ORIGINAL ARTICLE

Teachers' accuracy in identifying ADHD status and their intended classroom management strategies for students with and without ADHD: a vignette study in South-Korea and Germany

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BACKGROUND
The purpose of this study was to investigate Korean and German teachers' accurate diagnosis and their intentions of using classroom management strategies (CMS) for the hypothetical student depicted in the vignette types.

PARTICIPANTS AND PROCEDURE
Through a disproportional stratified sampling procedure, matched 264 Korean and 264 German teachers were distributed. Kos (2004)' eight vignettes were slightly modified due to the different cultural background. SPSS 22.0 was used to analyze the data.

RESULTS
Within a culture, 68.20% of Korean and 48.90% of German teachers were able to correctly identify attention deficit hyperactivity disorder (ADHD) status. Teachers in both countries intend to use emotional support the most, followed by proactive strategies. Across cultures, a significant difference was found between Korean and German teachers with regard to their accuracy in identifying students' ADHD status. Korean teachers showed higher accuracy than German teachers. Significant differences between the two countries were also observed regarding teachers' intentions of using corrective and proactive strategies. Korean teachers use more corrective strategies, and German teachers use more proactive strategies. Regarding emotional support, no significant differences were found between Korean and German teachers.

CONCLUSIONS
This study can be a preliminary resource for developing a specific CMS for students with ADHD for both countries. It is suggested that the current status of teachers' specific CMS for students with ADHD should be investigated in order to develop more specialized CMS for these students. It is worth conducting a meta-analysis of this issue to assess the most effective CMS for students with ADHD in the classroom.

KEY WORDS
hyperkinetic disorder; DSM; ICD; corrective strategies; proactive strategies; emotional support

BACKGROUND

Attention deficit hyperactivity disorder (ADHD) is a well-known phenomenon in both South Korea and Germany. This disorder is one of the most common neurobiological, developmental, and behavioral disorders of school-aged children (Barkley, 2007), estimated to occur in about 3% to 7% of school-aged children, and more frequently diagnosed in boys than girls, with ratios of 3 : 1 reported (APA, 2000).

Both Korean and German students attend school five days a week where students are expected not only to perform goal-directed academic activities but also to behave in socially appropriate ways (Lee & Witruk, 2016a; Daley & Birchwood, 2010). Unfortunately, students with ADHD often face their greatest challenges at school. Their difficulties with sustained attention, staying seated, and controlling impulses often result in academic (e.g., underachievement) (Deshazo-Barry & Lyman, 2002) as well as social problems (e.g., behavioral and emotional problems, poor relationships with peers and teachers) (Barkley, 2007), which often lead to serious problems at school, and in their social lives (Blume-D'Ausilio, 2005; DuPaul & Stoner, 2003; Lee & Witruk, 2013).

THE CLASSIFICATION SYSTEM: DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (DSM) AND INTERNATIONAL CLASSIFICATION OF DISEASES (ICD)

DSM-4th and 5th editions. Currently in Korea[1], the classification system of the DSM-5th revision is used for diagnosing ADHD (Cho et al., 2009; Lee & Witruk, 2014). Diagnosis of ADHD requires the presence of problematic types of behavior, which often emerge before the age of seven, most of which are diagnosed as ADHD in the years that follow. These include primary symptoms: inattention, hyperactivity, and impulsivity, which represent the full diagnostic criteria. In addition, for ADHD, these primary symptoms must emerge in more than two situations (e.g., home and school). If the children or adolescents only demonstrate inattentive and hyperactive behavior at home but not at school, then it cannot be diagnosed as ADHD. Furthermore, all three symptoms do not need to emerge to be diagnosed (APA, 2000). For example, a student who has severe inattention problems, but no hyperactive or impulsive difficulties, can be diagnosed as ADHD-predominantly inattentive type. Likewise, a student who shows hyperactive and impulsive symptoms but has no problem with attention can also be diagnosed as ADHD-predominantly hyperactive/impulsive type (see in detail: DSM-IV-TR, APA, 2000, pp. 85-93).

