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ABSTRACT

This study tested the factorial validity of the Teacher Interpersonal Self-Efficacy Scale, which measures teachers' self-efficacy beliefs regarding the interpersonal domain of their functioning. The scale includes three subscales to assess teacher perceived self-efficacy in (1) managing student behavior in the classroom, (2) eliciting support from colleagues, and (3) eliciting support from principals. Following self-efficacy theory, which posits that self-efficacy beliefs are linked to specific activities, it was hypothesized that the three Teacher Interpersonal Self-Efficacy Subscales comprised three different activities linked to teacher self-efficacy beliefs. Confirmatory factory analysis confirmed the hypothesis by showing an adequate fit of the three-factor oblique model, the model in which the items of the three subscales were allowed to load on their respective factors. Since the fit of the three-factor oblique model was significantly better than both the two-factor model and the one-factor model, the researchers conclude that teachers' self-efficacy beliefs differ for the three activities measured (managing student behavior, eliciting support from colleagues, and eliciting support from principals). They conclude that the Teacher Interpersonal Self-Efficacy Scale is a reliable and a factorially valid measurement to assess teachers' beliefs about their abilities to acquire and maintain easy, pleasant, and helpful working relationships. (Contains 43 references.) (SM)

The Factorial Validity of the Teacher Interpersonal Self-Efficacy Scale

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Abstract

This study tested the factorial validity of the Teacher Interpersonal Self-Efficacy Scale. The Teacher Interpersonal Self-Efficacy Scale measures teachers' self-efficacy beliefs with respect to the interpersonal domain of their functioning. The scale consists of three subscales to assess (1) teacher perceived self-efficacy in managing student behavior in the classroom, (2) teacher perceived self-efficacy in eliciting support from colleagues, and (3) teacher perceived self-efficacy in eliciting support from school principals. Following self-efficacy theory, which posits that self-efficacy beliefs are linked to specific activities, it was hypothesized that the three Teacher Interpersonal Self-Efficacy Subscales comprised three different activities linked to teacher self-efficacy beliefs. Confirmatory factor analysis confirmed the hypothesis by showing an adequate fit of the three-factor oblique model, the model in which the items of the three subscales were allowed to load on their respective factors. Since the fit of the three-factor oblique model was significantly better than both the two-factor model and the one-factor model, it could be stated that teachers' self-efficacy beliefs differ to some extent for the three activities measured, i.e. managing student behavior, eliciting support from colleagues, and eliciting support from principals. It was concluded that the Teacher Interpersonal Self-Efficacy Scale is a reliable and a factorially valid measurement to assess teachers' beliefs about their abilities to acquire and maintain easy, pleasant, and helpful working relationships.

The Factorial Validity of the

Teacher Interpersonal Self-Efficacy Scale

Introduction

The psychological literature devotes a great deal of attention to the concept of teacher efficacy. In a review of virtually all sources dated between 1974 and 1997 that used the term teacher efficacy, Tschannen-Moran, Woolfolk-Hoy, and Hoy (1998) identified over a hundred articles, conference papers, and books that refer somehow or other to teacher efficacy. In the course of time the concept of teacher efficacy has been connected with a multitude of critically important educational variables, such as student achievement and motivation (Bergman, McLaughlin, Bass, Pauly, & Zellman, 1977; Moore & Esselman, 1992), student self-esteem and prosocial attitudes (Borton, 1991; Cheung & Cheng, 1997), school effectiveness (Hoy & Woolfolk, 1993), teachers' adoption of innovations (Fuchs, Fuchs, & Bishop, 1992), the success of program implementation (Guskey, 1988), teachers' referral decisions for special education (Meijer & Foster, 1988; Soodak & Podell, 1993), teachers' professional commitment (Coladarci, 1992), teachers' classroom management strategies (Woolfolk, Rosoff, & Hoy, 1990), teacher absenteeism (Imants & Van Zoelen, 1995), and teacher stress and burnout (Bliss & Finneran, 1991; Brissie, Hoover-Dempsey, & Bassler, 1988; Parkey, Greenwood, Olejnik, & Proller, 1988).

