavior.	X		X			X
Students meet challenges best when they feel that their teachers care about them.		X		X	X	
Students learn best by being actively involved in lessons.		X		X		
Students cannot be understood without knowing something about their families.		X				X
Almost all students are equally likable and enjoyable.			X		X	
Students should feel as though they are "known" and "recognized" in the classroom.	X					
Students need opportunities to think in a quiet classroom environment.				X		

Table 2: Beliefs about students.

Teaching Practices

Preschool: Preschool teachers had two viewpoints, which differed based on whether children or teachers should take the lead in instructional activities (Table 3): Cultivating Student Agency (n=62%, R2=34%) and Teacher Orchestrated (n=26%, R2=17%). Both viewpoints endorsed modeling for students. In addition, the Cultivating Student Agency viewpoint described teachers that encourage student thinking (not only outcomes), create a sense of community in the classroom, and offering students the opportunity to choose from activities. The Teacher Orchestrated viewpoint seemed to focus on the teachers' role of introducing new objects/activities in the classroom, asking students to share something that has happened to them, or helping students reflect on what worked or did not work in the classroom.

Elementary: Elementary teachers had three viewpoints, describing different ways in which teachers lead instruction (Table 3). Guidance (n=27%, R2=17%), Direct Instruction (n=27%, R2=16%), and Discussion (n=15%, R2=10%). All three viewpoints shared a belief in the importance of modeling behaviors and the importance of reflecting on academic lessons. In addition to these beliefs, the Guidance viewpoint described teachers who regularly provided children information through feedback and demonstrating use of new objects or activities in the classroom. The Direct Instruction viewpoint was distinguished by teachers' beliefs in teacher-led activities such as drills and whole group instruction. Finally, the Discussion viewpoint let students share something that has happened to them or discuss a written message/announcement.

	Preschool		Elementary School		
Most characteristic statements	**Cultivating Student Agency** n=62% R2=34%	**Teacher Orchestrated** n=26% R2=17%	**Guidance** n=27% R2=17%	**Direct Instruction** n=27% R2=16%	**Discussion** n=15% R2=10%
Modeling behaviors for students.	X	X	X	X	X
Encouraging students and giving feedback that focuses on the process of students'	X		X		

creations or thinking, not the outcomes or the solution.					
Introducing new objects or new activities in the room through demonstration.		X	X		
Having at least a few students share something that has happened to them.		X			X
Doing an activity to create a sense of community.	X				
Permitting students to choose from a variety of activities.	X				
Reflecting and talking about something such as a social interaction that "worked" or "didn't work" in our class.		X			
Reflecting on the content of an academic lesson and talking about what we learned.			X	X	X
Discussing a written announcement or message created by the teacher.					X
Using drill or recitation for factual information (math facts, etc.).				X	
Using whole group instruction				X	

Table 3: Beliefs about teaching practices.

Research aim 2: Relations between teacher background, classroom characteristics, and beliefs

Preschool and elementary school teachers differed in their beliefs about discipline and teaching practices based on their background (years of teaching experience, whether they completed a Bachelor's degree and the content area of their teacher training) and classroom characteristics (child age or grade level, student-teacher ratio).

Beliefs about discipline

Preschool teachers with a degree related to child education were more likely to hold the Teacher Managed viewpoint than the Child Managed or Co-Managed viewpoints, $\chi2(2)=7.33$, $p=0.03$, Cramer's $V=0.49$. In addition, preschool teachers holding the Teacher Managed belief had more 5-year-olds in their classroom than teachers holding the Co-Managed belief ($\mu=13.4$ vs 4; $F(2, 51)=4.30$, $p=0.02$). There were no significant differences among viewpoints in experience, Bachelor's degree, or student-teacher ratio.

For elementary teachers there were no significant differences among viewpoints by backgrounds (experience, degree, area of training) or classroom characteristics (grade level or student-teacher ratio).