ICD-10th revision. In Germany, the classification systems of the ICD-10th revision is used for diag-nosing hyperkinetic disorder (Remschmidt, 2001; Schlack, Hölling, Kurth, & Huss, 2007). In order to diagnose hyperkinetic disorder, current inattention and restlessness are required, which are constant across situations and consistent over time before the age of seven, with a duration of at least six months, an IQ of above 50, and not caused by other disorders (e.g., autism). In addition, abnormality of attention, activity, and impulsivity need to be demonstrated at home, at school, or at nursery (if applicable). Furthermore, abnormal attention or activity is directly observed and must be excessive for the child's age and level of development (see ICD-10; WHO, 1992: Clinical descriptions and diagnostic guidelines, F90 Hyperkinetic disorders, pp. 206-208 or Diagnostic criteria for research, pp. 188-194).

CLASSROOM MANAGEMENT STRATEGIES FOR STUDENTS WITH ADHD

The classroom is an important context for all students, and teachers will have to manage students with diverse needs in their classroom (DuPaul & Stoner, 2003; Lee & Witruk, 2016a). Effective implementation of classroom management strategies (CMS) is essential for the academic progress of all students as well as emotional well-being (Blume-D'Ausilio, 2005; Lee, 2015), and of course students with ADHD are no exception (Kos, 2004; Murray, 2009).

The success of students with ADHD in the classroom is mainly based on how teachers handle their problematic behaviors (DuPaul & Stoner, 2003; Lee & Kim, 2009). Therefore, it is very important for teachers to be able to manage each student's personal, emotional, and social needs. However, having students with ADHD in the classroom poses several challenges for teachers (Greene, Beszterczey, Katzenstein, Park, & Goring, 2002; Lee & Witruk, 2016b). The class is often disrupted by students with ADHD due to their behavioral characteristics. Teachers often feel frustrated and overwhelmed about managing students with ADHD compared to other typically developing students (Blume-D'Ausilio, 2005; Lee, 2015). Teachers find that they have to modify their teaching strategies (e.g., breaking tasks into smaller steps) when they have students with ADHD in the classroom (Greene et al., 2002; Lee & Kim, 2009; Lee & Witruk, 2013, 2016a).

South Australia's Department of Education, Training and Employment (DETE, 1999) developed a manual for teachers to provide CMS for students with ADHD, including behavior modification strategies (reinforcement, negative consequences, and planned ignoring), and environmental adaptation. Kos (2004) then added emotional support for her study. In this study, three behavior modification strategies were defined as "corrective strategies" and environmental

adaptation was defined as "proactive strategies", and the term "emotional support" was used as defined by Kos (see Table 1).

Corrective strategies. These strategies are frequently used to increase appropriate as well as to decrease inappropriate behavior (Murray, 2009; Lee & Witruk, 2016b). According to Kos (2004), positive reinforcement is the most frequently used for students with ADHD, and negative consequences and planned ignoring are followed to effectively manage students with ADHD.

Proactive strategies. Teachers use these strategies before students have an opportunity to misbehave by preparing a structured classroom, making a quiet area in the classroom, organizing seating arrangements, lowering the level of assignments, and allowing them extra time and providing choice during free time (DETE, 1999; Kos, 2004; Lee, 2015).

Emotional support. This strategy includes individual counseling, showing the student care and attention, and providing specific activities to increase self-esteem in order for students with ADHD to be able to build upon their strengths (Kos, 2004; Murray, 2009). Teachers believe that emotional support is effective as well as beneficial, and have a positive attitude regarding this strategy (Kos, 2004; Lee & Witruk, 2016a, 2016b).

VIGNETTES: TEACHERS' ACCURATE DIAGNOSIS AND INTENDED CMS

Eight vignettes. Kos (2014) developed eight vignettes based on DSM-IV criteria: ADHD-predominately inattentive type, ADHD-predominately hyperactive/impulsive type, and ADHD-combined type, and the control group of typically developing children with some behavioral problems (i.e., non-ADHD), in order to evaluate how teachers correctly identify students' status (students with and without ADHD; boy and girl). In this study, Kos' eight vignettes were slightly modified for the two countries due to different cultural backgrounds (see Table 2).