Perceived teacher efficacy has been defined as "the extent to which the teacher believes he or she has the capacity to affect student performance" (Bergman, et al., p. 137), or as "teachers' belief or conviction that they can influence how well students learn, even those who may be difficult or unmotivated" (Guskey & Parraro, 1994, p. 4). Tschannen-Moran, et al. (1998) identified two strands of research into the concept of teacher efficacy. One is grounded in Rotter's social learning theory of internal versus external control (Rotter, 1966). Teachers who believe that they are competent to teach difficult or unmotivated students were

considered to have internal control, whereas teachers who believe that the environment has more influence on student learning than their own teaching abilities were considered to have external control. The RAND organization, which first conducted research on teacher efficacy, developed two items to measure a teacher's locus of control (Armor, Conroy-Oseguera, Cox, King, McDonnell, Pascal, Pauly, & Zellman, 1976). The statement that indicates that environmental factors overwhelm a teacher's power to influence student learning was labeled "general teaching efficacy". The other, labeled "personal teaching efficacy", indicates the importance of a teacher's abilities to overcome factors that could make learning difficult for students. In the course of time several other instruments were developed to measure teacher efficacy in the Rotter tradition, including Teacher Locus of Control (Rose & Medway, 1981), Responsibility for Student Achievement (Guskey, 1981), and the Webb Efficacy Scale (Ashton, Olejnik, Crocker, & McAuliffe, 1982).

The other strand of research on teacher efficacy was grounded in Bandura's social cognitive theory and his construct of self-efficacy. Bandura (1997) described perceived self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Teachers who believe that they are competent to teach their students were considered to have strong self-efficacy beliefs in teaching, whereas teachers who doubt their ability in this respect were considered to have weak self-efficacy beliefs in teaching. Several measures grew out of this tradition, including the Teacher Efficacy Scale (Gibson & Dembo, 1984), the Science Teaching Efficacy Belief Instrument (Riggs & Enochs, 1990), the Ashton Vignettes (Ashton, Buhr, & Crocker, 1984), and the Teacher Self-Efficacy Scale (Bandura, 1990).

In a review of the concept of teacher efficacy, Ross (1998) stated that almost half of the studies conducted up to 1998 measured teacher efficacy with Gibson and Dembo's (1984) Teacher Efficacy Scale, or adaptations of their scale. The Teacher Efficacy Scale can be

regarded as a standard measurement instrument of teacher efficacy. In the development of the Teacher Efficacy Scale, Gibson and Dembo (1984) assumed that two different dimensions underlie the teacher efficacy construct. One dimension, labeled "General Teaching Efficacy", refers to the ability beliefs of teachers in general to influence their students learning process positively in the face of external restraints such as family background. The other dimension, labeled "Personal Teaching Efficacy", refers to teacher's beliefs in his or her own abilities to teach students something.

A characteristic of many measurement instruments of teacher efficacy, including the Teacher Efficacy Scale, is that they assess teachers' ability beliefs about their functioning in general rather than teachers' beliefs in their ability to perform specific tasks. This is problematic, since self-efficacy theory posits that self-efficacy beliefs are quite likely to differ among specific domains of activities (Bandura, 1997). For example, teachers may feel themselves quite competent at drafting a test to assess their students' progress accurately, but at the same time they may doubt their abilities to maintain an easy and orderly learning environment.

Cherniss (1993) posits three different domains of activity to be examined when studying professionals' self-efficacy beliefs: (1) the task domain, (2) the interpersonal domain, and (3) the organizational domain. The task domain concerns the technical aspects of the professional role. In the case of teachers, it relates to activities also covered by the Teacher Efficacy Scale (Gibson & Dembo, 1984), such as preparing and delivering lessons, correcting student performance, and motivating student effort. The organizational domain concerns political aspects of the professional role, i.e. activities to influence the political forces within the organization. The interpersonal domain contains activities directed to acquiring and maintaining easy, pleasant, and helpful relationships with recipients, clients, or students, and members of the organization, i.e. co-workers and supervisors.

This study presents an instrument for measuring teachers' self-efficacy beliefs within the interpersonal domain of their functioning, labeled the Teacher Interpersonal Self-Efficacy Scale. Within the interpersonal domain, teachers' activities can be specified to (1) the kind of persons with whom teachers interact, i.e. students, colleagues, and school principals, and (2) the aim that underlies teachers' interactions with others. Since the nature of teachers' interactions with others depends on whether these others are students, colleagues, or principals, the defined interpersonal activities of the measurement instrument presented are related to both the kind of persons with whom teachers interact and the aim that underlies these interactions.

The measurement instrument presented consists of the following three interpersonal activities of teachers: (1) managing student behavior in the classroom, (2) eliciting collegial support, and (3) eliciting principals' support. The items developed by Emmer and Hickman (1991) were used to measure teachers' perceived self-efficacy in managing student behavior and were grouped in a subscale labeled "Perceived Self-Efficacy in Classroom Management". The items were derived from current conceptualizations of classroom management and refer to teachers' confidence in their capabilities to manage student behavior to achieve order and cooperation in the classroom (Doyle, 1986). The items are focused on behavioral outcomes of teachers' behavior that are not immediately linked to student learning. Emmer and Hickman's (1991) findings indicated that their Perceived Self-Efficacy in Classroom Management Scale is factorially distinct from the subscales of Gibson and Dembo's (1984) Teacher Efficacy Scale, labeled "Personal Teaching Efficacy" and "General Teaching Efficacy".