Beliefs about students

There were no significant differences among preschool or elementary teachers' viewpoints by teacher background (experience, degree, area of training) or classroom characteristics (child age/grade, student-teacher ratio).

Beliefs about teaching practices

Preschool teachers with training in an area related to child education were more likely to believe that instructional activities should be geared toward Cultivating Student Agency than that activities should be Teacher Orchestrated, $\chi2(1)=4.10$, $p=0.04$, Cramer's $V=0.32$. On the other hand, preschool teachers with more 3-year-olds in their classrooms believed that instruction of students should be Teacher Orchestrated ($\mu=7.4$ vs. 3; $F(1, 71)=4.71$, $p=0.03$) than teachers believing that Cultivating Student Agency is a better method. There were no significant differences among viewpoints in experience, degree, or student-teacher ratio.

Elementary teachers in classrooms with a lower student-teacher ratio were more likely to hold the Guidance viewpoint than the Direct Instruction viewpoint ($\mu=20.31$ vs. 25.69 students per adult; $F(2, 127)=4.18$, $p=0.02$). Also, teachers of first grade students were more likely to hold the Guidance viewpoint than the Direct Instruction or Discussion beliefs, $\chi2(2)=10.37$, $p=0.006$, Cramer's $V=0.25$. There were no significant differences among viewpoints in experience or whether they had a Bachelor's degree.

Discussion

There is increasing interest in understanding aspects of teaching that may underlie the high academic achievement in countries such as Taiwan. Examining teacher beliefs, in particular, may add to our understanding of the lens through which teachers make decisions about how to interact with students every day. Research already exists to describe preservice teacher beliefs in Taiwan [14], and the present study extends this line of study by investigating inservice preschool and elementary school teachers' beliefs in three specific areas: discipline, students, and teaching practices. We also drew from Buehl and Fives [15] framework for extending Lin et al., conceptualization of beliefs. Two or three distinct viewpoints (a collection of beliefs/items) emerged in each area for preschool teachers and for elementary school teachers. The presence of distinct viewpoints suggested some categorical variability in teachers' collection of beliefs. Regardless of viewpoint held, however, preschool and elementary teachers in Taiwan generally emphasized the overall importance of controlling behaviors, caring about their students, and being role models for students. These

themes align with aspects of previous research that found that using rules (controlling behavior), showing affectivity (caring) and providing mentorship (role modeling) were some of Taiwanese teachers' preferred ways to support children's learning [14]. Moreover, there were relatively few relations between teacher viewpoints and teacher background or classroom characteristics; suggesting that further research is needed to understand why certain teachers hold particular constellations of beliefs. Taken together, these findings add to our understanding of teacher beliefs in one country with high academic achievement, and lay the groundwork for future studies in other countries, to determine whether certain teacher beliefs are consistently present in countries with high academic success.

Controlling Behavior

In the present study, preschool and elementary teachers in Taiwan seem to be grappling with the degree to which teachers' and students' are responsible for controlling student behaviors. Traditionally, Taiwanese culture is highly influenced by Confucianism, which emphasizes the need for one to control their behaviors as a way to show respect for authority figures and to behave in a way that benefits the group, rather than self. This value may be reflected in Taiwanese teaching where teachers may feel they need to maintain control and order over the classroom [39]. Lin, Gorrell, and Silvern [14] found that Taiwanese preservice teachers felt it was important to maintain control in the classroom by having and consistently enforcing rules. In the present study, preschool teachers, in particular, seem to hold this belief, but differ in the way they view their role in controlling student behaviors. Of the three discipline viewpoints that preschool teachers held, one (Teacher Managed) emphasized the teacher's responsibility to use praise, respect, and engaging activities to elicit controlled student behaviors. Specifically, the Teacher Managed viewpoint highlighted particular teacher strategies such as praise ("Praise from me is an effective way to change students' behavior") that the teacher could use to encourage children to behave in more responsible ways. On the other end of the continuum was a viewpoint (Child Managed) that highlighted children's responsibility to regulate themselves. The Child Managed viewpoint included items such as "Self-monitoring (self-regulation) are important skills for students to develop," evoking the sense that children should learn to manage themselves. In fact, one Child Managed statement explicitly stated that children should control themselves when the teacher is out of the room. This suggests that the responsibility for management lies in the child's hands. In the middle of these two extremes was a viewpoint (Co-Managed) that combined children's self-regulation with teachers' positive management techniques. These preschool teacher viewpoints may reflect the tension in Taiwanese early childhood education between a Confucian-influenced belief in teacher-control and a highly regarded Western approach, Developmentally Appropriate Practice, which emphasizes child-control [18,34].

