Revising and Validating Achievement Emotions Questionnaire – Teachers (AEQ-T)

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Abstract

Achievement Emotions Questionnaire - Teachers (AEQ-T) measures teachers' anger, anxiety, and enjoyment related to instruction. The purpose of this research is to revise and validate AEQ-T to include pride and frustration. Also, this study aimed to replicate previous research on anger, anxiety, and enjoyment and validate this expanded measure in an Asian context. The revised AEQ-T was tested using Exploratory Factor Analysis for 150 Japanese teachers, and then cross-validated with 208 Korean teachers using Confirmatory Factor Analysis. Results showed that four emotions of anger, anxiety, enjoyment, and pride had acceptable levels of internal consistency and clear factor structure. However, frustration items had low reliability and cross-loaded with anger factor. This study provides empirical evidences to include pride to measure teachers' emotions, and suggests the need to develop a more refined understanding and distinction between anger and frustration.

Keywords: Teacher emotions, Achievement Emotion Questionnaire –Teachers (AEQ-T), instrument validation, cross-cultural study.

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Revisión y Validación del Cuestionario de Emociones de Logro-Profesores (AEQ-T)

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Resumen

El Cuestionario de Emociones de Logro - Profesores (AEQ-T) mide la ira de los maestros, la ansiedad y el placer en relación con la instrucción. El propósito de esta investigación es revisar y validar AEQ-T para incluir el orgullo y la frustración. Además, este estudio tiene como objetivo replicar la investigación previa sobre la ira, la ansiedad y el placer y validar esta medida extendida en un contexto asiático. El AEQ-T revisado fue probado usando un análisis factorial exploratorio para 150 maestros japoneses y, luego, revalidado con 208 maestros coreanos utilizando un análisis factorial confirmatorio. Los resultados mostraron que las cuatro emociones de ira, ansiedad, placer y orgullo tienen un nivel aceptable de consistencia interna y claridad en el factor de estructura; sin embargo, los elementos de frustración tuvieron una baja confiabilidad y se cruzaron con el factor de ira. Este estudio proporciona evidencia empírica para incluir el orgullo en la medición de las emociones de los profesores y plantea la necesidad de desarrollar una comprensión y una diferenciación más refinadas entre la ira y la frustración.

Palabras clave: Emociones del profesorado, Cuestionario de Emociones de Logro, AEQ-T, validación de instrumentos, estudio transcultural.

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Teaching is an emotionally charged profession, and thus the significance of emotions has been receiving increasing attention in recent years (e.g., Pekrun & Linnenbrink-Garcia, 2014; Schutz & Pekrun, 2007; Schutz & Zembylas, 2009). Research on teacher emotions has emphasized their central role by investigating various type and intensity of teachers' emotions (e.g., Sutton, 2007), the impact of teachers' emotions on their professional lives including their identity, well-being, effectiveness (e.g., Day & Gu, 2007; Hong, 2010), and the way teachers display and regulate their emotions (e.g., Sutton & Harper, 2009). As such, teacher emotion research has expanded significantly in its scope and depth, however, research methodology has not been diversified much. Qualitative interviews and observations were employed most dominantly including individual interviews (e.g., Darby, 2008), focus group interviews (e.g., Cross & Hong, 2012), and field observations (e.g., Zembylas, Charalambous, & Charalambous, 2014). Also, experience sampling methods (e.g., Becker, Goetz, Morger, & Ranellucci, 2014; Jones & Youngs, 2012) began to be used more frequently. However, quantitative scales to measure teachers' discrete emotions are largely lacking. Thus, this study focuses on developing and validating a measure of teacher emotions. In particular, a revised Achievement Emotions Questionnaire – Teachers (AEQ-T), which includes pride and frustration in addition to enjoyment, anger, and anxiety was tested and validated with Japanese and Korean teachers.

