

The Emotional Reactions to Challenging Behavior Scale-Korean (ERCBS-K): Modification and Validation

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The purpose of this study was to explore the original version of Mitchell and Hastings's (1998) Emotional Reaction to Challenging Behavior Scale (ERCBS) and estimate validity and reliability of a revised version containing 29 items. The Emotional Reaction to Challenging Behavior Scale–Korean (ERCBS-K) was studied using 445 in-service physical educators (228 females; 217 males). Data were collected using onsite administration as well as mail survey administration procedures. Confirmatory and exploratory factor analyses results supported a five-factor, 28-item scale (ERCBS-K). Acceptable internal consistency coefficients were found for each of the subscales of the ERCBS-K (Cronbach's alpha ranged from 0.71 to 0.87).

Behavior problems of students with and without disabilities are among the most problematic concerns that teachers encounter in today's classroom (Hester, 2002; Meadows, Melloy, & Yell, 1996). Although challenging behavior in any child can frustrate teachers, the term "challenging behavior" is often found in literature that focuses on the problematic behavior of individuals with disabilities (Emerson, 2001). This term generally refers to behavior that is physically and verbally aggressive by students with disabilities and that teachers find hard to control (Elgie & Hastings, 2002; Kaiser & Rasminsky, 2003). While the literature does not provide a precise definition of "challenging behavior," authors indicate that challenging behaviors could include the following problematic behaviors: (a) physically and/

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or verbally aggressive behavior toward others, (b) self-injurious behavior which interferes with the acquisition of learning, and (c) stereotypical behavior such as repetitive or self-stimulating actions (Emerson, 2001; Harborne, 1996; Kaiser & Rasminsky, 2003). Without a doubt, challenging behavior of students with disabilities disrupt classroom settings, including in physical education classrooms, and interfere with students' learning (Brownell & Smith, 1993; Cowart, 2000; Lavay, French, & Henderson, 1997). Overall, teaching students with disabilities is challenging, and more specifically, instructing students who show challenging behavior is very difficult (Kozub & Oh, 2007; Lavay et al., 1997). Teachers who work with students with disabilities who demonstrate challenging behavior on a daily basis tend to exhibit a high level of stress and emotional arousal (Hastings & Bham, 2003; Hastings & Brown, 2002; Morgan & Hastings, 1998). Nevertheless, teachers' emotional reactions toward challenging behavior in relation to both positive and negative dimensions have yet to be well studied in physical education.

Researchers have assumed that emotions and actions are closely linked; however, emotions are multifaceted and actions do not necessarily accompany emotions. People can have many different emotions without taking actions. Moreover, actions may vary based on a situational context where the individual is experiencing a phenomenon (Frijda, 2001). Researchers have tried to theorize how emotions are expressed and actions are manifested, but no clear explanations have been provided in the data based literature specific to physical education (Damasio, 1999; Frijda, 2001; Milton, 2005; Zhu & Thagard, 2002). According to Milton (2005), some types of stimuli elicit emotions, and these emotions cause feelings that affect a human's actions. All this implies that emotions can drive people's behavior. Zhu and Thagard (2002) also agreed that emotions play a crucial role in the explanation of human behavior. These authors further conceptualized a causal link between emotions and actions by studying the causal link starting from some event or situation (other researchers refer to this as stimulus) that affect human emotions. Emotions then get involved in the decision-making process and affect actions (Zhu & Thagard, 2002). This causal relationship between emotions and actions can be applied to educational settings. Moreover, Milton's (2005) conceptual model may explain both teachers' emotional reactions and their subsequent behavior. For example, challenging behavior demonstrated by students with disabilities can be a stimulus to teachers' emotional reactions. These emotional reactions of teachers (e.g., anger, frustration, fear, etc.) may trigger subsequent actions (e.g., refusal response, etc.).

Emotional reactions vary and may be influenced by prior experiences, intensity, and length of specific life events, and preincident stressors (Damasio, 1999; Lazarus, 1991). Every individual is different, and people respond to the same situation or behavior in different ways. For example, someone may react very sensitively and negatively, while another person may show positive reactions when faced with the same form of challenging behaviors. Challenging behavior is often associated with negative emotional reactions by teachers (Hastings, Tombs, Monzani, & Boulton, 2003; Jones & Hastings, 2003; Mitchell & Hastings, 1998; Morgan & Hastings, 1998); however, there has been little research examining teachers' emotional reactions toward challenging behavior of students with disabilities (Sutton & Wheatley, 2003). This is due in part to the difficulty in accurately measuring a teacher's response to students' challenging behavior.