The elementary teachers, more so than the preschool teachers, seemed to feel that teachers were responsible for maintaining order in the classroom. We base this finding based on the fact that all three elementary teacher viewpoints had greater emphasis on teacher lead discipline, including having clear expectations and respecting students to encourage responsible behavior. Further, they showed slight differences in the way they thought it was best to do that. One elementary teacher viewpoint on discipline heavily prioritized teacher control, emphasizing that the, "primary goal in dealing with student behavior is to establish and maintain control." This viewpoint prioritized controlling children's behavior, but did not speak to ways to transition the responsibility for controlling behavior from the teachers

to the children. The other two elementary teachers' viewpoints on discipline placed the responsibility for controlling behavior in the teacher's hand, but used respect for students and engaging activities as means for facilitating students' ability to control their behavior. In fact, those two viewpoints were very similar, but differed in the approach that the teacher used to manage behavior (either "if I treat students with respect, kindness, and concern, there are less behavior problems" or "when students are engaged in interesting problems and challenging activities, they tend to have very few discipline problems"). In other words, all elementary teachers expected controlled student behaviors but teachers endorsing two of the viewpoints (Teacher-Managed via Respect, Teacher-Managed via Engagement) took a more proactive approach to helping students develop the ability to control themselves.

It is important to note that the pervasive theme of teachers' responsibility to help control student behavior has different implications for Taiwan than it would in the U.S. Although high control is often harmful to children's autonomy and intrinsic motivation in the U.S., where independence is highly valued, research has found that teacher control is not harmful for students in Taiwan [33]. Specifically, since the cultural norm in Taiwan is to be obedient to authority figures, Taiwanese students see controlling teachers as helping them, not as constraining their individuality, as is the case in the U.S. [33,54]. Moreover, this emphasis on teacher control may be one way that Taiwanese teachers convey how much they care about their students. This distinction is important, because teacher beliefs about control may be linked to Taiwan's high academic achievement, but may not easily translate to other countries such as the U.S.

Caring about Students

Another theme, largely seen in the beliefs about students viewpoints, is that Taiwanese teachers prioritize caring about their students. In the present study, teachers in both the preschool and elementary samples conveyed their feelings of care for their students by emphasizing that students were all enjoyable, students each taught the teacher something new, and that it was important to be interested in the children's families too. As an example, the statement, "students meet challenges best when they feel that their teachers care about them" was present in three of the viewpoints, across preschool and elementary teachers. Although prior research in Taiwan has indicated that teachers seem to be dichotomous in their views of the teacher-student relationship, with some teachers believing the relationship should be like a friendship and others emphasizing teacher authority and control [18,36], teachers in the present study seemed to focus on both: a caring and close relationship with their students that, in many of the viewpoints, still establishes teacher control. It is possible that this focus on caring for students and sharing a warm relationship with them may stem from the influence of the Developmentally Appropriate Practice (DAP) approach [34]. The DAP approach has become prevalent in Taiwan and teachers may blend the close student-teacher relationship espoused by DAP with the more traditional approach that tends to focus on hierarchy and the teacher's authority over her students [19].

This care may elicit Taiwanese teachers' emphasis on controlling their students. Specifically, these teachers may care so much for their students that they may want to help their students control their behavior so students can be successful in a society that values self-control and harmony. In fact, in Lin, Gorrell, and Silvern's [14] study of Taiwanese preservice teachers' beliefs, participants viewed teachers as caring about their students and showing students love and patience. They believed it was important to build relationships with students as a means to improve learning.

