

## TEACHER SELF-EFFICACY AND TEACHING PRACTICES IN THE HEALTH AND PHYSICAL EDUCATION CURRICULUM IN TAIWAN

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The purpose in this study was to confirm the relationship between teacher self-efficacy and teaching practices in the health and physical education (HPE) curriculum in Taiwan. We used stratified random sampling and cluster sampling methods to select 842 HPE teachers from elementary schools in Taiwan. They completed the Teacher Self-Efficacy Scale in HPE and the Teaching Practice Scale in HPE (Pan, 2006, 2007). Structural equation modeling was used to analyze the suitability of the hypothetical model. Results indicated that the model had acceptable goodness-of-fit and it was concluded that teachers' self-efficacy has a positive effect on teaching practices in HPE.

*Keywords:* teacher self-efficacy, teaching practices, health and physical education curriculum, elementary schools, Taiwan.

Professionalism in teachers has always been highly valued in the field of education, owing to its effect on teaching performance (Chen, 2006; Deglau & O'Sullivan, 2006; Gorozidis & Papaioannou, 2011). Teacher self-efficacy (TSE) is a kind of professionalism (Tsangaridou, 2006). *Self-efficacy* refers to “*beliefs in one's capabilities to organize and execute the course of action required to*

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*produce given attainments*” (Bandura, 1997, p. 3). “Efficacy beliefs influence how people feel, think, motivate themselves, and behave” (Bandura, 1993, p. 118). The importance of the role of self-efficacy in influencing individual behavior has also been confirmed in previous studies (Martin & Kulinna, 2003). In fact, numerous educational researchers view teacher self-efficacy as a major determinant of effective teaching (Martin, McCaughy, Hodges-Kulinna, & Cothran, 2008). A number of researchers have shown how teachers’ self-efficacy influences students’ learning achievement in school (Muijs & Reynolds, 2002; Shidler, 2009; Tschannen-Moran & Woolfolk Hoy, 2001). In other words, TSE is one of the most important characteristics of a professional teacher.

Recently, researchers have begun to focus on professional teaching practices, owing to the important role they play in enhancing professionalism in teachers (Deglau & O’Sullivan, 2006). Teachers should be more successful when they have high levels of self-efficacy, leading them to feel positive about their career (Erdem & Demirel, 2007). Efficacy beliefs influence teachers’ persistence and resilience in the face of setbacks (Tschannen-Moran & Woolfolk Hoy, 2001). In accordance with Bandura’s (1986) social cognitive theory, TSE is a crucial factor that affects teaching behavior; for example, teachers with higher efficacy tend to exhibit more creative and quality teaching methods compared to those with lower TSE (Bandura, 1993). TSE is a theoretical concept that is difficult to define and often varies depending on the educational setting (Bandura, 1997). Despite this, researchers have generally accepted the value of TSE in influencing the desired outcome from students’ performance, behavior, and motivation in the classroom (Tschannen-Moran & Woolfolk Hoy, 2001). For example, Gorozidis and Papaioannou (2011) found in their study of the TSE of 290 Greek junior high school physical education teachers that highly self-efficacious teachers had a positive attitude toward the physical education curriculum, implemented the highest number of teaching plans, and intended to continue their current efforts in the future. Teachers with high levels of self-efficacy are more likely to implement didactic innovations in the classroom, use classroom management approaches and teaching methods that allow students more autonomy and teachers less custodial control, take responsibility for students with special learning needs, manage classroom problems, and keep students interested in learning (Guskey & Passaro, 1994). Teachers with a strong sense of self-efficacy demonstrate excellent teaching skills, which include implementing interesting teaching activities, creating a good learning atmosphere, and providing an appropriate evaluation of learning. They are more committed to their professional development, and are more likely to positively influence their teaching practices and students’ performance (Allinder, 1994; Chacón, 2005). They use multiple strategies to keep students engaged in their learning, and use active and progressive methods (e.g., creating a supportive learning environment) when