Rational Empirical Strategy of Test Construction

When developing and validating an instrument, previous researchers suggest that a combination of theory and empirical investigation be implemented in the design process (Blake & Sackett, 1999; Pekrun et al., 2004; Schwartz, 1978). That is, theory should be used to guide decisions about what latent variables to use, in our case emotions, as well as other convergent and divergent constructs to assess along with our target variables. However, one cannot rely on theory alone to guide the instrument validation procedure or else there exists a danger of unproven and potentially untrustworthy measurement, which is not based on reality, but rather solely one's beliefs

(Pekrun, Goetz, Titz, & Perry, 2002; Morey, Waugh, & Blashfield, 1985). Therefore, scale construction best practice also includes testing the reliability and validity of a newly designed theoretical instrument through empirical research. Using empirical analysis alone is insufficient due to the biases of researchers engaged in instrument construction and the idiosyncrasies of specific samples used to validate (Butcher, 2000). Thus, in the current study, both theoretical and empirical considerations were leveraged to design and validate the instrument in a procedure known as the rational-empirical strategy of test construction (Pekrun et al., 2002, 2004; Schwartz, 1978). Therefore, in the following, theoretical reasons are discussed for expanding the AEQ to include frustration and pride. However, in alignment with the rational-empirical strategy of test construction, the revised instrument was also tested empirically to assess the utility of the theoretically based revisions.

Theoretical Perspective

Emotion has been defined as "socially constructed, personally enacted ways of being that emerge from conscious and/or unconscious judgments regarding perceived successes at attaining goals or maintaining standards or beliefs during transactions as part of social-historical contexts" (Schutz, Hong, Cross & Osbon, 2006, p. 344). This definition highlights key attributes of emotions that even if an individual experiences emotions, social matrix inherently influences the type and intensity of emotions, as well as why and how the individual experiences certain emotions.

"Socially constructed" nature of emotions signifies that social relations are perceived and appraised in relation to the individual's goals and standards (Denzin, 1984; Lazarus, 1991). As Schutz and DeCuir (2002) discussed, an individual's goals provide reference points to evaluate how successful the individual views himself/herself in their effort to achieve the goals. As the definition emphasized ("from conscious and/or unconscious judgments regarding perceived successes at attaining goals or maintaining standards or beliefs"), the appraisal of their current situation in relation to their goals - whether the evaluation is conscious or unconscious - is essential for the emotions to be elicited (Frijda, 1993). Lazarus (1991, 1999) further

unpacked the process of emotional experiences by differentiating primary and secondary appraisals.

The primary appraisal involves goal relevance and goal congruence. When an individual's situation is appraised as relevant and congruent, positive emotions are experienced. However, if the situation is relevant but incongruent with the individual's goals, then negative emotions are experienced. Secondary appraisals are about judgments the individuals make in relation to their coping potential to handle the situation and possible blame or credit to make. Secondary appraisal contributes in eliciting more specific emotions. For instance, when a teacher experiences negative emotions due to students' disruptive behaviors, if the teacher has low coping potential, then he/she may experience anxiety. However, in the same situation if the teacher blames others, then he/she may experience anger.

These emotions teachers experience through primary and secondary appraisals are embedded in their social context, both immediate and distal environments. This is another key aspect that the definition of emotions emphasized ("as part of social-historical contexts") (Ratner, 2000, 2007). As emotions are relational and require person-environment transaction, a teacher can experience various emotions from the same classroom depending on the way each student interacts with the teacher and the whole classroom dynamics (Schutz et al., 2006). In particular, Klassen, Perry, and Frenzel (2012) noted the importance of relatedness and socially constructed nature of teachers' emotions, and its connection to intrinsic motivation.

Teachers' emotions are embedded in not only classroom or school environment but also a larger social-historical context. As Ratner (2007) argued, emotions are "rooted in macro cultural factors, such as social institutions, artifacts, and cultural concepts. Emotions have cultural origins, characteristics, and functions" (p. 89). Thus, it is important to note that emotions are reflective of the social-historical context such as cultural norms and rules, and ethical values and beliefs. Also, although emotions are likely to be tied to a socio-historical context (Ratner, 2007) and differences in language (Wierzbicka, 1984), there exists some empirical evidence that there may be some universal or "basic" emotions (Ekman, Friesen, & Ellsworth, 1982; Matsumoto, 1992; Oatley & Johnson-Laird, 1987). According to Oatley and Johnson-Laird's (1987) research working towards a cognitive

theory of emotions, basic emotions, which are recognized and perceived similarly across cultural contexts, include enjoyment, sadness, anxiety, anger, and disgust. However, in teacher emotion research, there is a lack of empirical investigation, especially large-scale quantitative studies, to examine if teachers' discrete emotions are different or similar given different cultural contexts. As an attempt to fill this gap, this study focuses on measuring teachers' emotions in Asian cultural context, discussed in depth below, in addition to testing a proposed revision to the AEQ-T (Frenzel et al., 2010).