In the present study, caring for their students are also evidenced by teachers' beliefs that children learn best when are seen as individuals. Some teachers in the present study focused on the psychological safety of the environment ("students should feel as though they are 'known' and 'recognized' in the classroom") and some focused on the academic environment ("students need to be met where they are in terms of their ability"). Finally, teachers in both the preschool and elementary school samples indicated that teaching was a rewarding profession, and that they derived positive feelings from their students ("almost all students are equally likeable and enjoyable" and "each one of my students teaches me something"). The high status and respect for teachers in Taiwanese society may be part of the reason for this. In Taiwan, teachers are well-compensated, report high levels of job satisfaction, and are well-respected as learned leaders in the community [22,50]. Thus, these teachers may be better able to focus on enjoying their students and genuinely care for each individual in their classroom.

Teacher as a role model

Teachers' unanimously viewed themselves as role models. In the beliefs about teaching practices subscale of the TBQ, teachers uniformly endorsed the importance of "modeling behaviors for students", despite other differences in their viewpoints. Role modeling was also emphasized in the beliefs about students subscale where three of the six viewpoints across preschool and elementary school teachers mentioned "students learn best when they have good role models". In fact, when looking across all viewpoints within each subscale (discipline, students, teaching practices), it is noteworthy that modeling behaviors for students was the only example of a belief that was endorsed by all teachers.

This finding is similar to previous research where Taiwanese preservice teachers described images of their future classroom practices as engaging in role modeling. In fact, a previous study in Taiwan described "good teachers as those who are role models for their students in all respects and at all times" [14]. Similarly, traditional Chinese education expounds that the most important job parents have is to be a role model for their children. Teachers may extend the role of the child's parent by acting as a role model for appropriate classroom behavior [55-58]. This strong emphasis on role modeling aligns with Confucian-influenced social hierarchy. Specifically, teachers' high status comes with a responsibility to demonstrate appropriate behaviors for students.

Influences on Beliefs

Teacher background and classroom characteristics were examined in relation to each viewpoint. Overall, there were few associations, suggesting that teachers' beliefs were not related systematically to these characteristics and may be related to other factors not measured in the current study. Experience and having a bachelor's degree were not related to teachers' viewpoints, but there were differences for preschool teachers in regards to area of training. Teachers with training in an area related to education were more likely to hold the Teacher Managed viewpoint about discipline, and the Cultivating Student Agency viewpoint about teaching practices. For the Teacher Managed viewpoint of discipline, preschool teachers trained in early child education may more readily recognize their role in helping young children learn to manage their behavior. Teachers without such training may not recognize children's developmental needs and abilities, and expect them to be able to manage their own behavior before they have the capability to do so. Research has indicated that preschool teachers with training in child development are more sensitive in their interactions with children and more aware of their

role in guiding children into developing skills for which they are ready [59]. Thus, teachers trained in early education may have been more likely to endorse their management of children's classroom behaviors. In the same vein, while preschool-aged children may need guidance in regulating their classroom behavior, they are ready to take ownership of their learning experiences. This may explain why teachers trained in early child education were more likely to report that they encouraged children to lead their own learning (Cultivating Student Agency viewpoint), whereas teachers without such training were more likely to report that they remained in charge of the learning process (Teacher Orchestrated viewpoint). Teachers who have not been instructed in how to teach young children may be less willing to give up their role as the leader in the classroom because it has greater risk of leading to chaos. However, the Teacher Orchestrated view is by no means an inappropriate instructional method for young children, indicating that teachers without a degree related to education still endorsed some age-appropriate instructional methods.