interacting with students (Bordelon, Phillips, Parkison, Thomas, & Howell, 2012; Chacón, 2005; Gorozidis & Papaionnou, 2011). Gibson and Dembo (1984) also found a significant relationship between TSE and the teaching methods used. Pajares (1992) found that teachers' beliefs are considered to play an important part in their perceptions and judgments, which with interpretations they make in their work every day (Tsangaridou, 2006), are the primary determinants of practical professional teaching behavior. Recent findings showed that teachers' self-efficacy beliefs played a crucial role in affecting and sustaining their commitment to their teaching practices, and job satisfaction (Caprara, Barbaranelli, Borgogni, & Steca, 2003). Recently, Bordelon et al. (2012) showed in a study about the influence of TSE on students' performance that TSE has a positive influence on students' behavior. In addition, such high self-efficacy teachers may gain better results from low achievement students, and compensate for students' negative home experiences through good teaching.

The physical education curriculum in schools plays a key role in ensuring that students reach their desired levels of physical activity. The National Association of Sport and Physical Education (NASPE) established recommendations for the amount of school-based physical education (SBPE) instructional time in its 2010 Guidelines for Quality Physical Education, in which it is stated that "children must be provided with opportunities to learn, which necessitates at least 150 minutes per week of SBPE instruction at the elementary school level" (McCullick et al., 2012, p. 201). Physical education teachers play a vital role in helping students develop the behaviors, attitudes, skills, and knowledge that are needed to maintain physical activity throughout their lives (Martin et al., 2008). In Taiwan, the elementary school curriculum was most recently revised in 2001, when health education and physical education were combined to become the health and physical education (HPE) curriculum. Nowadays, this curriculum is noticeably different from the traditional physical education curriculum. The emphasis is now on promoting and maintaining students' fitness, as well as improving their overall well-being. Few researchers have examined the self-efficacy of physical education teachers, and Martin and Kulinna (2003) found no existing research on physical education TSE in relation to overcoming barriers to ensuring that students are physically active. We believed that teachers with high self-efficacy would have good teaching behaviors, use multiple strategies to keep students engaged in their learning, and demonstrate active and progressive methods (e.g., creating a supportive learning environment) in interacting with students. In summary, our main purpose was to investigate the relationship between TSE and teaching practices in HPE programs in elementary schools in Taiwan. We hypothesized that there would be a positive and significant relationship between the two variables.

## Method

### Participants and Procedure

We used stratified random sampling and cluster sampling to select 2,100 HPE teachers from 108 public and private elementary schools in Taiwan. Each teacher completed a questionnaire. There are three kinds of HPE teachers in Taiwan: health education teachers, physical education teachers, and health and physical education teachers. The scales used in this study were designed for HPE teachers who teach both health and physical education. Instructors who teach only health or physical education and those who could not complete the questionnaires were excluded. Ultimately, 842 valid questionnaires were returned, for a total response rate of 40.10%. Of these, 156 were from male and 686 from female teachers, with a mean age of 38.32 years ( $SD = 3.62$ ).

The first author mailed questionnaires to schools with a request that they be distributed to each HPE teacher. The questionnaires were accompanied by a consent form in which the nature of the study was explained and teachers were assured that their answers were confidential and that there was no correct answer to the survey questions. We asked the teachers to answer based on their own views and opinions. The questionnaire took an average of 10 minutes to complete.

### Measures

The questionnaires comprised the Teacher Self-Efficacy Scale for Health and Physical Education Teachers (TSES–HPE; Pan, 2006) and the Teaching Practice Scale for Health and Physical Education Teachers (TPS–HPE; Pan, 2007). Answers were given on a 6-point Likert scale ranging from 1 (*completely disagree*) to 6 (*completely agree*).