Existing studies have also explored the relationship between teachers' emotions and other psychological constructs such as teacher efficacy and job satisfaction. For instance, Moè, Pazzaglia, and Ronconi's (2010) path model showed that teachers' positive emotions positively impact their job satisfaction. Stephanou, Gkavras, and Doulkeridou's (2013) data on elementary teachers showed that higher teacher efficacy predicts more intense positive emotions. In the current study, we investigate convergent validity by exploring the relationship between teacher's emotions, teacher efficacy, and job satisfaction.

In the following section, we discuss Achievement Emotions Questionnaire – Teachers (AEQ-T) in relation to discrete emotions teachers experience frequently, and provide justifications to revise and validate AEQ-T in order to measure teachers' emotions more comprehensively.

Achievement Emotions Questionnaire – Teachers (AEQ-T)

Given the scarcity of available instrument to measure teachers' emotions, Frenzel and her colleagues (2010) developed Achievement Emotions Questionnaire – Teachers (AEQ-T) that includes three emotions of enjoyment, anger, and anxiety. Although there are several instruments to measure various aspects of teachers' emotions (e.g., Teacher Emotional Labour Strategy Scale (TELSS) by Yin (2012), Emotion Regulation Ability (ERA) Scale by Brackett, Palomera, Mosja-Kaja, Reyes, & Salovey (2010), Emotional Intelligence Scale (EIS) by Chan (2006)), AEQ-T is the only available instrument that measures discrete emotion that teachers experience in relation to their classroom teaching. Positive and Negative Affect Scale

(PANAS) has also been used to measure teachers' discrete emotions (e.g., Jo, 2014), however the items measure general emotion, instead of measuring emotions related to teachers' classroom teaching. In the field of student emotion research, Pekrun and his colleagues developed Achievement Emotion Questionnaire (AEQ) to measure students' emotions, which included enjoyment, hope, pride, relief, anger, anxiety, shame, hopelessness, and boredom during class, while studying, and when taking tests and exams (Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011). Sharing the same theoretical assumption with AEQ, in that goals and appraisals are the antecedents of emotional experiences, Frenzel and her colleagues (2010) developed AEQ-T to measure teachers' emotions related to teaching.

Frenzel and her colleagues justified the selection of enjoyment, anger, and anxiety based on their salience in the literature and everyday life (Frenzel, Goetz, Lüdtke, Pekrun, & Sutton, 2009). Enjoyment is one of the most dominant positive emotions teachers experience. When classroom transactions are in line with the specific goals teachers set for the lesson, teachers experience enjoyment (Frenzel et al., 2009; Sutton & Wheatley, 2003), which is also referred to as emotional rewards by Hargreaves (2005). In terms of negative emotions, teachers frequently experience anger, when the classroom goals are not realized and teachers appraise that it is caused by students or other people (Chang, 2009; Sutton, 2007). In other words, anger is experienced when teachers blame undesirable outcomes to someone else such as students' misbehaviors/laziness and parents' lack of caring. Besides anger, anxiety is also frequently experienced by teachers, especially when they doubt their coping potential to handle challenging situations or to meet certain classroom goals (Darby, 2008). Beginning teachers tend to experience more anxiety due to their low competence (Chang, 2009). Also, the pressure to increase standardized testing scores can possibly contribute to teachers' anxiety (Frenzel, 2014).

These three emotions are undoubtedly dominant emotions teachers experience in their daily classroom transactions, however we argue that teachers experience other emotions as well. It is important to measure not only the aforementioned three emotions, but also other emotions in order to gauge the full range of teacher emotions, in particular, frustration and pride.

Other Discrete Emotions Relevant to Teaching: Frustration and Pride

Recently, researchers have distinguished between several negative emotions that may arise in classroom teachers. Of particular interest is the difference between anger and frustration. According to Sutton (2007), anger is experienced when teachers make a primary appraisal that a situation is incongruent with their goals and a secondary appraisal that an individual is to blame. Frustration is similar to anger in that there exists an initial primary appraisal that an event is relevant and incongruent with one's goals. However, frustration differs from anger with regard to the secondary appraisal. That is rather than blaming an individual, in frustration circumstance is blamed (Roseman, 2001). Given that teaching is circumstantial in nature, frustration, along with anger, may be an important emotion to assess. Furthermore, Chang (2009) noted that frustration is related to low controllability of the situation. If teachers think that the incongruence between their goals and the classroom transaction is attributed to less controllable issues such as educational system or the students' family background, then they are more likely to experience frustration. Sutton's (2004) empirical data showed that frustration was a relevant emotion discussed by teachers within teacher emotion diaries and that it was in fact perceived differently than anger. For the aforementioned reasons, we intended to extend the scope of the AEQ-T to include frustration, which may be a fruitful emotion to investigate based on theoretical and empirical research on teacher emotions.