Classroom characteristics were more related to beliefs than were teacher characteristics. Preschool teachers with more five year olds in their classroom than younger children were most likely to endorse the Teacher Managed viewpoint of discipline than the Co-Managed viewpoint. Teachers of five-year-old children may face greater pressure to prepare their students for school entry and thus may emphasize their role in aiding children's development of important self-regulation and self-managing skills [60]. Teachers of younger children than their peers had, in contrast, were more likely to hold the Teacher Orchestrated (preschool teachers) or the Guidance (elementary teachers) viewpoints on teaching practices. These findings seem to suggest that teachers modify their instruction based on their students' developmental capabilities. Finally, having a lower student-teacher ratio made elementary teachers more likely to hold the Guidance viewpoint on teaching practices. Having fewer students in the classroom likely makes activities such as giving feedback and demonstrating new ideas and objects to individual students easier. Teachers with more students in the room may need to resort to whole group activities [49].

Varying Coherence in Beliefs

In our findings, beliefs that clustered together to form viewpoints were very difficult to neatly characterize with one viewpoint descriptor. Beliefs within each viewpoint were often diverse and lacked a strong sense of coherence. This lack of coherence may have be a function of the tensions between traditional and contemporary values that are both still prevalent in Taiwanese teaching. As an example, Hsieh [18] found that Taiwanese teachers reported both developmentally appropriate and inappropriate practices when interviewing teachers about their practices. Another reason for limited coherence could have been that participants may have interpreted the same statement in different ways [61]. We made an effort to make sense of the top beliefs by interpreting them together as a whole for each belief, as opposed to interpreting each individual statement in the same way for each belief. The presence of distinct viewpoints in the present study, however, suggests that there may be a foundation that holds them together that is not immediately identifiable from the present data. Future research examining a larger set of beliefs may be able to determine what underlying philosophy or worldview is bringing together beliefs that in some cases are seemingly unrelated or further illustrate the tensions teachers feel in implementing more contemporary teaching practices in the context of more traditional Confucian beliefs.

Practical Implications

This line of inquiry and these findings have practical implications for working with Taiwanese educators in teacher preparation and in professional development throughout their careers. Previous research has pointed to the importance of understanding beliefs because of their relevance for practice. The present study suggests that understanding beliefs may not be a simple task. In fact, beliefs are nuanced, complex, may lack coherence, and are worthy of close attention. Because of these complexities, it may be important for teacher preparation programs in higher education institutions to address beliefs more directly. By taking time for preservice teachers to become aware of their existing beliefs, the implications of these, and offering space for continuous reflection, it may be possible to make these beliefs more intention, coherent, and less subject to unintentional shifts. In other words, awareness of beliefs may be a sufficient intervention to increase educators' ownership of these beliefs before their careers begin, and throughout the years in professional development and training.

Limitations and Future Directions

Although the present study extends the extant literature on teaching beliefs in Taiwan, it has limitations that should be considered. First, the main limitation is that the preschool sample was collected in northern Taiwan (Taipei) and the elementary sample was collected in central Taiwan. We drew some comparisons between the preschool and elementary teachers' viewpoints, and largely attributed any differences to the differences between preschools and elementary schools. It is possible, however, that belief differences were also a result of the geographic location of the teachers. Future research may want to extend this study by examining preschool and elementary teachers in both regions of Taiwan. Second, this study is different from previous studies of Taiwanese teacher beliefs in that we used a Q-Sort methodology. The Q-Sort's strength is that it forces teachers to identify their most characteristic priorities and puts a limit on the number of beliefs that a teacher can endorse. In other words, this approach forces variability in teacher beliefs to surface. It is important to remember, however, that beliefs that were not prioritized cannot be considered unimportant to the teachers. Instead, those beliefs are less of a priority than the ones chosen as most characteristic. Finally, this study aimed to identify teacher beliefs in Taiwan, as an example of a country with high academic achievement. In future studies, it will be necessary to examine teacher beliefs in other high-achieving countries to determine whether there are underlying viewpoints that consistently lay the foundation for students' strong academic outcomes.