The Perceived Self-Efficacy in Eliciting Support from Colleagues Subscale and the Perceived Self-Efficacy in Eliciting Support from Principals Subscale were developed by the authors of this study, who got their inspiration in part from the work of Riemsma, Elving, Taal, and Boer (1998), the first one's who attempted to develop such a measurement

instrument. The items were derived from current conceptualizations of receiving and acquiring emotional and instrumental support (Cohen, 1988), and refer to teachers' confidence in their capabilities to elicit from the school team, i.e. colleagues and principals, the support they needed. The items were formulated following the recommendations of Forsyth and Cary (1998), who stated that a self-efficacy measurement instrument should contain items that show mutual gradations in conditions and specificity of the activities concerned.

The present study tested the hypothesis that the three Teacher Interpersonal Self-Efficacy Subscales comprised three different activities linked to teacher self-efficacy beliefs, i.e. (1) managing student behavior in the classroom, (2) eliciting collegial support, and (3) eliciting principals' support. Based on Bandura's self-efficacy theory, which posits that self-efficacy beliefs are linked to specific activities rather than referring to a global personality trait, it was assumed that a three-factor model in which the items of the three subscales were allowed to load on their respective factors fitted the data better than either a one-factor model (a model in which the three subscales represent one factor) or a two-factor oblique model (a model in which the self-efficacy belief regarding (1) managing student behavior and (2) eliciting colleagues' and principals' support each represents one factor, with the two factors being interconnected).

Method

Participants

Participants in the study were a sample of 832 teachers working in secondary (vocational) schools. 540 of the participants were male (65%) and 292 were female (35%) teachers. Their average age was 45.15 years (SD = 8.90) with a range of 21 to 62 years. The average teaching experience was 19.69 years (SD = 9.80) with a range of 0 to 39 years.

Measure

Teacher Interpersonal Self-Efficacy Scale. The Teacher Interpersonal Self-Efficacy Scale was employed to assess teachers' confidence in their abilities (1) to manage student behavior in the classroom, (2) to elicit support from colleagues, and (3) to elicit support from school principals. Based on the three interpersonal self-efficacy activities, the items were grouped into three subscales: (1) Perceived Self-Efficacy in Classroom Management (14 items), (2) Perceived Self-Efficacy to Elicit Support from Colleagues (5 items), and (3) Perceived Self-Efficacy to Elicit Support from Principals (5 items). The items were measured on a 6-point Likert scale with a strongly agree/strongly disagree response format.

Procedure

The principals of randomly selected schools were asked to cooperate and were mailed questionnaires along with a request to hand out the questionnaires to every teacher in their school accompanied by a letter explaining the nature and general aim of the study. Follow-up letters were mailed to them about three weeks later.

Analysis

For purposes of cross-validation, the completed questionnaires were randomly split into two halves (Cudeck & Browne, 1983). One half comprised the calibration sample, the other half the validation sample. Data were subsequently analyzed in three steps (Byrne, 1991).

The first step comprised confirmatory factor analysis (CFA) with maximum likelihood estimation utilizing the AMOS 3.6 computer program in order to test the proposed factorial structure of the Teacher Interpersonal Self-Efficacy Scale. In this confirmatory factor-analytic approach, the fit of three factorial models was tested against the null model (Model 0): Model 1, a one-factor model in which all items of the three subscales were allowed to load on one general teacher interpersonal perceived self-efficacy factor; Model 2, a two-factor oblique model in which the items of the Perceived Self-Efficacy in Classroom Management Subscale were allowed to load on one factor, whereas the items of the Perceived Self-Efficacy to Elicit

Support from Colleagues Subscale, as well as those of the Perceived Self-Efficacy to Elicit Support from Principals Subscale, were allowed to load on a second factor; and Model 3, a three-factor oblique model in which the items of the three subscales were allowed to load on their respective factors.

The second step comprised explanatory factor analysis in order to determine whether the fit of the best fitting model in step 1 could be improved. For that purpose the modification indices and the pattern of standardized regression coefficients were examined. A cut-off of .40 of the standardized regression coefficients was used to identify items contributing significantly to each factor.