A second emotion that we thought was particularly relevant to the teaching process was pride. Pride is a positive emotion that is salient in academic settings in both students and teachers (Goetz, Frenzel, Pekrun, Hall, & Lüdtke, 2007). Pekrun and his colleagues' control-value theory of achievement emotions classified emotions based on the three-dimensions: valence (positive-negative), the level of activation (activating-deactivating), and object focus (activities-outcomes) (Pekrun, 2006; Pekrun et al., 2011). According to this taxonomy, pride is positive, retrospective outcome emotion linked to prior success. Tracy and Robin (2004, 2007) further clarified that pride is elicited when individuals direct attentional focus to the self and appraise that an event is congruent with positive self-

representations. This process entails making causal attributions that the self is credited as the cause of the event. In other word, pride results from attributions to internal, unstable, controllable causes (Lewis, 2000; Smith & Lazarus, 1993; Weiner, 1985). For example teachers may experience pride when they appraise that their students' learning and achievement are caused by teachers' instructional and interpersonal effort (Golby 1996; Trigwell, 2012).

Pride functions to promote positive behaviors and contributes to increase a genuine sense of self-esteem (Herrald & Tomaka, 2000). Thus, Teachers who feel pride about their teaching tend to seek and implement effective teaching strategies (Sutton & Wheatley, 2003). As such, pride appears to be a theoretically sound emotion to investigate in teachers. Some empirical work has been conducted on measuring pride as a teacher emotion (Trigwell, 2012; Trigwell & Prosser, 2004). For example, Trigwell's study (2012) showed that pride loaded as a separate factor that can be distinguished from other emotions. Thus we sought to include pride as an emotion on the revised AEQ-T in addition to enjoyment, anger, anxiety, and frustration.

Understanding Teachers' Emotions in Wider Cultural Contexts

As we addressed above, emotions are embedded in a social-cultural context, and thus they are shaped by and nuanced from shared culture of a society. Thus, it is critical to understand teachers' emotions not only within European-American culture, but also from other cultural perspectives. Teacher emotion research has been dominantly conducted with American or European teachers. In particular, three existing studies that used AEQ-T are based on German teachers (Becker, Keller, Goetz, Frenzel, & Taxer, 2015; Frenzel, Goetz, Stephens, & Jacob, 2009) and Canadian teachers (Klassen, Perry, & Frenzel, 2012). Although there are several cross-cultural studies for students' emotions measured by Achievement Emotions Questionnaire (AEQ) (e.g., Frenzel, Thrash, Pekrun, & Goetz, 2007; Yamac, 2014), cross-cultural studies to establish the construct comparability of teacher emotions across samples from different cultural backgrounds are scarce. Thus, it is largely unknown whether teachers in different cultural contexts experience and report discrete emotions differently. Thus, this study includes Asian

teachers (Japanese and Korean teachers) to test if the three emotions included in the original AEQ-T (anger, anxiety, and enjoyment) can be replicated in the Asian teachers, and to expand our understanding on teachers' emotions in cross-cultural contexts.

Research Questions

The purpose of this research is to evaluate the usefulness and quality of the revised AEQ-T after including pride and frustration, in addition to enjoyment, anger, and anxiety. Specifically this research seeks to answer the following questions: (1) Does the revised AEQ-T demonstrate high internal consistency, factor structure, and convergent validity?, and (2) Is the revised AEQ-T replicated and validated with teachers in Asian contexts (Japan & Korea)?