Mitchell and Hastings (1998) developed the first version of the *Emotional Reaction to Challenging Behavior Scale (ERCBS)* based on Weiner's cognitive-emotional model of helping behavior and attribution theory. According to Weiner (1980), individuals' helping behavior, emotion, and attribution are related to one another. Dagnan, Trower, and Smith (1998) also found a connection between emotional reactions and attributions of controllability. For example, when staff members who work in group homes feel more control over the challenging behaviors, they reported less negative emotional reactions. The first version of the ERCBS had a list of 15 negative emotional reactions to challenging behavior and originally was designed for staff members who had experienced aggressive challenging behavior (Mitchell & Hastings, 1998). The first version of the ERCBS has been used for exploring the relationships among staff members' attributions, emotional reactions, stress, and coping (Hastings & Brown, 2002; Mossman, Hastings, & Brown, 2002; Rose, Horne, Rose, & Hastings, 2004). Later, Jones and Hastings (2003) argued that emotional reactions toward challenging behavior should not be limited to measuring negative reactions. They further modified the first version of ERCBS (Mitchell & Hastings, 1998) by adding positive emotional reaction items to the original 15-negative emotional reaction item questionnaire. Eight positive emotional reaction items were developed using information from transcripts of interviews with staff members. Jones and Hastings (2003) increased the total items of the ERCBS to 23 items that are now divided into 15 negative and 8 positive emotional reactions items. Both the first (15 items) and the revised version (23 items) of ERCBS have been used to examine the emotional reactions of support staff and special education teachers toward challenging behavior (Hastings & Brown, 2002; Mossman et al., 2002; Hastings et al., 2003; Rose et al., 2004); however, there are no known psychometric data for either version of the ERCBS. Thus, it is imperative to test the psychometric properties of instruments developed from the original version of the ERCBS since without an accurate measure, it is not possible to measure teacher emotional reaction to challenging behavior. The purpose of this study was twofold: (a) translate and revise the ERCBS (Jones & Hastings, 2003) and (b) evaluate psychometric properties of the instrument.

Methods

Participants

A convenience sample of 445 in-service Korean physical educators (228 females and 217 males) between age of 23 and 61 years ($M = 39.45$, $SD = 9.60$) participated in this study. All the participants were recruited from Seoul, Korea and had teaching duties in physical education where they worked with students with disabilities. The participants identified their positions as one of the following: adapted physical educator (13%), general physical educator and coach (53.9%), health educator (9.4%), or other (23.4%), including physical education teachers in adult centers and/or community centers. The majority of the participants (74.6%) were working at secondary schools, 19.6% at elementary schools, and the remaining 5.0% at other workplaces including adult programs.

Additional demographic responses were solicited to include number of behavior management classes taken, number of special education classes taken, years of teaching, volunteer experiences in working with individuals with disabilities, and years of volunteer experience. A majority of respondents had not taken any specific course work to prepare them for teaching students with disabilities. Two hundred and seventy-two participants (61.1%) had neither adapted physical education nor special education training experiences. In terms of years of teaching experience as a physical educator, 199 participants (44.7%) reported 1–10 years, 127 participants (28.6%) reported 11–20 years, and 103 participants (23.1%) reported 21–30 years. Only 16 participants (3.6%) identified themselves as having more than 30 years of experience. Over 40% of the participants ($n = 216$) identified that they had less than 5 years of volunteer experience in working with individuals with disabilities.

Measures

Jones and Hastings' (2003) ERCBS is a 23 emotional reaction item scale with two categories: positive (8 items) and negative emotional reactions (15 items). The negative emotional reaction items were further divided into fear/anxiety and depression/anger and the positive reaction items into cheerful/excited and confidence/relaxed dimensions. Jones and Hastings (2003) reported adequate internal consistency scores for each dimension ($\alpha = 0.86$ for depression/anger; $\alpha = 0.69$ for fear/anxiety; $\alpha = 0.72$ for cheerful/excited; and $\alpha = 0.70$ for confidence/relaxed). The response options included, "No, never," "Yes, but infrequently," "Yes, frequently," and "Yes, very frequently" (codes 0–3) for each emotional reaction item. For the current study, the revised 23-item ERCBS, containing modified negative and positive items, was subjected to back translation procedures (Jones & Hastings, 2003) before data collection.

Translation Procedures

The 23-item ERCBS (Jones & Hastings, 2003) was translated into Korean using the procedures suggested by Banville, Esrosiers, and Genet-Volet (2000). The translation was supported by a panel of four Korean adapted physical education professionals who were fluent in both English and Korean. Two of them were doctoral students majoring in adapted physical education, and the other two were physical education professors working in the U.S. After the English version of the questionnaire was translated into Korean by the two doctoral students, a back translation was performed by the two professors. Then, the same panel of four experts compared the original version to the back translated version. In accordance with the suggestions from the panel of experts, content and grammatical edits were made and then the final review was conducted to support content validity of the questionnaire. In addition, a pilot study ($n = 11$) was conducted to check the test-retest reliability of the translated scale. The two-week test-retest administrations resulted in 72% agreement and Spearman correlations of the items ranged from 0.61 to 0.90. Details about the pilot study can be found in Kozub and Oh (2007).