The third step comprised cross-validation analysis in order to test for invariance of the pattern of factor loadings across the calibration and the validation samples (Cudeck & Browne, 1983). Referring to Byrne, Shavelson, and Muthén (1989), a test for invariance comprised (1) specification of a model in which the number of factors and the pattern of loadings were invariant across the two samples, (2) specification of a model in which the pattern of factor loadings was constrained to be equal across the two samples, and (3) comparison of the two models. If the difference in chi-square was non-significant, the hypothesis of an invariant pattern of factor loadings across the calibration and the validation samples was tenable.

Evaluation of model fit was based on the chi-square likelihood ratio, the Adjusted Goodness of Fit Index (AGFI), the Root Mean Square Residual (RMR), the Tucker-Lewis Index (TLI; McDonald & March, 1990), the Normed Comparative Fit Index (CFI; Bentler, 1990), and the Parsimony Normed Comparative Fit Index (PCFI). To assess TLI, CFI and PCFI null models were specified, i.e. models in which the variables are mutually independent (Model 0). Following the recommendations of Bentler and Bonett (1980), the fit of a model was considered to be acceptable as TLI, and CFI exceeded .90. PCFI was used to assess a

model's parsimony, which is especially useful when comparing models (Mulaik, James, Van Alstein, Bennett, Lind, & Stilwell, 1989).

Results

Table 1 About Here

Confirmatory Factor Analyses

Chi-square ratios indicated a poor absolute fit, most likely due to the large sample size. Inspection of the TLI, the CFI, and the PCFI, which are relatively insensitive of the sample size (Bentler, 1990; McDonald & March, 1990), indicated that the three-factor oblique model (Model 3) fitted the data best (see Table 1). Chi-square difference tests showed a significantly better fit of the three-factor oblique model over the one-factor model ($\Delta\chi^2_{(3)} = 2897.70$, $p < .001$; $\Delta\chi^2_{(3)} = 2765.84$, $p < .001$) and the two-factor oblique model ($\Delta\chi^2_{(2)} = 1046.96$, $p < .001$; $\Delta\chi^2_{(2)} = 827.38$, $p < .001$). The fit of the three-factor oblique model was adequate since TLI and CFI (.90 and .91, respectively) exceeded the recommended criterion of .90 (Bentler & Bonett, 1980).

Exploratory Factor Analyses

Inspection of the pattern of standardized regression coefficients revealed that item 10 ("I am not always able to execute several activities at once") loaded poorly on the factor, i.e. its standardized regression coefficient was lower than the cut-off of .40. After item 10 was deleted, the fit of the respecified three-factor oblique model (Model 3 respecified, Table 1) was not improved significantly ($\Delta\chi^2_{(22)} = 25.92$, $p = .255$; $\Delta\chi^2_{(22)} = 29.79$, $p = .124$) and remain just as adequate (TLI = .90, CFI = .91). Model 3 respecified was chosen as the final model since inspection of the modification indices revealed that its fit could not be improved significantly. Table 2 shows the means and standard deviations of the items as well as the

completely standardized solution of the final model of the Teacher Interpersonal Self-Efficacy Scale.

Cross-Validation Analysis

Cross-validation of Model 3 respecified was achieved by testing for invariance of the pattern of factor loadings across the calibration and the validation samples. First, specification of a model in which the number of factors and the pattern of loadings were invariant across the two samples resulted in a $\chi^2_{(454)} = 1616.47$. Second, specification of a model in which the pattern of factor loadings was constrained to be equal across the two samples resulted in a $\chi^2_{(474)} = 1638.16$. Comparison of the two models yielded a $\Delta\chi^2_{(20)} = 21.69$, which was not significant ($p = .357$), thereby arguing for invariance of the pattern of factor loadings across the calibration and the validation samples.

Descriptive Statistics of the Scale

Table 2 and 3 About Here

Table 3 shows the means, standard deviations, and alphas of, as well as the intercorrelations between the subscales of the Teacher Interpersonal Self-Efficacy Scale. The Conbach's Alphas exceeded .90, which means that the subscales are highly internally consistent. The correlations between the Perceived Self-Efficacy in Classroom Management Subscale and the two other subscales were between .32 and .42; the correlation between the Self-Efficacy in Eliciting Support subscales was .57.

Discussion

This study tested the factorial validity of the Teacher Interpersonal Self-Efficacy Scale. The Teacher Interpersonal Self-Efficacy Scale comprises three subscales to assess (1) teacher perceived self-efficacy in managing student behavior in the classroom, (2) teacher perceived

self-efficacy in eliciting support from colleagues, and (3) teacher perceived self-efficacy in eliciting support from school principals. Following Bandura's (1997) self-efficacy theory, which posits that self-efficacy beliefs are linked to specific activities, it was hypothesized that the three Teacher Interpersonal Self-Efficacy subscales comprised three different activities linked to teacher self-efficacy beliefs. The results showed an adequate fit of the three-factor oblique model, the model in which the items of the three subscales were allowed to load on their respective factors. Since the fit of the three-factor oblique model was significantly better than both a two-factor model and a one-factor model, it was concluded that teachers' self-efficacy beliefs could differ to some extent for the three activities measured, i.e. managing student behavior, eliciting support from colleagues, and eliciting support from principals.