Conclusion

The present study highlighted the main viewpoints of Taiwanese preschool and elementary teachers regarding discipline, students, and teaching practices. Since Taiwanese students have had some of the highest academic outcomes in the world, understanding their teachers' beliefs, along with those of teachers in other high-achieving countries, may give new insight into the elements of teaching that are supporting these accomplishments. Findings suggest that teachers differ somewhat in the degree to which they feel it is their responsibility to control children's behaviors, but show strong agreement in caring for their students and expecting to be role models for their students. Variability in teachers' viewpoints, however, was mostly unrelated to teacher backgrounds or classroom characteristics, suggesting that further research is needed to explore what factors characterize teachers who endorse similar sets of beliefs. In addition to understanding these factors, it may be just as important to understand ways to address beliefs in higher education and professional development. Future research is needed in this area. Taiwanese teacher professional development programs and the Taiwanese Ministry of Education may find the results of the present study useful for determining any teacher beliefs that they would like to continue to encourage, and those they might want to try to change to align more closely with best practices and Taiwanese teaching philosophies. By understanding prevalent sets of beliefs, we may gain insight into how teachers will approach situations in the classroom and support children's success in school.

References

1. Baldi S, Jin Y, Skemer M, Green PJ, Herget D (2007) Highlights from the PISA 2006: Performance of U.S. 15-year-old students in sciences and mathematics literacy in an international context: National Center for Education Statistics.

2. Mullis IVS, Martin, MO, Gonzalez EJ, Chrostowski SJ (2004) TIMSS 2003 International Mathematics Report 1-465.

3. Baker DP, Fabrega R, Galindo C, Mishook J (2004) Instructional time and national achievement: Cross-national evidence. Prospects 34: 311-334.

4. Fuligni AJ, Stevenson HW (1995) Time use and mathematics achievement among American, Chinese, and Japanese high school students. Child Development 66: 830-842.

5. House JD (2002) Instructional practices and mathematics achievement of adolescent students in Chinese Taipei: Results from the TIMSS 1999 assessment. Child Study Journal 32: 157 - 178.

6. Hsue Y, Aldridge J (1995) Developmentally appropriate practice and traditional Taiwanese culture. Journal of Instructional Psychology 22: 320-324.

7. Martin MO, Mullis IVS, Gregory KD, Hoyle C, Shen C (2000) Effective schools in science and mathematics. IEA's third international mathematics and science study. Boston College MA: TIMMS International Study Center.

8. Stigler JW, Gallimore R, Hiebert J (2000) Using video surveys to compare classrooms and teaching across cultures: Examples and lessons from the TIMSS video studies. Educational Psychologist 35: 87-100.

9. Pajares MF (1992) Teachers beliefs and educational research: Cleaning up a messy construct. Review of Educational Research 62: 307-332.

10. OECD (2010) PISA 2009 Results: What students know and can do: Student performance in reading, mathematics and science (Volume I): OECD Publishing.

11. McCarty F, Abbott-Shim M, Lambert R (2001) The relationship between teacher beliefs and practices and Head Start classroom quality. Early Education and Development 12: 225-238.

12. Peterson PL, Fennema E, Carpenter TP, Loef M (1989) Teachers' pedagogical content beliefs in mathematics. Cognition and Instruction 6: 1-40.

13. Pianta RC, LaParo K, Hamre BK (2004) Classroom Assessment Scoring System CLASS. Baltimore: Brookes.

14. Gorrell J, Lin H, Silvern SB (2001) Taiwan's early childhood preservice teachers' professional beliefs. Journal of Research in Childhood Education 15: 242-255.

15. Buehl MM, Fives H (2009) Exploring teachers' beliefs about teaching knowledge: Where does it come from? Does it change? The Journal of Experimental Education, 77: 367-408.

16. Nespor J (1987) The role of beliefs in the practice of teaching. Journal of curriculum studies 19: 317-328.

17. Rimm-Kaufman SE, Storm MD, Sawyer BE, Pianta RC, LaParo KM (2006) The Teacher Belief Q-Sort: A measure of teachers' priorities in relation to disciplinary practices, teaching practices, and beliefs about children. Journal of School Psychology 44: 141-165.