Scale Modification

Although the original scale showed evidence of language equivalence between English and Korean, there were some emotional reaction words seldom expressed by Koreans (Hilton & Skrutkowski, 2002; Kozub & Oh, 2007). To address this issue, a focus group interview was conducted. The focus group consisted of four Korean physical educators (two females and two males) who were working with children with disabilities on a daily basis. Their ages ranged from 23 to 34 years ($M = 27.5$) and their teaching experience ranged from 3 to 10 years ($M = 6.25$). During the focus group interview, all participations were asked to fill out the 23-item ERCBS (Jones & Hastings, 2003). After filling out the questionnaire, participants discussed each item and the extent with which the emotional words were appropriate or if additional emotional items were lacking from Jones and Hastings' (2003) version of the scale. Based on this discussion, additional emotional reaction words were added to the Korean version of the scale, which included "Surprise/Wonder," "Confusion/Panic," "Doubt/Suspicion," "Responsibility," "Repeated," and "Relief." This resulted in a 29-item modified version of the ERCBS-K that was subsequently reviewed by panel of experts and used for primary data collection.

Panel Review of the Modified Version

A new panel of experts was formed ($n = 3$) to check the content validity of the modified version of the 29-item ERCBS-K. The panel of experts included two Korean adapted physical education teachers who had more than ten years of experience in teaching individuals with disabilities and a Korean faculty member who had conducted researched in adapted physical education for more than 15 years. The panel of experts reviewed the appropriateness of existing and additional emotional reaction items, addressing content validity. As a result of the expert panel review, additional information was added to the definition of challenging behavior and to the types of disabilities and demographic information of individuals with disabilities, such as gender and age, was included. According to their suggestions, a vignette that explains an example of challenging behavior was added to the questionnaire. The format of the vignette followed Hastings' (1997) vignette from the *Challenging Behavior Attribution Scale*. The following vignette was presented on the top of the questionnaire: "*Jeong-Suk is a male adolescent with autism spectrum disorder. Sometimes Jeong-Suk is defiant and even aggressive toward the teacher and classmates during the physical education class. He will refuse to comply with simple requests and has been known to be physically aggressive toward peers, teachers, and even his parents.*"

Data Collection Procedures

The 29-item ERCBS-K was used to collect data from Korean physical education teachers. Before data collection, the study protocol was approved by the Institutional Review Board. Each participant was asked to read the vignette as an example,

then consider each of the emotional reactions and select the response next to each item that best describes how he/she feels when working with students who display challenging behaviors.

The data collection methods of the current study involved both onsite survey administration at a summer conference and the mailed survey administration procedures. The onsite survey administration data were collected from 125 participants (100% response rate) who were involved in an in-service physical education teacher workshop during the summer of 2005 in Seoul, Korea. The lead researcher provided a 30-min introduction to the study and recruit participants on the last day of the conference. For mailed survey administration, a purposive sample of 400 physical educators were drawn from a mailing list of past summer in-service physical education teacher workshop attendees. The purposeful sampling method excluded 125 participants who had attended the earlier 2005 summer in-service physical education teacher workshop. This mailed survey resulted in 336 completed questionnaires (84% response rate) for a total of 461 study respondents. The mailed survey administration procedure followed Salant and Dillman's (1994) methods and included sending (a) an initial postcard a week before the main mailing, informing participants that a mail packet would be arriving in the near future; (b) a main mail packet that included a cover letter, a prepaid return envelope, the questionnaire, a human subject participant study information sheet, and a token (University decal); (c) the first follow-up postcard two weeks after the main packet mailing; (d) a second mail packet containing the same materials as the first mail packet, excluding the token, one week after the first follow-up postcard; and (e) the second follow-up post card reminder.

Data Analysis

One hundred and twenty-five questionnaires were returned (100% response rate) from the conference attendees and 336 questionnaires were returned (84% response rate) from the mailed survey. The 461 returned questionnaires were manually checked for inappropriate responses that showed a systematic response pattern (e.g., all 2s in their responses) or large missing data (> 20%). Of the 461 returned questionnaires, 16 were dropped from the analysis due to the systematic response pattern or large missing data, resulting in 445 usable questionnaires (325 from the mail survey and 120 from the conference data). The final sample of surveys included responses from 228 females and 217 male in-service physical educators. Additional missing data from retained responses were systematically replaced with group mean values for the item (Tabachnick & Fidell, 2007).