Based on our understanding of the literature and previous research, we predict that the revised AEQ-T will demonstrate psychometrically sound properties. Thus, we predict that frustration and pride will prove to be useful teacher emotions to assess beyond the original three emotions (enjoyment, anger, and anxiety). We make this prediction because of the theoretical differences between anger and frustration (Sutton, 2004, 2007; Roseman, 2001) and the previous literature showing the existence of pride in teachers during instruction (Golby 1996; Trigwell, 2012). Next we predict that the revised AEQ-T will be replicated and validated with teachers in Asian contexts. As we discussed above, basic emotions are recognized and perceived similarly across cultural contexts (Ekman, Friesen, & Ellsworth, 1982; Matsumoto, 1992; Oatley & Johnson-Laird, 1987). Therefore, we predict that enjoyment, anxiety and anger, which are emotions included in the original AEQ-T, will be replicated in the Asian contexts. Pride and frustration are not included as basic emotions and those need to be validated, which is a goal of the current study.

Methods

Participants

As the goal of this study is to validate the emotions of the original AEQ-T instrument (anxiety, enjoyment, and anger) cross culturally, especially to Asian cultures, while expanding to include frustration and pride, Japanese and Korean teacher samples were included, instead of using two samples from a single country. Although Japan and Korea share similar Asian cultural background, each country holds different values on educational systems and teachers' statuses in the society. For instance, Korean culture values higher education more than Japan. Consequently 92% of high school students pursue college degrees in Korea, while it is only 58% in Japan. Also, due to the recent earthquake in Japan in 2011, Japanese government has largely cut down teachers' salary and the public tends not to encourage their children to become teachers. Global Teacher Status Index Report (2013) showed that teacher status index ranking is 16.2 in Japan and 64 in Korea, where 100 is the highest score. Thus, by investigating the revised AEQ-T scale for Japanese and Korean teachers, we could explore if the teachers' emotions in the scale were generalizable in different cultures.

Japanese sample. The Japanese sample consisted of 150 school teachers. There were 87 male and 58 female teachers. Five teachers did not specify their gender. The mean years of teaching experience was 16.79. Among them, 25.3% of the teachers (N=38) was from elementary school, 26.7% of the teachers (N=40) was from junior high school, and 32.0% of the teachers (N=48) was from high school. 13 teachers taught across grades 7 to 16. 11 teachers did not specify their grade level(s).

Korean sample. The Korean sample consisted of 208 school teachers. There were 45 male and 163 female with the mean years of teaching experience 14.85. Among them, 32.2% of the teachers (N=67) were from elementary school, 28.8% of the teachers (N=60) were from junior high school, and 38.5% of the teachers (N=80) were from high school. One teacher did not provide grade level information.

Instruments

The revised AEQ-T consisted of a total of 20 items including four items for each of the five emotions (enjoyment, anger, anxiety, pride, and frustration) with a 4-point likert scale ranging from 1 (strongly disagree) to 4 (strongly

agree). Based on the English version of the original AEQ-T (Frenzel et al., 2010), an expert panel consisted of three renowned scholars in the field of teacher emotion research and the researchers of this project were first asked to independently review each item of the AEQ-T for its relevance, clarity, and importance. Once the individual reviews were completed, the expert panel and researchers discussed each item in depth by triangulating various literature sources addressed above. Through the review and discussion processes, original items of AEQ-T were revised and new items were added as well. One enjoyment item, "I generally have so much fun teaching that I gladly prepare and teach my lessons" was revised to "I generally have fun preparing my lessons", in order to avoid complicated expression. Also, one anger item, "Teaching generally frustrates me" was removed and replaced to "Some days teaching just infuriates me", because the original item reflects frustration, not anger.

In terms of the frustration emotion, the removed anger item from AEQ-T ("Teaching generally frustrates me") was added to the frustration section. One frustration item ("Getting students to engage with learning is frustrating") was adopted from Trigwell's (2012) Emotions in Teaching Inventory (ETI). The other two frustration items ("I often feel frustrated while working with students" & "I think generally, frustration is a part of being a teacher") were developed through the ongoing discussions with the expert panel. For the pride emotion, three items were adopted from Trigwell's (2012) Emotions in Teaching Inventory (ETI): "I am proud of the way I am teaching", "I get a feeling of pride as a result of my work", and "I feel proud of the way I prepare for my teaching." One pride item ("Thinking about my success as a teacher makes me feel proud") was developed through the discussion with the expert panel.

The original AEQ-T consisted of two sets of scales for three emotions: (1) General emotions related to overall teaching experiences (e.g., "I generally enjoy teaching."), and (2) Group-specific emotions related to teaching a specific class (e.g., "I enjoy teaching these students."). In this study we adopted the general emotion section, as secondary school teachers often teach more than one class. Asking general emotions is more appropriate to obtain a comprehensive understanding about their emotional experiences.