**Teacher Self-Efficacy Scale for Health and Physical Education Teachers (TSES–HPE).** This scale has two dimensions, each with eight items: personal teaching efficacy (PTE) and general teaching efficacy (GTE). PTE is the level of confidence that teachers have of their teaching skills and their awareness of the improvements made by students within the HSE curriculum. An example of a PTE item is: “I am able to teach ball games such as basketball and soccer”. GTE refers to teachers’ expectations of how students could improve their HPE skills despite external environmental influences, for example, a lack of funding meaning that facilities are inadequate. An example of a GTE item is: “Even if the school’s facilities are inadequate, I can use other teaching resources to effectively develop students’ motor skills”. The results of confirmatory factor analysis (CFA) showed that the TSES–HPE met acceptable fit criteria,  $\chi^2(103) = 244.03$ ,  $p < .05$ , RMSEA = .02, GFI = .98, AGFI = .98, NFI = .90, CFI = .99, RMR = .04, SRMR = .03. Composite reliability (CR) values were .93 and .91.

Convergent validity was considered acceptable as the average variance extracted (AVE) values were .63 and .57. Discriminant validity was also acceptable as the confidence interval of the correlation coefficient of this parameter was between .44 and .58. Therefore, it was concluded that the TSES–HPE was both reliable and valid.

**Teaching Practice Scale for Health and Physical Education Teachers (TPS–HPE).** This scale has four dimensions: teaching preparation, teaching content, teaching strategy, and teaching evaluation. Teaching preparation relates to how a teacher prepares for a teaching activity. An example item is: “I always prepare appropriate equipment before teaching activities”. Teaching content deals with how a teacher approaches HPE curricular content, including fitness activity, sport, and health knowledge and behavior. An example of a teaching content item is: “I always attempt to improve my pupils’ physical fitness through physical education”. Teaching strategy reflects how teachers apply creative, varied, and appropriate strategies to improve learning. An example item is: “I always guide students to learn a new lesson based on the level of their own ability”. Teaching evaluation covers how teachers assess pupils’ learning results to understand their own teaching performance. An example item is: “I always practice learning assessment in each unit of health and physical education”. The CFA results showed that the TPS–HPE had acceptable fit criteria,  $\chi^2(203) = 490.19, p < .05$ , RMSEA = .04, GFI = .98, AGFI = .97, NFI = .93, CFI = .99, RMR = .04, SRMR = .03. CR values were .88, .94, .83, and .86. Convergent validity was considered acceptable as the AVE values were .59, .67, .51, and .55. Discriminant validity was also acceptable as the confidence interval of the correlation coefficient of each parameter ranged between .50 and .75. In sum, the TPS–HPE was both reliable and valid and suitable for use with samples of HPE teachers in Taiwan.

## Results

LISREL version 8.8 was used to analyze the suitability of the hypothetical model in this study. The skewness (.22~.44) and kurtosis (.01~.17) of observed indicators and parameters were within the acceptable range of  $\pm 1.96$ . This means that the samples had no marginal value and were normally distributed because they were selected using random sampling. The correlation matrix of the samples observed, with significant correlations among the observed variables, is shown in Table 1. Firstly, a measurement model analysis was performed to test the factor structure of the two scales. In Table 2 it can be seen that the parameter estimates between the indicators and latent variables were .54, including  $\lambda_{(x1)11}$  and  $\lambda_{(y1)11}$ , for the TSES–HPE, and ranged from .52 to .62, including  $\lambda_{(y1)11}$ ,  $\lambda_{(y2)21}$ ,  $\lambda_{(y3)31}$ , and  $\lambda_{(y4)41}$ , for the TPS–HPE. The errors of measurement ranged from .12 to .17, including  $\delta_1$  and  $\delta_2$ , for the TSES–HPE, and ranged from .12