Before the confirmatory factor analysis (CFA), the sample was split in half. Then exploratory factor analysis (EFA) was conducted on half ($n = 222$) to explore feasible factor structure and loadings of the scale using SPSS 16.0. Gerbing and Hamilton (1996) suggest using EFA procedure as a precursor to CFA. Then, the other half ($n = 223$) were tested by CFA using LISREL 8.70 for a variance-covariance matrix data (Jöreskog & Sörbom, 2001; Olsson, Foss, Troye, & Howell, 2000). Maximum likelihood method was selected to estimate the specified parameters

because it is a robust method to obtain accurate fit indexes with ordered categorical data (Hoyle & Panter, 1995; Hutchinson & Olmos, 1998). There are a number of model fit indexes but no single fit index is sufficient for a correct assessment of fit in a CFA model (Hu & Bentler, 1995; Hu & Bentler, 1999; Maruyama, 1998). Rather, it is recommended that researchers use several indexes from different families of fit indexes (Hu & Bentler, 1995; Maruyama, 1998). The absolute and incremental fit indexes that were used in testing the model fit included the ratio of the χ^2 to the degrees of freedom (χ^2/df , less than 2.0 indicates a good fit), the Root Mean Square Error of Approximation (RMSEA, less than .05), the Non-Normed Fit Index (NNFI, greater than 0.90), Comparative Fit Index (CFI, greater than 0.90), and Incremental Fit Index (IFI, greater than 0.90; Hu & Bentler, 1995, 1999; Jöreskog & Sörbom, 2001). Descriptive statistics including mean, standard deviation, skewness, kurtosis, and Cronbach's alpha coefficients were examined.

Results

Scale Reliability

Internal consistency reliability was evaluated for each identified factor using Cronbach's alpha (see Table 1). Cronbach alpha coefficient was chosen because it provides a good estimate of reliability in most situations (Nunnally, 1978). According to Nunnally, Cronbach alpha value of 0.70 is the minimum desired for reliability purposes. The estimates from the current sample ($n = 445$) ranged from 0.71 to 0.87, which demonstrates adequacy of internal consistency (Nunnally, 1978).

Exploratory Factor Analysis

A principal axis factoring analysis, with oblique rotation and the scree plot for the 29-item ERCBS-K ($N = 222$) was used for better interpretability of the factor loadings. The initial EFA produced five factors with eigenvalues greater than 1 (Kaiser Criterion). One item was deleted due to lack of salient loadings when the cutoff of 0.30 was used. The item "Shocked" did not load on any of the five factors.

Table 1 Internal Consistency of Each Subscale of the 28-Item Emotional Reactions to Challenging Behavior Scale-Korean (N = 445)

Subscale	Chronbach's α
Fear/Anxiety	0.86
Positive Emotion	0.87
Responsible Emotion	0.71
Depression	0.83
Confused Emotion	0.83

Table 2 Exploratory factor analysis of the 28-item Emotional Reactions to Challenging Behavior Scale-Korean (N = 222)

Items	Fear/Anxiety	Positive	Responsible	Depression	Confused
Humiliated	0.62				
Betrayed	0.61				
Disgusted	0.55				
Angry	0.55				
Frightened	0.53				
Afraid	0.41				
Excited	0.41				
Shocked	0.32				
Relief		0.80			
Comfortable		0.78			
Happy		0.76			
Cheerful		0.75			
Relaxed		0.67			
Invigorated		0.52			
Responsibility			-.58		
Self-assured		0.44	-.55		
Confident			-.44		
Repeated			-.44		
Incompetent				0.84	
Helpless				0.71	
Hopeless				0.50	
Resigned				0.45	
Frustrated				0.42	
Guilty				0.41	
Surprise/Wonder					-.83
Confusion/Panic					-.70
Doubtful/Suspicious					-.53
Nervous					-.49
Eigenvalue	7.83	3.82	1.23	0.93	0.73
Percentage of Variance	27.96	13.62	4.41	3.32	2.60
Cumulative Percentage of Variance	27.96	41.58	45.99	49.31	51.91

Another EFA was conducted on the 28-item modified version of ERCBS-K. The second EFA produced five factors with eigenvalues greater than 1, accounting for 52% of the total variance and overall agreed with the predicted factor structure as shown in Table 2.

Items loading on the first component measured fear/anxiety, the second component positive emotional reactions, the third component responsibility, the fourth component depression, and the fifth component the feeling of confusion. Thus, the five factors were labeled as Fear/Anxiety, Positive Emotion, Responsible Emotion, Depression, and Confused Emotion, respectively, based on salient loadings of each factor in the current study. Since more emotional reaction items were added to the 23-item Jones and Hastings's (2003) scale, EFA produced a different factor structure and the label of the factors were also changed in the ERCBS-K.