In order to test convergent validity, Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Hoy, 2001) that was validated for measurement invariance for three Asian countries: China, Korea, and Japan and reduced to 9-items (Ruan et al., 2015) was used. The reduced TSES consisted of three sub-scales (efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement), including three items for each sub-scale. All items were measured on a nine-point likert scale ranging from 1 (nothing) to 9 (a great deal).

Teachers' Career Satisfaction Survey (TCSS) developed by the International Association for the Evaluation of Educational Achievement (2011) was also used for convergent validity test. Most teacher job satisfaction instruments, including Teaching Satisfaction Survey by Ho and Au (2006), were constructed and validated using teacher samples from a single country, which have potential limitations due to their specific cultural and national contexts. TCSS was developed by a large team of experts and researchers from multiple countries, and it was field tested for validity and reliability check. TCSS has been adopted for international research projects such as Progress in International Reading Literacy Study (PIRLs) and Trends in International Mathematics and Science Study (TIMSS) assessments (Martin & Mullis, n.d.). Since this study involves teachers from more than one country, TCSS is an optimal instrument to measure teacher satisfaction. TCSS was designed to measure teachers' overall job satisfaction and consisted of 6 items with a four-point likert scale ranging from 1 (agree a lot) to 4 (disagree a lot).

All three instruments were translated from English into Japanese and Korean through translation and back-translation procedure (Sperber, Devellis, & Boehlecke, 1994), and then validated its comparability and interpretability by another expert panel group consisting of Japanese and Korean scholars who are fluent in both English and the target language for translation. Also, the translated version was pilot tested with a small group of teachers in each country to ensure that items were culturally appropriate and easy to understand.

Data Analysis

In alignment with the rational-empirical strategy of test construction (Butcher, 2000; Pekrun et al., 2004; Schwartz, 1978), theory was implemented to aid the design of the revised AEQ-T, followed by an empirical analysis of the psychometric properties. To empirically examine the revised AEQ-T, the instrument was tested for internal consistency first, and then investigated using exploratory factor analysis (EFA) with the Japanese sample. After initially developing the instrument, it was validated with the Korean sample using confirmatory factor analysis (CFA). Also, convergent validity was tested using correlations with Teachers' Sense of Self-Efficacy Scale (TSES) and Teacher Career Satisfaction Survey (TCSS). CFA was performed using AMOS and the remaining statistical analyses were performed using SPSS.

Results

Internal Consistency

First, we examined reliability estimates of the revised AEQ-T that includes five emotions for both countries. For the Japanese sample, four emotions showed acceptable level of internal consistency with alpha coefficients of .85 (anxiety), .79 (pride), .78 (enjoyment), and .71 (anger). One anger item ("I often feel annoyed while teaching.") was deleted, as alpha coefficient was increased when the item was deleted. The Korean sample also showed acceptable level of internal consistency for the four emotions: .72 (anxiety), .76 (pride), .72 (enjoyment), and .78 (anger). Again, the same item from anger was deleted, as it lowered reliability. For both countries, frustration items showed low reliability ($r = .41$ for Japanese sample, $r = .63$ for Korean sample).

Exploratory Factor Analysis for Japanese Sample

Using the revised AEQ-T that has 20 items with five emotions, a series of exploratory factor analysis (EFA) were performed on Japanese sample. EFA was used as it can determine the number of factors and identify the items

that have cross-loadings or misloadings in other factors. A principal axis factor analysis with promax rotation was used. The initial run resulted in a five-factor solution, but the scree plot provided evidence for four-factor solution, and the five items either failed to load substantially on one factor, or loaded strongly on two factors. Three frustration items were cross-loaded with anger items; one frustration item was not loaded in any factor substantially. Also, one anger item ("I often feel annoyed while teaching.") that lowered reliability was cross-loaded. We deleted those five items and attempted to derive a new solution based on the remaining 15 items. The second run resulted in a clear four-factor solution based on an examination of the scree plot and eigenvalues. The four factors have eigenvalues of more than 1 and accounted for 66.90% of the total variance. The EFA results on factor loading for each item and Cronbach's α coefficient for each sub-scale after removing the five items are presented in Table 1.