18. Hsieh M-F (2004) Teaching practices in Taiwan's education for young children: Complexity and ambiguity of developmentally appropriate practices and/or developmentally inappropriate practices. Contemporary Issues in Early Childhood 5: 309-329.

19. McMullen MB, Elicker J, Wang J, Erdiller Z, Lee S-M, et al. (2005) Comparing beliefs about appropriate practice among early childhood education and care professionals from the U.S, China, Taiwan, Korea, and Turkey. Early Childhood Research Quarterly 20: 451-464.

20. Chen C, Stevenson HW (1995) Motivation and mathematics achievement: A comparative study of AsianAmerican, Caucasian American, and East Asian high school students. Child Development 66: 1215-1234.

21. Kotchick BA, Forehand R (2002) Putting parenting in perspective: A discussion of the contextual factors that shape parenting practices. Journal of Child and Family Studies 11: 255-269.

22. Stankov L (2010) Unforgiving Confucian culture: A breeding ground for high academic achievement, test anxiety and self-doubt? Learning and Individual Differences 20: 555-563.

23. Fwu BJ, Wang HH (2002) The social status of teachers in Taiwan. Comparative Education 38: 211-224.

24. Leatham K (2006) Viewing mathematics teachers beliefs as sensible systems. Journal of Mathematics Teacher Education 9: 91-102.

25. Avalos B (2011) Teacher professional development in Teaching and Teacher Education over ten years. Teaching and Teacher Education 27: 10-20.

26. Fang Z (1996) A review of research on teacher beliefs and practices. Educational Research 38: 47-65.

27. Trivette CM, Dunst CJ, Hamby DW, Meter D (2012) Relationship between early childhood practitioner beliefs and the adoption of innovation and recommended practices. Research Brief 6: 1-9.

28. Hamre BK, Pianta RC, Burchinal M, Field S, LoCasale-Crouch J, Downer JT, et al. (2012) A course on effective teacher-child interactions: Effects on teacher beliefs, knowledge, and observed practice. American Educational Research Journal 49: 88-123.

29. Brock LL, Rimm-Kaufman SE, Wanless SB (2013) The combined contributions of delay inhibition, working memory, and instructional context to first grade achievement, behavior, and engagement. Manuscript in press at Learning and Individual Differences.

30. Hattie J, Timperley H (2007) The power of feedback. Review of Educational Research 77: 81-112.

31. Zhang YB, Lin M-C, Nonaka A, Beom K (2005) Harmony, hierarchy and conservatism: A cross-cultural comparison of Confucian values in China, Korea, Japan, and Taiwan. Communication Research Reports 22: 207-115.

32. Chao RK (1994) Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. Child Development 65: 1111-1119.

33. Zhou N, Lam SF, Chan KC (2012) The Chinese classroom paradox: A cross-cultural comparison of teacher controlling behaviors. Journal of educational psychology 104:1162.

34. Bredekamp S, Copple C (1997) Developmentally appropriate practice in early childhood programs. Washington DC: National Association for the Education of Young Children (Eds).

35. Pianta RC, Stuhlman MW (2004) Teacher-child relationships and children's success in the first years of school. School Psychology Review 33: 444-458.

36. Lin H-L, Gorrell J, Silvern SB (2001) Taiwan's early childhood preservice teachers' professional beliefs. Journal of Research in Childhood Education 15: 242-255.

37. Eccles JS (2004) Schools academic motivation and stage-environment fit In. Lerner RM, Steinberg L (Eds) Handbook of Adolescent Psychology (2nd edn). Hoboken, NJ: John Wiley Sons125-153.

38. Battistich V, Solomon D, Watson D, Schaps E (1997) Caring school communities. Educational Psychologist 32: 137-157.

39. Lin Y-W, Tsai M-L (1996) Culture and the kindergarten curriculum in Taiwan. Early Childhood Development and Care 123: 157-165.