Confirmatory Factor Analysis

The result from the EFA guided the CFA process. Confirmatory factor analysis was conducted using PRELIS and LISREL programs, version 8.80 (Jöreskog, & Sörbom, 2001). Maximum likelihood factor extraction with a variance-covariance matrix was used. CFA was conducted with a five-factor model to examine the best model for the modified 28-item ERCBS-K. The results yielded a good fit of the five-factor model (Fear/Anxiety, Positive Emotion, Responsible Emotion, Depression, and Confused Emotion) to the data (Table 3 and Figure 1). Major fit indexes such as the NNFI, CFI, and IFI indicated a good model fit for the five-factor model (Bentler & Bonett, 1980; Byrne, 1998; Hu & Bentler, 1999) although the ratio of the χ^2 to the degrees of freedom (2.1) and RMSEA (0.07) were slightly higher than the recommended level (Hu & Bentler, 1995, Hu & Bentler, 1999).

Table 3 Fit Indexes of the Five-Factor CFA Model

Model fit Index	Index for the 5-factor Model ^a	Acceptable Criterion
χ^2 / df	2.1 (713.38/339)	Less than 2.00
RMSEA	0.07	.05 or less
90% CI of RMSEA	0.06–0.07	Reasonably narrow
NNFI	0.89	.90 or better
CFI	0.94	90 or better
IFI	0.94	90 or better

Note. RMSEA = root mean square error of approximation; NNFI = nonnormed fit index; CFI = comparative fit index; IFI = incremental fit index.

^a5-Factor = Fear/Anxiety, Positive Emotion, Responsible Emotion, Depression, and Confused Emotion