Teachers' accuracy in identifying students' statues. Kos (2004) found that the overall accuracy in identifying students' status (three ADHD subtypes and one non-ADHD) was less than 50%. When broken down into subtypes, the accuracy in identifying the ADHD-combined type was 48.60%, the ADHD-hyperactive and impulsive type 44.80%, the ADHD-inattentive type 36.40%, and non-ADHD 51.60%.

In 2014, Lee and Witruk investigated cultural similarities and differences of teachers' demographics and their ability to correctly identify children with and without ADHD, by comparing two samples of primary school teachers (grade 1-4) from Korea and Germany. They found that the overall accuracy in identifying children's status was 72.80% (Korea) and 54.20% (Germany). German teachers identified correctly for all vignette types (approximately 50%), whereas Korean teachers were highly able to identify children with ADHD (more than 80%) but hardly able to identify children without ADHD (32.60%). In addition, whereas German teachers tend to answer *don't know* rather than incorrectly identify the child depicted in the vignette, Korean teachers tend to answer *yes* or *no* rather than *don't know*.

For both samples, amount of teaching experience, grade level, experience teaching children with ADHD, personal experience with ADHD, and gender of children were not significantly related to their ability to correctly identify children's status. In addi-

Table 1

A brief definition of selected classroom management strategies (CMS)

Kos (2004)	Lee (2015)
Reinforcement includes such things as praising and rewarding the student for being good and doing the right thing. The aim of reinforcement is to increase the student's appropriate behavior.	
Negative consequences include reprimands, removal of privileges (e.g., excursions, playtime), and the use of time out. The aim of negative consequences is to decrease the student's inappropriate behavior.	Corrective strategies
Planned ignoring means that you do not attend to the student and/or their behavior. That is, neither reinforcement nor negative consequences are used.	
Organizing the classroom and curriculum includes the things you do before the student has a chance to misbehave. Examples include organizing seating arrangements, lowering the difficulty level of assignments, allowing short breaks between tasks, and working one-to-one with the student.	Proactive strategies
Emotional support includes such things as counseling, adding activities to increase self-esteem, and showing the student care and attention.	Emotional support

Note. Kos (2004, p. 201).

Table 2

Eight vignettes

Vignettes		German version		Korean version	
		Boy	Girl	Boy	Girl
ADHD	Predominately inattentive type	Kay	Kayla	가준	가희
	Predominately hyperactive/impulsive type	Daniel	Daniela	다준	다희
	Combined type	Michael	Michaela	민준	민희
non-ADHD	Typically developing type	Simon	Simone	서준	서희

A vignette example:
ADHD-predominately inattentive type (boy)

Kay is a nine-year old boy. He is often reprimanded by his teacher for not paying attention in class. His teacher says that Kay does not listen when she speaks to him, and has noticed that he finds it difficult to follow through on instructions. He rarely finishes his schoolwork, and on the few occasions that he has finished his work, it has been full of careless mistakes. He is easily distracted by external stimuli, such as what other students are doing. Kay finds it hard to pay attention for any significant amount of time – both in his schoolwork and in play activities. Hence, he often avoids tasks that require sustained mental effort (such as schoolwork and homework). Kay has difficulty organising tasks and activities, and frequently loses the things he needs to complete his work (e.g., school assignments, pencils, books), and is often forgetful in daily activities. As a result of all of these difficulties, Kay's teacher wants him to repeat the year. According to Kay's past teachers, these problems have been evident since prep. Kay's parents reported that similar problems have been occurring at home for the past three years.

Note. If you wish to access the vignettes (Korean, German, and/or English version), contact the author: iamyumilee@gmail.com.

tion, neither children's status nor their gender was found to have a significant relation with teachers' accuracy at identifying the ADHD status for Korea as well as Germany (Lee & Witruk, 2014).