to .23, including  $\varepsilon_1$ ,  $\varepsilon_2$ ,  $\varepsilon_3$ , and  $\varepsilon_4$ , for the TPS–HPE. All parameters reached a significant level in the measurement model. Secondly, a structural model analysis was performed to test the hypothesis. The hypothetical model had acceptable fit criteria,  $\chi^2(8) = 16.61$  ( $p > .05$ ), RMSEA = .04, GFI = .99; AGFI = .98, NFI = .99, CFI = 1.00, RMR = .01, SRMR = .01. The fit index was used to determine the suitability of the measured model. If the value of  $\chi^2$  is not significant, the goodness-of-fit index is well within the acceptable range for this model (Jöreskog & Sörbom, 1993; Raines-Eudy, 2000). Because the  $\chi^2$  value was not significant in this study, the model has acceptable fit criteria. The other indices also showed that the data adequately fit the hypothetical model (see Table 2): RMSEA (.04) was smaller than .10; GFI (.99) was greater than .90; AGFI (.98) was greater than .90; NFI (.99) was greater than .90; CFI (1.00) was greater than .90; RMR (.01) was smaller than .05; SRMR (.01) was smaller than .05. These values are considered acceptable according to the criteria of Jöreskog and Sörbom (1993), thus indicating the validity of this model. It can be seen in Figure 1 that the path coefficient ( $\gamma_{11}$ ) from the latent  $\xi$  (teacher self-efficacy) to latent  $\eta$  (teaching practice) reached significance ( $\gamma_{11} = 0.88$ ,  $p < .05$ ). This result shows that TSE has a strong influence on teaching practice, explaining 77% of the total variance.

Table 1. *Correlation Matrix of Observed Variables*

	Personal teaching efficacy (PTE)	General teaching efficacy (GTE)	Teaching preparation (TP)	Curriculum content (CC)	Teaching strategy (TS)	Teaching evaluation (TE)
PTE	1.00					
GTE	.66*	1.00				
TP	.53*	.52*	1.00			
CC	.65*	.57*	.62*	1.00		
TS	.65*	.61*	.67*	.73*	1.00	
TE	.62*	.60*	.62*	.71*	.77*	1.00

Note. \*  $p < .05$ .

Table 2. *Parameter Estimates from the Standardized Solution*

Parameter	Parameter estimates	<i>t</i>
$\lambda_{(x1)11}$	.54*	27.75
$\lambda_{(x2)21}$	.54*	25.65
$\lambda_{(y1)11}$	.53*	14.94
$\lambda_{(y2)21}$	.52*	15.81
$\lambda_{(y3)31}$	.61*	16.19
$\lambda_{(y4)41}$	.62*	15.96
$\gamma_{11}$	.88*	12.66

Table 2 continued

Parameter	Parameter estimates	<i>t</i>
$\delta_1$	.12*	11.86
$\delta_2$	.17*	14.68
$\varepsilon_1$	.23*	18.30
$\varepsilon_2$	.12*	16.30
$\varepsilon_3$	.10*	13.56
$\varepsilon_4$	.15*	15.55
RMSEA	.04	
<i>p</i>	.81	
$\chi^2$	16.61	
GFI	.99	
AGFI	.98	
NFI	.99	
CFI	1.00	
RMR	.01	
Standardized RMR	.01	

Note. \*  $p < .05$ .

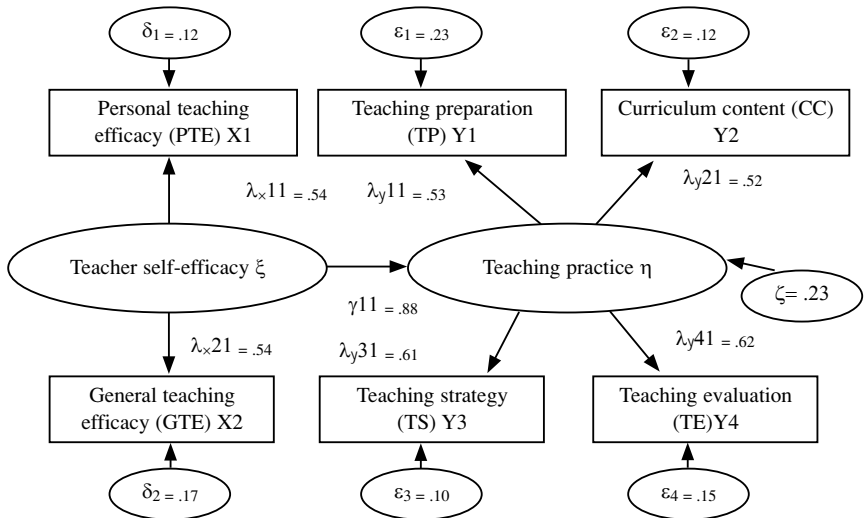


Figure 1. Parameter estimates of the hypothetical model.