Table 1
Exploratory Factor Analysis Results for Factor Loading on the Revised AEQ-T Scale (Japanese Sample)

Sub-scale and Item	Factor Loading			
Anxiety Cronbach's α = .85				
Preparing to teach often causes me to worry.	.958			
I feel uneasy when I think about teaching.	.879			
I generally feel tense and nervous while teaching.	.754			
I am often worried that my teaching isn't going so well.	.667			
Pride Cronbach's α = .79				
I feel proud of the way I prepare for my teaching.		.804		
I get a feeling of pride as a result of my work.		.790		
I am proud of the way I am teaching.		.734		
Thinking about my success as a teacher makes me feel proud.		.729		
Enjoyment Cronbach's α = .78				
I often have reasons to be happy while I teach.				.805
I generally have fun preparing my lessons.				.788
I generally enjoy teaching.				.786
I generally teach with enthusiasm.			.438	.514

Table 1. Continued

Sub-scale and Item	Factor Loading
Anger Cronbach's α = .71	
Sometimes I get really mad while I teach.	.878
I often have reasons to be angry while I teach.	.818
Some days teaching just infuriates me.	.702

Note: Factor loadings less than .3 were not shown in the table.

Convergent Validity for Japanese Sample

We tested concurrent validation processes where the new scale is correlated with other scales that are posited to have certain relationships. Such relationships are addressed next.

Teachers' sense of efficacy. Teachers' Sense of Efficacy Scale (TSES) developed by Tschannen-Moran and Hoy (2001) and revised by Ruan and her colleagues (2015) for Asian samples was used to test convergent validity. A positive relationship was predicted between scores on the TSES and positive emotions of enjoyment and pride from the revised AEQ-T. Also, a negative relationship was predicted between the TSES and negative emotions of anger and anxiety. As shown in Table 2, both predictions were confirmed.

Teachers' career satisfaction. Teachers' Career Satisfaction Survey (TCSS) developed by the International Association for the Evaluation of Educational Achievement (2011) and tested for Asian samples (Ruan et al., 2015) was used. A positive relationship was predicted between scores on the TCSS and positive emotions of enjoyment and pride from the revised AEQ-T. Also, a negative relationship was predicted between the TCSS and negative emotions of anger and anxiety. Table 2 also shows that the predictions were confirmed.

Table 2
Convergent Validity (Japanese Sample)

	Teachers' Career Satisfaction	Teachers' Sense of Self-Efficacy
Anxiety	-.340**	-.526**
Enjoyment	.547**	.255**
Pride	.545**	.538**
Anger	-.141*	-.332**

Note: **p<.01, * p<.05

Cross-Validation with Korean Sample

The 15-item version of AEQ-T was further cross-validated with Korean sample. The Confirmatory Factor Analysis (CFA) was used to test the fit between the EFA-derived factors and items in an independent sample of Korean teachers. The four-factor model provided a good data-model fit, X^2=145.7, *df* =79, *p*<.001, TLI=.900, CFI=.934, RMSEA=.064. The CFA results on factor loading for each item and Cronbach's α coefficient for each sub-scale are presented in Table 3.

Table 3
Confirmatory Factor Analysis Results for Factor Loading on the Revised AEQ-T Scale (Korean Sample)

Sub-scale and Item	Factor Loading
Anxiety Cronbach's α = .72	
Preparing to teach often causes me to worry.	.515
I feel uneasy when I think about teaching.	.805
I generally feel tense and nervous while teaching.	.610
I am often worried that my teaching isn't going so well.	.421
Pride Cronbach's α = .76	
I feel proud of the way I prepare for my teaching.	.616
I get a feeling of pride as a result of my work.	.784
I am proud of the way I am teaching.	.530
Thinking about my success as a teacher makes me feel proud.	.665
Enjoyment Cronbach's α = .72	
I often have reasons to be happy while I teach.	.422

Table 3. Continued

Sub-scale and Item	Factor Loading
I generally enjoy teaching.	.774
I generally have fun preparing my lessons.	.679
I generally teach with enthusiasm.	.581
Anger Cronbach's α = .78	
Sometimes I get really mad while I teach.	.834
I often have reasons to be angry while I teach.	.806
Some days teaching just infuriates me.	.556

Note: Factor loadings less than .3 were not shown in the table.

The same convergent validity tests were performed on Korean sample. As expected, both Teachers' Sense of Efficacy Scale (TSES) and Teachers' Career Satisfaction Survey (TCSS) were positively correlated with positive emotions of enjoyment and pride, and negatively correlated with anger and anxiety. The correlation results are presented in Table 4.