Teachers' intended CMS regardless of vignette types. The results of Kos (2004)' study showed that the most commonly selected strategy was organizing the classroom and curriculum (i.e., proactive strategies for this study; e.g., "Give simple and clear instructions"). On the other hand, teachers had less intention of using negative consequences (from corrective strategies) (e.g., "Provide the child with extra work"). In addition, she found no significant relationship between vignette type and frequency of intended uses for individual strategies. In addition, Kos (2004) found that teachers have a greater intention of using positive-oriented strategies (e.g., organizing the classroom and curriculum, reinforcement, emotional support) rather than negative-oriented strategies (e.g., punishment, planned ignoring), which was also found in several previous studies (Alderman & Nix, 1997; Murray, 2009).

THE CURRENT STUDY

Since the majority of students with ADHD attend integrated schools in Korea and in Germany, the success of these students in the classroom is mainly based on how teachers handle their problematic behaviors (Lee & Kim, 2009; Lee & Witruk, 2013). Effective implementation of CMS is essential for the academic progress of ADHD students and their emotional well-being. Therefore, it is imperative that teachers are able to apply specific CMS in the classroom for students with ADHD, which can lead to the success of students with ADHD in the classroom.

The purpose of this study was to assess teachers' accuracy in identifying students' ADHD status (students with and without ADHD) as well as to investigate teachers' intentions of using CMS for the hypothetical student depicted in the vignette types they read, by comparing two samples of teachers from Korea and Germany.

The following research questions were addressed by this study:
- How correctly do Korean and German teachers identify students' status and which CMS do teachers intend to use on the student from the vignette they read?
- Are there significant differences between Korean and German teachers in terms of their accurate diagnosis and their intended CMS for the hypothetical student depicted in the vignette types?
- Is there a significant relationship between eight vignette types and teachers' intentions of using CMS?

PARTICIPANTS AND PROCEDURE

SAMPLES

Participants were primary and secondary school teachers from Korea and Germany. In total, 639 Korean teachers and 317 German teachers participated in this study. Using a disproportional stratified sampling procedure, matched 264 Korean teachers and 264 German teachers were distributed for the same number of cases. In addition, 33 of each vignette were equally used for the data analysis for both countries.

SURVEY INSTRUMENT: VIGNETTE

The eight vignettes of Kos (2004) were adapted to examine whether teachers are able to accurately identify students with and without ADHD and their intention to use different CMS according to eight hypothetical vignettes. Translation/back-translation and item review were conducted. The survey instrument was translated into Korean and German by researchers, and then both Korean and German instruments were back-translated into English by bilingual professionals in order to confirm the equivalence of the survey instrument in the two different cultures. The original English version with the back-translated English versions were compared and reviewed by one professor and one researcher for both countries to confirm its wording and fluency before data collection for the pilot study. Based on the reviewers' recommendations, the translation/back-translation procedure was repeated until item reviewers and the researcher agreed to both the Korean and the German version. A pilot study was undertaken in June 2012 in Germany and in August 2012 in Korea to obtain teachers' feedback in order to modify the vignette for the actual study. The participants in the pilot study were four Korean teachers and four German teachers. Teachers' feedback was considered to modify the survey instruments. Collected feedback was used to modify the survey instrument for the final study.

Each teacher read only one vignette and was then asked "Do you think this student has ADHD?" to exam a teacher's ability to correctly identify students' status (with and without ADHD) using a yes, no, don't know format. Teachers were then asked whether they would use the provided individual 33 CMS, either yes or no, for the student from the vignette that the teachers had just read (α = .87).

DATA COLLECTION

Permission to conduct the study was obtained from the Department of Educational and Rehabilitation Psychology at the University of Leipzig. The current study was undertaken in Korea from September to December in 2012 and in Germany from January to December in 2013. For the Korean data, the researcher directly contacted in person one teacher who was in charge (of each school) to explain this study in order to request cooperation. Furthermore, the researcher visited the graduate school of the Korean National University of Education to meet graduate students of counseling psychology (whose professionals are teachers) to request participation, and data were collected during their class. For the German data, the researcher received permission from the Saxon Education Agency to collect the data for school teachers in Saxony. The school was contacted and asked for participation either in written form or in person. In addition, one professor from the Department of Education (University of Leipzig) contacted the person who is in charge of trainee teachers at the Saxon Education Agency in order to request cooperation, and data were collected during additional training.