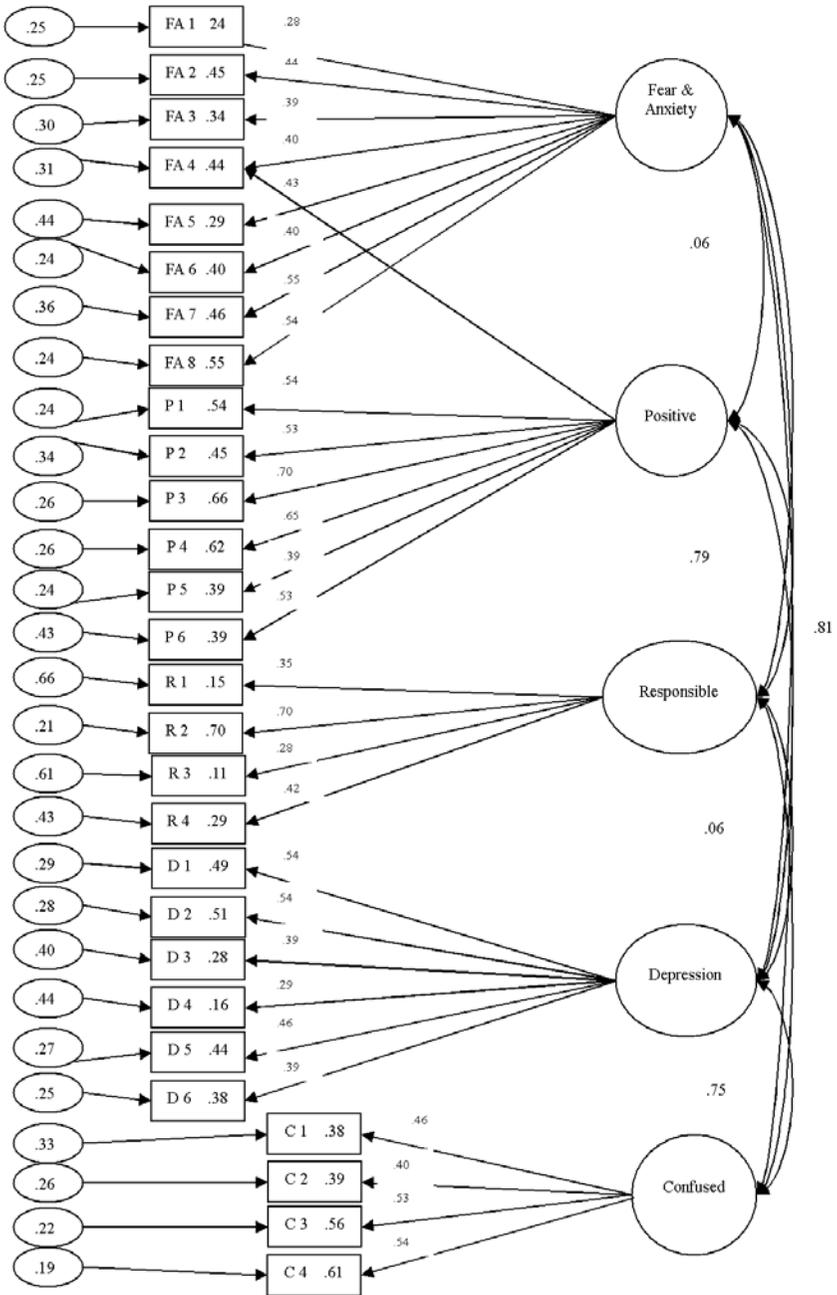


Figure 1 — Path diagram of the 28-item *Emotional Reactions to Challenging Behavior Scale-Korean*.

Discussion

The 23-item ERCBS (Jones & Hastings, 2003) has been used to measure emotional reactions of special educators and group home and hospital staff members (Hastings & Brown, 2002; Jones & Hastings, 2003); however, these previous studies used a measure with no known estimates of construct validity that was developed for residential service staff and special educators from English speaking samples. The purpose of this study was to translate and revise the ERCBS (Jones & Hastings, 2003) and to evaluate psychometric properties of the instrument, ERCBS-K.

Implications

Jones and Hastings (2003) originally explored the underlying dimensions of the 23-item ERCBS and came up with three factors, including positive, depression/anger, and fear/anxiety emotional reactions factors. Complicated subdimensions of the three-factor model questionnaire (Jones & Hastings, 2003), however, have caused problems with items cross-loading between factors. These scale problems were also reported in a study by Kozub and Oh (2007), who used the original ERCBS and found that items tended to have substantial cross loadings between depression/anger and fear/anxiety emotional reactions.

In the current study, the expanded 29-item ERCBS-K was hypothesized to result in a three-factor model; however, the resulting three-factor solution did not provide a convincing estimate of validity. Moreover, during the different EFA procedures, 29 items were reduced to 28 items. A subsequent analysis supported a final 28-item modified version of the questionnaire with more convincing fit indexes, supporting a five factor solution. These findings were not consistent with previous studies using less stringent tests (Kozub & Oh, 2007; Mitchell & Hastings, 1998). As combined factors were separated and more items were added, EFA of the 28-item ERCBS-K produced a five-factor model with one subscale resulting from positive items and the remaining four subscales from negative items (fear/anxiety, responsible, depression, and confused; see Table 2). This indicates that the questionnaire was clearly different from the three-factor Jones and Hastings' (2003) 23-item ERCBS. Therefore, the current study provided initial validity estimates for a five-factor model of the 28-item ERCBS-K, which addresses a more complex set of emotional response than was previously believed to exist in Jones and Hastings' (2003) solution. Conceptually this is plausible based on White (1993), who indicated that emotions as expressed in words "carry complex, abstract messages about personal dispositions, social relations, and moral evaluations, among other things" (p. 33). The current study supports this notion and also provides a measure sensitive enough to study the construct of emotions and specifically negative reactions toward challenging behavior using a written questionnaire format. Clearly, the 28-item ERCBS-K is unique from previous versions of the scale and with additional work can help researchers interested in physical educators' emotional reactions to challenging behaviors further study links between responses and broader learning outcomes.

With respect to CFA procedures, no universally accepted guidelines are available to determine a good fit of a specified model to data (Hu & Bentler, 1995; Maruyama, 1998). These data resulted in three different fit indexes supporting a good fit, which included Non-Normed Fit Index (NNFI), Comparative Fit Index

(CFI), and Incremental Fit Index (IFI; Hu & Bentler, 1995; Jöreskog & Sörbom, 2001). Further, an additional fit index, Root Mean Square Error of Approximation (RMSEA), for the current study was slightly higher (0.07) than the acceptable criterion (0.05). However, Byrne (1998) and MacCallum, Browne, and Sugawara (1996) state that RMSEA values up to 0.08 represent reasonable errors of approximation, while values ranging from 0.08 to 0.10 indicate a mediocre fit. Although not surprising, an adequate Cronbach alpha for each identified factor in the five-factor model affirms the reliability of the current modified 28-item scale. Not only CFA results, but also EFA and scree plot results support a five-factor solution. Therefore, an examination of the five-factor, 28-item ERCBS-K resulted in encouraging psychometric properties for the questionnaire with respect to the current sample. Future studies would be desirable to further estimate validity of the 28-item ERCBS-K across populations of Korean educators.