## Discussion

Our results show that TSE had a positive influence on the teaching practices of HPE teachers. These findings are in accordance with Bandura's (1986) social cognitive theory and also those of Muijs and Reynolds (2002), who applied regression analysis to predict the effects of TSE on teaching practices. Li (1994) also indicated that TSE had a direct and positive relationship with teaching practices. In addition, a linear structure relation model was used to investigate the relationship of each potential variable in this study. We found that our prediction was in agreement with the results, that is, TSE is related to all four dimensions of teaching practice: teaching preparation, teaching content, teaching strategy, and teaching evaluation.

In terms of the relationship between TSE and teaching preparation, efficacious teachers expect success from themselves and their students (Shore, 2004). Teachers with higher self-efficacy spend more time and effort in preparation – for example, preparing equipment and planning learning objectives and content – than do teachers with lower self-efficacy, for the same curriculum (Gorozidis & Papaionnou, 2011). Teachers with high self-efficacy also consider students' basic learning abilities, motivations, and attitudes in designing a curriculum to effectively guide students in achieving their learning goals (Tschannen-Moran & Woolfolk Hoy, 2001).

In terms of the relationship between TSE and teaching content, Schempff (2008) indicated that the three key components of expertise are experience, knowledge, and skills. Generally speaking, high TSE teachers have more experience, knowledge, and skills than do low TSE teachers, and they are more able to guide students to learn beyond the basics included in the curriculum. For example, they help students acquire good attitudes about, and knowledge of, health-related concepts, including self-recognition, emotional management, interpersonal skills, and life values. They are also more able to teach students about ball games, track and field sports, and gymnastics, than are those with lower TSE.

In terms of the relationship between TSE and teaching strategy, it is important for teachers to choose instructional processes and strategies appropriate to their goals (Rink, 2010). Self-efficacious teachers have confidence in their strategies, are innovative in their pedagogical practices, manage their classrooms with a sense of purpose and control, and involve their students in democratic decision making (Shore, 2004). Some of their strategies include using multimedia aids, equipment, and facilities to implement activities. They guide students to learn lessons based on the level of their ability, and they develop different teaching strategies to guide students through each lesson.

In terms of the relationship between TSE and teaching evaluation, teachers with high self-efficacy evaluate their lessons to get a clear idea of students' performance. They may implement multiple techniques for every lesson, including observation, demonstration, oral testing, and profiling. In line with our findings, Chen (2006) also found that TSE affected the quality of teaching evaluation.

These findings show that TSE has a positive effect on teaching practices in HPE, which may be improved by enhancing TSE. This could be achieved by education administrators expanding the curriculum for in-service training and encouraging teachers to attend more symposia and workshops. The limitations in this study are that we employed only a hypothetical model and that the findings cannot be generalized beyond elementary schools because the participants were elementary HPE teachers. Further researchers could expand this study using a sample of high school physical education teachers to determine if the causal model still has a good level of fit. Also, the fit of the model should be verified with respect to other countries.

## References

- Allinder, R. (1994). The relationship between efficacy and the instructional practices of special education teachers and consultants. *Teacher Education and Special Education, 17*, 86-95. <http://doi.org/fv5jsd>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. New York: Prentice-Hall.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*, 117-148. <http://doi.org/fkhng6>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bordelon, T., Phillips, I., Parkison, P., Thomas, J., & Howell, C. (2012). Teacher efficacy: How teachers rate themselves and how students rate their teachers. *Action in Teacher Education, 34*, 14-25. <http://doi.org/jmp>
- Caprara, G. V., Barbaranelli, C., Borgogni, L., & Steca, P. (2003). Efficacy beliefs as determinants of teachers' job satisfaction. *Journal of Educational Psychology, 95*, 821-832. <http://doi.org/dkpw59>
- Chacón, C. T. (2005). Teachers' perceived efficacy among English as a foreign language teachers in middle schools in Venezuela. *Teaching and Teacher Education, 21*, 257-272. <http://doi.org/df5f97>
- Chen, W. (2006). Teachers' knowledge about and views of the National Standards for Physical Education. *Journal of Teaching in Physical Education, 25*, 120-142.
- Deglau, D., & O'Sullivan, M. (2006). The effects of a long-term professional development program on the beliefs and practices of experienced teachers. *Journal of Teaching in Physical Education, 25*, 379-396.
- Erdem, E., & Demirel, O. (2007). Teacher self-efficacy belief. *Social Behavior and Personality: An international journal, 35*, 573-586. <http://doi.org/dvb9jp>
- Gibson, S., & Dembo, M. H. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology, 76*, 569-582. <http://doi.org/bkbhpk>