DATA ANALYSIS

SPSS 22.0 was used to analyze the data. Frequency analysis was used to confirm the distribution of the vignette, teachers' total accuracy of identifying students' status, and their intentions of using CMS for students depicted in the vignette they read. Then several mean analyses and chi-square (χ^2) analysis (each vignette, yes/no) were completed to assess the research questions.

RESULTS

TEACHERS' ACCURACY IN IDENTIFYING STUDENTS' STATUS

Frequency analysis was firstly conducted to investigate the percentage of Korean and German teachers who *correctly* or *incorrectly* identify the ADHD status (three ADHD subtypes and one non-ADHD type, each type standing for a boy and a girl), as well as the 'unknown' status (*don't know*).

As shown in Table 3, 68.20% of Korean and 48.90% of German teachers were able to correctly identify ADHD status (*correctly known*). 15.90% of Korean and 11.40% of German teachers incorrectly identified ADHD status (*incorrectly known*). In relation to unknown (*no information*), whereas 15.90% of Korean teachers answered this item, 39.80% of German teachers had no information about the ADHD status of the student they read in the vignette.

A *t*-test was then conducted in order to investigate a cross-cultural comparison of teachers' accurate diagnosis. As shown in Table 4, a significant difference was found between Korea and German teachers

Table 3

Percentage of teachers' accurate diagnosis (total accuracy)

Total accuracy	Korea		Germany	
	frequency	%	frequency	%
Correctly known	180	68.20	129	48.90
Incorrectly known	42	15.90	30	11.40
Unknown	42	15.90	105	39.80

Table 4

Teachers' accuracy in identifying ADHD status

	min	max	Korea		Germany		t	d
			M	SD	M	SD		
Accurate diagnosis	1	2	1.68	0.46	1.48	0.50	4.59***	.41

Note. Cohen's effect size (*d*) – small .2, medium .5, large .8; ***$p < .001$.

with regard to their accuracy of identifying students' ADHD status. Korean teachers ($M = 1.68$, $SD = 0.46$) showed higher accuracy than German teachers ($M = 1.48$, $SD = 0.50$), $t(523, 396) = 4.59$, $p < .001$, $d = .41$.

Teachers' accurate diagnosis regardless of vignette types. Frequency analysis was conducted separately based on eight vignette types (see Table 5).

In terms of *correctly known*, Korean teachers were able to mostly correctly identify Daniel (84.80%), followed by Kayla (81.80%) and Daniela/Michaela (78.80%). Similarly, German teachers were most able to correctly identify Daniel (69.70%), followed by Michaela (69.70%), and Michael (66.70%). With respect to non-ADHD status, both Korean and German teachers had more difficulty in correctly identifying Simone (Korea 36.40% and Germany 42.40%) compared to Simon (Korea 48.50% and Germany 46.90%).

With regard to *incorrectly known*, Korean teachers mostly incorrectly answered the non-ADHD status (Simone: 39.40%; Simon: 33.30%), whereas German teachers' identified only 6.10% (Simone) and 9.40% (Simon). German teachers on the other hand mostly incorrectly identified Daniela (18.20%), whereas no Korean teachers incorrectly answered that type (0.00%).

In relation to *unknown*, German teachers answered a higher rate of *don't know* answers (more than 50%) compared to Korean teachers (less than 30%) as follows: (a) Korean teachers had the least information to identify Kay (27.30%), followed by Simone (24.20%) and Daniela (21.20%); (b) German teachers had the least information to identify Daniela (57.60%), followed by Kayla (54.50%) and Simone (51.50%).

Teachers' accurate diagnosis regardless of students' subtypes. A one-way ANOVA was conducted to assess the relationship between students' subtypes (3 ADHD and 1 non-ADHD) and teachers' accurate diagnosis (see Table 6). The ANOVA was signifi-

cant for both countries: (a) Korea: $F(3, 260) = 10.54$, $p < .001$; (b) Germany: $F(3, 260) = 5.12$, $p = .002$. Korean teachers most correctly identified ADHD-predominately hyperactive/impulsive status, and had most difficulties to correctly identify non-ADHD status. German teachers, on the other hand, had the most correctly identified ADHD-combined status, and the most difficulties to correctly identify ADHD-inattentive status.