Limitations of the Study

Emotional reactions are conceptually challenging and manifest in multiple channels. The meaning of some items may have changed after translation, as is the case with any existing instrument (Carlson, 2000). A limitation of the current study was that investigators could not compare the psychometric properties of Jones and Hastings' (2003) 23-item ERCBS to the 28-item ERCBS-K due to a lack of access to data or estimates of fit from previous studies. Further studies are warranted to compare Jones and Hastings' (2003) scale with the 28-item ERCBS-K tested in the current study in terms of model fit indexes and other psychometric properties. While there is evidence of acceptable reliability and validity of the five-factor model, 28-item of the ERCBS-K, there are three additional limitations in the current study. First, participants of this study were from one urban area in Korea. This may limit the generalizability of findings to other places outside of Seoul, Korea. Second, there is evidence from demographic data that these participants may have different levels of experience and training to teach students with challenging behavior resulting in a unique solution. Third, specific cultural issues on emotional reactions were not addressed in this study.

In conclusion, the factorial validity and reliability of the modified 28-item ERCBS-K was supported. The measure is a promising instrument to assess physical educators' emotional reactions toward students' challenging behavior in the physical education context. Furthermore, this measure provides a starting point for researchers to continue to seek understanding of teachers' emotional reactions toward challenging behavior.

Recommendations for Future Research

From the results of the current study, the following recommendations are made for future studies on physical educators reacting to challenging behavior. First, future researchers should attempt to refine instrument items. Since the ERCBS-K contains single word items (e.g., confident, afraid, and angry), future researchers may expand the single word item to include additional wording that may help enhance psychometric properties (e.g., I feel confident when I face challenging behavior). Second, future studies should focus on replicating this study in other

countries so that emotional reactions can be understood across cultures. In addition, if the modified version of the scale is validated for English speaking population, it would allow researchers to compare cross-cultural responses toward challenging behaviors in different countries. Lastly, future research may combine qualitative measures (e.g., interviews) of teachers' emotional reactions to challenging behavior with the current quantitative measures. For a better understanding of teachers' emotional reactions to learners' challenging behavior, it would be desirable to allow respondents an opportunity to verbalize their responses to allow for more in-depth study of this phenomenon.

References

- Banville, D., Esrosiers, P., & Genet-Volet, Y. (2000). Translating questionnaires and inventories using a cross-cultural translation technique. *Journal of Teaching in Physical Education, 19*, 374–387.
- Bentler, P.M., & Bonett, D.G. (1980). Significance tests and goodness of fit in the analysis of covariance structure. *Psychological Bulletin, 88*, 588–606.
- Brownell, M.T., & Smith, S.W. (1993). Understanding special education teacher attrition: A conceptual model and implications for teacher educators. *Teacher Education and Special Education, 16*, 270–282.
- Byrne, B.M. (1998). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Carlson, E.D. (2000). A case study in translation methodology using the health promotion lifestyle profile II. *Public Health Nursing (Boston, Mass.), 17*, 61–70.
- Cowart, J. (2000). Managing student misbehavior in adapted physical education by good teaching practices. *Palaestra, 16*, 40–46.
- Damasio, A.R. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. New York: Harcourt Brace & Company.
- Dagnan, D., Trower, P., & Smith, R. (1998). Care staff responses to people with learning disabilities and challenging behaviour: A cognitive-emotional analysis. *The British Journal of Clinical Psychology, 37*, 59–68.
- Elgie, S., & Hastings, R.P. (2002). Staff definitions of challenging behavior. *Education and Training in Mental Retardation and Developmental Disabilities, 37*, 202–208.
- Emerson, E. (2001). *Challenging behaviour: Analysis and intervention in people with learning difficulties*. Cambridge: Cambridge University Press.
- Frijda, N.H. (2001). Emotions and action. In A.S.R. Manstead, N. Frijda, & A. Fisher (Eds.), *Feelings and emotions: The Amsterdam symposium* (pp. 158–173). Cambridge: Cambridge University Press.
- Gerbing, D.W., & Hamilton, J.G. (1996). Viability of exploratory factor analysis as a precursor to confirmatory factor analysis. *Structural Equation Modeling, 3*, 62–72.
- Harborne, A. (1996). Challenging behaviour in older people: Nurses' attitudes. *Nursing Standard, 11*, 39–43.
- Hastings, R.P. (1997). Measuring staff perceptions of challenging behaviour: The Challenging Behaviour Attributions Scale (CHABA). *Journal of Intellectual Disability Research, 41*, 495–501.
- Hastings, R.P., & Bham, M. (2003). The relationship between student behaviour patterns and teacher burnout. *School Psychology International, 24*, 115–127.
- Hastings, R.P., & Brown, T. (2002). Behavioural knowledge, causal beliefs, and self-efficacy as predictors of special educators' emotional reactions to challenging behaviours. *Journal of Intellectual Disability Research, 46*, 144–150.