40. Hu C, Pellegrini EK, Scandura TA (2011) Measurement invariance in mentoring research: A cross-cultural examination across Taiwan and the US. Journal of Vocational Behavior 78: 274-282.

41. Huang LF (2002) Traditional Chinese early childhood education: A document analysis. Journal of Mei-Ho Institute of Technology 20: 81-93.

42. Entwistle N, Entwistle, D, Skinner D (2000) The nature and possible origins of conceptions of 'good teaching' among student teachers. Paper presented at the the European Conference on Educational Research Edinburgh.

43. Lin H-L, Hazareesingh N, Taylor J, Gorrell J, Carlson HL (2001) Early childhood and elementary preservice teachers' beliefs. Journal of Early Childhood Teacher Education 22: 135-150.

44. Lin H-L, Gorrell J, Taylor J (2002) Influence of culture and education on U.S. and Taiwan preservice teachers' efficacy beliefs. The Journal of Educational Research 96: 37-46.

45. Hollingsworth S (1989) Prior beliefs and cognitive change in learning to teach. American Educational Research Journal 26: 160-189.

46. Richardson V (1996) The role of attitudes and beliefs in learning to teach. In Sikula J, Buttery TJ, Guyton E (Eds) Handbook of research on teacher education (2nd edn). New York: Simon and Schuster Macmillan 102: 119.

47. Shin S, Koh MS (2007) A cross-cultural study of teachers beliefs and strategies on classroom behavior management in urban American and Korean school systems. Education and Urban Society 39: 286-309.

48. Bourke S (1986) How smaller is better: Some relationships between class size, teaching practices, and student achievement. American Educational Research Journal 23: 558-571.

49. Finn JD, Achilles CM (1999) Tennessee's class size study: Findings, implications, misconceptions. Educational Evaluation and Policy Analysis 21:97-109.

50. Chiu CP, Wei S (2011) Child care friendly policies and integration of ECEC in Taiwan. International Journal of Child Care and Education Policy 5: 1-19.

51. Chiu Y-JI (2006) Cross-cultural comparison of teacher beliefs about discipline and behavior management, teaching practices, and students. Doctoral doctoral dissertation, University of Virginia, Charlottesville VA.

52. McKeown B (2001) Technical note: Loss of meaning in Likert Scaling: A note on the Q methodological alternative. Operant Subjectivity 24: 201-206.

53. PQMethod Retrieved from http://schmolck.userweb.mwn.de/qmethod/downpqwin.htm Schmolck%20P%20(2012)%20PQMethod%20Retrieved%20from%20http:/schmolck.userweb.mwn.de/qmethod/downpqwin.htm %20

54. Iyengar SS, Lepper MR (1999) Rethinking the value of choice: A cultural perspective on intrinsic motivation. Journal of Personality and Social Psychology 76: 349.

55. Ministry of Education (1999) The salary scale of teachers in public and private schools at all levels in 1999 (Jiao Yu Bu Nian Gong Si Li Ge Ji Xue Xiao Jiao Shi Xin Zi Biao) (i. Chinese, Trans). Taipei, Taiwan: Ministry of Education.

56. Xie BC (1996) The work satisfaction of teachers from all levels of schools in the Taiwan province Taiwan: Taiwan Provincial Government.

57. Meyer JF (1988) Moral education in Taiwan. Comparative Education Review 32: 20-38.

58. Yin H, Lee JCK (2011) Be passionate, but be rational as well: Emotional rules for Chinese teachers work. Teaching and Teacher Education 28: 56-65.

59. Burchinal M, Cryer D, Clifford RM, Howes C (2002) Caregiver training and classroom quality in child care centers. Applied Developmental Science 6: 2-11.

60. Lin H-L, Lawrence FR, Gorrell J (2003) Kindergarten teachersview of children s readiness for school. Early Childhood Research Quarterly 18: 225-237.

61. Webler T, Danielson S, Tuler S (2009) Using Q method to reveal social perspectives in environmental research. Greenfield MA: Social and Environmental Research Institute.