Teachers' accurate diagnosis regardless of students' gender. A *t*-test was conducted to assess the relationship between ADHD gender (boy and girl) and teachers' accurate diagnosis (see Table 7). For the Korean sample, *no* significant difference was found between gender and teachers' accurate diagnosis: (a) boys: ($M = 1.67$, $SD = 0.47$) and girls ($M = 1.68$, $SD = 5.46$), $t(262) = -0.26$, $p = .793$, $d = .02$. For the German sample, on the other hand, a significant difference was found: (a) boys: ($M = 1.56$, $SD = 0.49$) and girls ($M = 1.41$, $SD = 0.49$), $t(262) = 2.36$, $p = .019$, $d = .31$.

THE RELATIONSHIP BETWEEN EIGHT VIGNETTE TYPES AND TEACHERS' INTENDED CMS

A 4 × 2 (vignettes X yes/no) χ^2 analysis was conducted to assess the relationship between eight vignette types and teachers' intentions of using CMS (see Table 8), and no significant relationship was found for either sample: Korea (corrective: $\chi^2(12, n = 264) = 9.12$, $p = .693$; proactive: $\chi^2(9, n = 264) = 12.26$, $p = .199$; emotional support: $\chi^2(8, n = 264) = 4.91$, $p = .768$); Germany (corrective: $\chi^2(12, n = 264) = 9.66$, $p = .646$; proactive: $\chi^2(10, n = 264) = 9.50$, $p = .486$; emotional support: $\chi^2(11, n = 264) = 8.63$, $p = .656$). This means that teachers' intended CMS for students

Table 5

Percentage of teachers' accurate diagnosis regardless of vignette types

Vignette types		Korea		Germany	
		frequency	%	frequency	%
Kay (boy)	Correctly known	20	60.60	14	42.40
	Incorrectly known	4	12.10	5	15.20
	Unknown	9	27.30	14	42.40
Kayla (girl)	Correctly known	27	81.80	10	30.30
	Incorrectly known	5	15.20	5	15.20
	Unknown	1	3.00	18	54.50
Daniel (boy)	Correctly known	28	84.80	23	69.70
	Incorrectly known	2	6.10	4	12.10
	Unknown	3	9.10	6	18.20
Daniela (girl)	Correctly known	26	78.80	8	24.20
	Incorrectly known	0	0.00	6	18.20
	Unknown	7	21.20	19	57.60
Michael (boy)	Correctly known	25	75.80	22	66.70
	Incorrectly known	4	12.10	3	9.10
	Unknown	4	12.10	8	24.20
Michaela (girl)	Correctly known	26	78.80	23	69.70
	Incorrectly known	3	9.10	2	6.10
	Unknown	4	12.10	8	24.20
Simon (boy)	Correctly known	16	48.50	15	45.50
	Incorrectly known	11	33.30	3	9.00
	Unknown	6	18.20	15	45.50
Simone (girl)	Correctly known	12	36.40	14	42.40
	Incorrectly known	13	39.40	2	6.10
	Unknown	8	24.20	17	51.50

Table 6

Teachers' accuracy in identifying ADHD status regardless of students' subtypes

Students' subtypes		min	max	Korea		Germany	
				M	SD	M	SD
ADHD	Inattentive	1	2	1.71	0.45	1.36	0.92
	Hyperactive/Impulsive	1	2	1.81	0.38	1.46	0.92
	Combined	1	2	1.72	0.42	1.68	0.86
Non-ADHD		1	2	1.42	0.49	1.43	0.96
F-value				10.54***		5.12**	

Note. ***$p < .001$, **$p < .01$.

Table 7

Teachers' accuracy in identifying ADHD status regardless of students' gender

Students' gender	*min*	*max*	Korea			Germany		
			M	*t*	*d*	*M*	*t*	*d*
Boy	1	2	1.67	−.26	.02	1.56	2.36*	.31
Girl	1	2	1.68			1.41		

Note. Cohen's effect size (*d*) = small .2, medium .5, large .8; *p* < .05.