Table 4
Convergent Validity (Korean Sample)

	Teachers' Career Satisfaction	Teachers' Sense of Self-Efficacy
Anxiety	-.215**	-.362**
Enjoyment	.500**	.453**
Pride	.415**	.449**
Anger	-.353**	-.457**

Note: **$p<.01$

Discussion

The findings of this study contribute to the field by providing empirical evidences that the three emotions included in the original AEQ-T (enjoyment, anger, and anxiety) are replicated with Asian teachers. Also, another positive emotion, pride, needs to be added to measure discrete emotions of teachers more comprehensively.

However, unlike our prediction, frustration did not demonstrate good internal consistency and did not emerge as a factor. The fact that most of the frustration items were cross-loaded with anger items suggests the need to

further investigate the nature of frustration and anger, and the differences between the two. Despite the theoretical distinction between frustration and anger and Sutton's (2004) empirical data, her other study (Sutton, 2007) also showed that teachers experienced frustration and anger simultaneously for 17% of the episodes they reported. Also, the teachers reported no significant difference between frustration and anger in terms of bodily responses, intrusive thoughts, and coping strategies. This indicates the inconsistent findings and lack of empirical evidences to distinguish anger and frustration. As we discussed earlier, theoretical rationale cannot hold its truth and validity without empirical evidences. Thus, future research needs to further explore how teachers perceive and experience frustration and anger, and what the similarities and differences are between the two.

Also, it is important to note that anger can turn into frustration, as the teacher realizes low controllability after repeated failure to change or improve the situation (Chang, 2009). Given the fact that one incident can invoke both anger and frustration depending on how the teachers exercises agency, frustration items need to focus on the controllability aspect. Currently, frustration items were not worded in a way to capture these key features of circumstance-caused challenges and low controllability. Items were targeted to measure general frustration experience without emphasizing the key nature of frustration (e.g., "Teaching generally frustrates me.", "I often feel frustrated while working with students."). Frustration items need to be better worded in a way to include those distinctive aspects of frustration (e.g., "Teaching generally frustrates me, as I cannot control certain aspect of teaching." or "I often feel frustrated when I repeatedly fail at achieving my goals."). Future research needs to revise frustration items and test them empirically.

One of the major contributions of this study is to provide empirical evidence to include pride in measuring teachers' discrete emotions. Pride has been recognized as a universal and distinctive emotion observed in various cultures and environments (Tracy & Robins, 2004, 2007). In particular, several studies have shown that pride is a highly relevant emotion that teachers experience frequently (e.g., Becker, 2011; Carson, 2007; Frenzel, 2014). Carson's (2006) study found that pride is the second most frequent emotion, as students' progress and accomplishments often result in teachers'

feelings of pride (Keller, Frenzel, Goetz, Pekrun, & Hensley, 2014). Pride also functions to increase self-esteem and adaptive behaviors, and promotes an individual's social status and group acceptance (Hart & Matsuba, 2007; Leary, Tambor, Terdal, & Downs, 1995). Thus, pride is an important emotion especially for novice teachers who are in the critical stage of developing a sense of teacher identity and belonging to the professional community. As we addressed previously, pride is elicited when teachers make internal, unstable, and controllable attribution beliefs on positive outcomes such as students' learning, achievement, or prosocial behaviors (Lewis, 2000; Smith & Lazarus, 1993; Weiner, 1985). This implies that it is important for school leaders and colleague teachers to provide concrete feedback on the teachers' instructional and interpersonal effort, so that teachers experience pride emotion, and develop self-representations and stronger sense of competence.

Despite this salience and importance of pride in teachers' emotions, the existing AEQ-T measure did not include pride. Indeed, our findings suggest that pride is a useful teacher emotion to measure in the classroom, which is in alignment with previous research (Trigwell, 2012; Trigwell & Prosser, 2004). Moving forward, we recommend that researchers include pride when assessing teacher emotions. Furthermore, teacher pride is a fruitful area of future research because few studies have explored this emotion in depth as it occurs in the classroom (Golby 1996; Trigwell & Prosser, 2004). Finally, given our conclusion that pride should be included when assessing teacher emotions, we suggest exploring the prevalence of other related teacher emotions such as hope, hopelessness, shame, and guilt.

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