- Grozeidis, G., & Papaioannou, A. (2011). Teachers' self-efficacy, achievement goals, attitudes and intentions to implement the new Greek physical education curriculum. *European Physical Education Review, 17*, 231-253. <http://doi.org/cjpn64>
- Guskey, T. R., & Passaro, P. D. (1994). Teacher efficacy: A study of construct dimensions. *American Educational Research Journal, 31*, 627-643. <http://doi.org/d2mx7f>
- Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Chicago, IL: Scientific Software International.
- Li, W.-C. (1994). Talking about class management based on teacher efficacy theory [In Chinese]. *The Journal of Student Counseling, 33*, 24-29.
- Martin, J. J., & Kulinna, P. H. (2003). The development of a physical education teachers' physical activity self-efficacy instrument. *Journal of Teaching in Physical Education, 22*, 219-232.
- Martin, J. J., Mccaughy, N., Hodges-Kulinna, P., & Cothran, D. (2008). The influences of professional development on teachers' self-efficacy toward educational change. *Physical Education and Sport Pedagogy, 13*, 171-190. <http://doi.org/bbzn4x>
- McCullick, B., Baker, T., Tomporowski, P., Templin, T., Lux, K., & Isaac, T. (2012). An analysis of state physical education policies. *Journal of Teaching in Physical Education, 31*, 200-210.
- Muijs, D., & Reynolds, D. (2002). Teachers' beliefs and behaviors: What really matters. *Journal of Classroom Interaction, 37*, 3-15.
- Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research, 62*, 307-332. <http://doi.org/dxhtbf>
- Pan, Y. I. (2006). *A study on the construct of the Teacher Self-Efficacy Scale for Health and Physical Education Teachers at elementary schools in Taiwan*. Paper presented at the AIESEP World Congress, 5-8 July, Jyväskylä, Finland.
- Pan, Y. I. (2007). *A study on the construct of the Teaching Practice Scale for Health and Physical Education Teachers at elementary schools in Taiwan*. Paper presented at the 12th European Congress of Sport Psychology, 4-9 September, Halkidiki, Greece.
- Raines-Eudy, R. (2000). Using structural equation modeling to test for differential reliability and validity: An empirical demonstration. *Structural Equation Modeling: A Multidisciplinary Journal, 7*, 124-141. <http://doi.org/cm2ftz>
- Rink, J. E. (2010). *Teaching physical education for learning* (6th ed.). Boston, MA: McGraw-Hill.
- Schempp, P. G. (2008). *5 steps to expert: How to go from business novice to elite performer*. Mountain View, CA: Davies-Black.
- Shidler, L. (2009). The impact of time spent coaching for teacher efficacy on student achievement. *Early Childhood Education Journal, 36*, 453-460. <http://doi.org/bpw8fc>
- Shore, J. (2004). Teacher education and multiple intelligences: A case study of multiple intelligences and teacher efficacy in two teacher preparation courses. *Teachers College Record, 106*, 112-139.
- Tsangaridou, N. (2006). Teachers' beliefs. In D. Kirk, D. Macdonald, & M. O'Sullivan (Eds.), *The handbook of physical education* (pp. 487-501). Thousand Oaks, CA: Sage.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*, 783-805. <http://doi.org/dc3g4h>