Table 8

The relationship between eight vignette types and teachers' intentions of using CMS

	Korea			Germany		
	χ^2	*df*	Sig.	χ^2	*df*	Sig.
Corrective strategies	9.12	12	.693	9.66	12	.646
Proactive strategies	12.26	9	.199	9.50	10	.486
Emotional support	4.91	8	.768	8.63	11	.656

Note. df – degrees of freedom; Cohen's effect size (*d*) = small .2, medium .5, large .8.

with and without ADHD are not different. Therefore, all data were collapsed across eight vignette types for further analyses.

TEACHERS' INTENDED CMS FOR STUDENTS WITH AND WITHOUT ADHD

As shown in Table 9, both Korean and German teachers intend to use emotional support the most (Korea: 81.25%; Germany: 81.62%), followed by proactive strategies (Korea: 70.70%; Germany: 80.90%). On the other hand, teachers in both countries had the least intention of using corrective strategies (Korea: 62.84%; Germany: 53.96%).

A *t*-test was then conducted to assess whether there are significant differences between the countries (see Table 9). Significant differences between the two countries were found regarding corrective strategies and proactive strategies as follows:

(a) Korean teachers (*M* = 8.17, *SD* = 1.85) use more corrective strategies than German teachers (*M* = 6.98, *SD* = 1.59) (*t*(526) = 7.87, *p* < .001, *d* = .68), and German teachers (*M* = 8.09, *SD* = 1.34) use more proactive strategies than Korean teachers (*M* = 7.07, *SD* = 1.75), *t*(493, 124) = −7.49, *p* < .001, *d* = .65. With regard to emotional support, on the other hand, *no* significant differences were found between Korea (*M* = 6.50, *SD* = 1.50) and Germany (*M* = 6.53, *SD* = 1.39), *t*(526) = −0.26, *p* = .798, *d* = .02.

DISCUSSION

SUMMARY

The purpose of this study was to investigate teachers' accurate diagnosis and their intentions of using CMS for the hypothetical student depicted in the vignette types. Participants were primary and second-

Table 9

Teachers' intentions of using classroom management strategies (CMS)

	Total Items	Korea		Germany		*t*	*d*
		M	*SD*	*M*	*SD*		
Corrective strategies	13	8.17 (62.84%)	1.85	6.98 (53.69%)	1.59	7.87***	.68
Proactive strategies	10	7.07 (70.70%)	1.75	8.09 (80.90%)	1.34	−7.49***	.65
Emotional support	8	6.50 (81.25%)	1.50	6.53 (81.62%)	1.39	−0.26	.02

Note. Cohen's effect size (*d*) = small .2, medium .5, large .8; ***p* < .001.

ary school teachers from Korea and Germany. Disproportional stratified sampling was used due to the different sample sizes between Korea and Germany and for the purpose of equaling out two culturally different samples. As a result, matched 264 Korean and 264 German teachers were distributed. Each subgroup then consisted of 132 teachers. In addition, 33 of each vignette were used for the data analysis for both countries. Kos (2004)' eight vignettes were used with permission. A cover letter describing this study was composed by the researcher with slight modifications for the two countries due to different cultural backgrounds. Translation/back-translation and item review were conducted by professionals from each country to confirm the equivalence of the survey instrument in the two different cultures. A pilot study was undertaken from June to August in 2012. The actual study was conducted in Korea from September to December in 2012 and in Germany from January to December in 2013. SPSS 22.0 was used to calculate mean analysis, frequency analysis, and χ^2 test.

INTERPRETATION OF THE RESULTS

Teachers' accuracy in identifying students' status. 68.20% of Korean teachers and 48.90% of German teachers were able to identify ADHD status, and it was significantly different between the two countries. When broken down into teachers' accuracy based on vignette types, both Korean and German teachers were able to most correctly identify *Daniel* (ADHD-predominantly hyperactive/impulsive type, boy: Korea 84.80%; Germany 69.70%), which was confirmed in Kos (2004)'s study in Australia. Due to the fact that hyperactivity and impulsivity are easily observed by teachers and since they disrupt the class much more than inattentive behavior (Greene et al., 2002; Lee & Witruk, 2014), ADHD-predominantly hyperactive/impulsive types and ADHD-combined types are more frequently recognized by teachers compared to ADHD-predominantly inattentive types (Daley & Birchwood, 2010; Deshazo-Barry & Lyman, 2002). Although numerous studies have focused on the subtypes of ADHD-HI or ADHD-combined types, further studies need to also pay attention to investigate students with ADHD-predominantly hyperactive/impulsive types, so that they also receive appropriate and professional attention from their teachers.