- Hastings, R.P., Tombs, A.K.H., Monzani, L.C., & Boulton, H.V.N. (2003). Determinants of negative emotional reactions and causal beliefs about self-injurious behaviour: An experimental study. *Journal of Intellectual Disability Research, 47*, 59–67.
- Hester, P. (2002). What teachers can do to prevent behavior problems in schools. *Preventing School Failure, 47*, 33–38.
- Hilton, A., & Skrutkowski, M. (2002). Translating instruments into other languages: Development and testing process. *Cancer Nursing, 25*, 1–7.
- Hoyle, R.H., & Panter, A.T. (1995). Writing about structural equation modeling. In R.H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 158–176). Thousand Oaks, CA: Sage.
- Hu, L., & Bentler, P.M. (1995). Evaluating model fit. In R.H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76–99). Thousand Oaks, CA: Sage.
- Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.
- Hutchinson, S.R., & Olmos, A. (1998). Behavior of descriptive fit indices in confirmatory factor analysis using ordered categorical data. *Structural Equation Modeling, 6*, 1–55.
- Jones, C., & Hastings, R.P. (2003). Staff reactions to self-injurious behaviours in learning disability services: Attributions, emotional responses and helping. *The British Journal of Clinical Psychology, 42*, 189–203.
- Jöreskog, K.G., & Sörbom, D. (2001). *Interactive LISREL: User's guide*. Chicago, IL: Scientific Software International.
- Kaiser, B., & Rasminsky, J.S. (2003). *Challenging behavior in young children: Understanding, preventing, and responding effectively*. Boston, MA: Allyn and Bacon.
- Kozub, F.M., & Oh, H.K. (2007). Predictors of negative emotional reaction in physical educators. *The Asia-Pacific Journal of Inclusive Education, 4*, 81–105.
- Lavay, B.W., French, R., & Henderson, H.L. (1997). *Positive behavior management strategies for physical educators*. Champaign, IL: Human Kinetics.
- Lazarus, R.S. (1991). *Emotion and Adaptation*. New York: Oxford University Press.
- MacCallum, R.C., Browne, M.W., & Sugawara, H.M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods, 1*, 130–149.
- Maruyama, G.M. (1998). *Basics of structural equation modeling*. Thousand Oaks, CA: Sage Publications.
- Meadows, B.N., Melloy, K.J., & Yell, M.L. (1996). Behavior management as a curriculum for students with emotional and behavior disorders. *Preventing School Failure, 40*, 124–130.
- Milton, K. (2005). Emotions (or Life, the Universe, Everything). *The Australian Journal of Anthropology, 16*, 198–211.
- Mitchell, G., & Hastings, R.P. (1998). Learning disability care staff emotional reactions to aggressive challenging behaviours: Development of a measurement tool. *The British Journal of Clinical Psychology, 37*, 441–449.
- Morgan, G.M., & Hastings, R.P. (1998). Special educators' understanding of challenging behaviors in children with learning disabilities: Sensitivity to information about behavioural function. *Behavioural and Cognitive Psychology, 26*, 43–52.
- Mossman, D.A., Hastings, R.P., & Brown, T. (2002). Mediators' emotional responses to self-injurious behavior: An Experimental study. *American Journal of Mental Retardation, 107*, 252–260.
- Nunnally, J.C. (1978). *Psychometric theory*. New York: McGraw-Hill Book Company.
- Olsson, U.H., Foss, T., Troye, S.V., & Howell, R.D. (2000). The performance of ML, GLS, and WLS estimation in structural equation modeling under conditions of misspecification and nonnormality. *Structural Equation Modeling, 7*, 557–595.
- Rose, D., Horne, S., Rose, J.L., & Hastings, R.P. (2004). Negative emotional reactions to challenging behaviour and staff burnout: Two replication studies. *Journal of Applied Research in Intellectual Disabilities, 17*, 219–223.

- Salant, P., & Dillman, D.A. (1994). *How to conduct your own survey*. New York: John Wiley & Sons.
- Sutton, R.E., & Wheatley, K.F. (2003). Teachers' emotions and teaching: A review of the literature and directions for future research. *Educational Psychology Review*, *15*, 327–358.
- Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn and Bacon.
- White, G. (1993). Emotions inside out: The anthropology of affect. In M. Lewis & J. Haviland (Eds.), *Handbook of emotions* (pp. 29–41). New York: The Guildford Press.
- Weiner, B. (1980). A cognitive (attribution)-emotion-action model of helping behavior: An analysis of judgments of help giving. *Journal of Personality and Social Psychology*, *29*, 1142–1162.
- Zhu, J., & Thagard, P. (2002). Emotion and action. *Philosophical Psychology*, *15*, 19–36.

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