As for teachers' misinterpretation of vignette types, German and Australian teachers tend to have the greatest difficulty in correctly identifying ADHD-predominantly inattentive types (both boy and girl: *Kay and Kayla*), but this is not the case for Korean teachers. As for *Daniela* (ADHD-predominantly hyperactive/impulsive type, girl), on the other hand, German teachers mostly identified this type incorrectly, whereas no Korean or Australian teachers incorrectly

identified this type (0%). The reason for this is unclear. It can be assumed that the different classification systems are used in order to diagnose ADHD. Since eight vignettes were developed based on DSM-IV-TR, which both Korea and Australia used, it could be difficult for German teachers to correctly identify students' status because ICD-10 is commonly used for diagnosing hyperkinetic disorder (i.e., ADHD). It could be interesting to develop the vignette based on ICD-10 and then compare the accuracy of teachers between Korea and Germany again in the future.

The relation between eight vignette types and teachers' intended CMS. Interestingly, *no* significant relationship was found between teachers' accuracy in identifying students' status and their intentions to use CMS based on eight vignette types in both countries. Both Korean and German teachers have great intentions of using emotional support for all students (students with and without ADHD). Proactive strategies and corrective strategies followed. This result was partly confirmed in the study by Kos (2004), who found that the strategy most commonly implemented by teachers was "organizing the classroom and curriculum (i.e., proactive strategies for this study; e.g., "give simple and clear instructions") and additionally found that teachers had little intention of implementing negative consequences (e.g., "Provide the child with extra work"). It can be understood that since more negative-oriented CMS were included in "corrective strategies" (e.g., punishment and planned ignoring), both Korean and German teachers' intentions of using corrective strategies could be lower than others, which was also confirmed in studies by Kos (2004) and Murray (2009).

Two questions arise regarding this point. *First*, does teachers' ability to accurately identify students with and without ADHD matter? Since *no* significant relation between teachers' accuracy and their intentions of using CMS was found, teachers may use similar strategies for all students regardless of their ability to identify students' status. Do teachers need to correctly identify students' status? *Second*, do teachers require specific CMS for students with ADHD? According to the findings of this study, three assumptions emerged: (a) teachers have the skills and/or ability to manage students with ADHD by applying specialized CMS; (b) teachers have *no* idea how to use CMS; or (c) students with and without ADHD need to be managed in the same way. Further studies are needed to answer these questions. Qualitative research could be the key to find more detailed information about teachers' intentions of using CMS in both countries.

RECOMMENDATIONS AND SUGGESTIONS

The samples were primary and secondary school teachers in Korea (collectivistic-vertical culture) and

Germany (individualistic-vertical culture). Other cross-cultural research is suggested, especially with individual horizontal cultures (e.g., North-Europe) and collectivistic horizontal cultures (e.g., Israeli kibbutzim). In addition, for other types of teachers (e.g., those teaching in special schools, alternative schools), it may not be accurate to generalize these research findings. Therefore, other types of teachers (e.g., trainee teachers, pre-service teachers) as well as other types of school (e.g., special schools, alternative schools) should be investigated in the future.

Developing vignettes based on the ICD-10 classification is suggested. The vignettes used in the study were developed by Kos (2004) based on DSM-IV-TR, which is commonly used in Korea. Since most European countries use ICD-10, German teachers' accuracy at identifying students' status could be different from the current study.

In addition, it is suggested that the current status of teachers' specific CMS for students with ADHD should be investigated in order to develop more specialized CMS for these students. It is worth conducting a meta-analysis of this issue to assess the most effective CMS for students with ADHD in the classroom.

ACKNOWLEDGEMENTS

Endnote

1 From here on, Korea represents South-Korea.

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