Evaluation of the pattern of standardized regression coefficients revealed that all of the factor loadings were between .45 and .90. This did not hold for item 10 ("I am not always able to execute several activities at once"), which loaded poorly on the Perceived Self-Efficacy in Classroom Management factor. Item 10 was therefore deleted from the factor model. One reason why item 10 loaded poorly on the factor may be that it was formulated negatively, while all of the other items of the Perceived Self-Efficacy in Classroom Management Subscale were formulated positively. In a study which aimed to determine whether perceived self-efficacy in classroom management was distinct from the two dimensions of Gibson and Dembo's (1984) Teacher Efficacy Scale, Emmer and Hickman (1991) also revealed problems with item 10. Their principal components analysis with varimax rotation revealed the ambiguity of item 10 because of its loading on two factors, Perceived Self-Efficacy in Classroom Management and Personal Teaching Efficacy. The factor loadings of item 10 in the study carried out by Emmer and Hickman (1991) were also low, respectively -.32 and .33.

The present study's findings of a partial distinction between the three interpersonal activities of teacher self-efficacy beliefs confirm the thesis of the self-efficacy theory, which

posits that self-efficacy beliefs are linked to specific activities. In studying the antecedents and consequences of teachers' self-efficacy beliefs, it is therefore strongly recommended to assess these beliefs for specific activities. Until now, many studies measured teacher self-efficacy beliefs with Gibson and Dembo's (1984) Teacher Efficacy Scale, which assesses teachers' ability beliefs about their functioning in general rather than teachers' beliefs in their ability to perform specific activities (Ross, 1998). The Teacher Interpersonal Self-Efficacy Scale can be regarded as an attempt to specify different activities within teachers' interpersonal domain of functioning in order to assess their self-efficacy beliefs to execute them. Besides the interpersonal domain of teachers' functioning, self-efficacy beliefs to perform professional work roles can also be linked to the task and the organizational domain of functioning (Cherniss, 1993). In order to be able to assess teachers' self-efficacy beliefs to perform activities within the task and organizational domain of functioning, it would be necessary first to specify different activities within these domains and second to develop a scale of each of the specified activities.

The Teacher Interpersonal Self-Efficacy Scale can be used in many important educational studies. Nowadays stress and burnout are considered to be major problems in education. From a social cognitive perspective, it is reasonable to assume that teachers who have less confidence in their abilities to achieve an easy and orderly learning environment probably experience more difficulty in reaching instructional goals and therefore more stress than teachers who have a strong self-efficacy belief in managing student behavior. Because burnout can be viewed as a long-term stress reaction (Maslach & Schaufeli, 1993), this means that teachers who have a weak self-efficacy belief in their classroom management skills can easily start to suffer from burnout symptoms. Since teacher burnout is regarded as a problem that results in particular from frustrating and difficult work relationships (Byrne, 1994; Friedman, 1995), it would be interesting to study whether teachers' interpersonal self-efficacy

beliefs mediate the assumed effect of frustrating work relationships on the level of teacher burnout.

In studying the consequences of teachers' weak interpersonal self-efficacy beliefs, it would also be interesting to focus on variables such as school effectiveness, the functioning of the school team, teachers' classroom management strategies, and student motivation and achievement. With respect to the antecedents of teachers' interpersonal self-efficacy beliefs, it would be interesting to study variables such as student engagement and classroom behavior and colleagues' and principals' support. Another interesting topic would be to study how teachers' interpersonal self-efficacy beliefs relate to phases in teachers' careers, whether there are growth spurts and, if so, when they occur and why (Ross, 1998).

After testing the factorial validity of the Teacher Interpersonal Self-Efficacy Scale, it could be stated that the teachers' self-efficacy beliefs differ to some extent for the three activities measured, i.e. managing student behavior, eliciting support from colleagues, and eliciting support from principals. Reliability analyses showed that the scales are internally consistent. It was concluded that the Teacher Interpersonal Self-Efficacy Scale is a reliable and a factorially valid measurement instrument to assess teachers' beliefs about their abilities to acquire and maintain easy, pleasant, and helpful work relationships.

References

Armor, D., Conroy-Oseguera, P., Cox, M., King, N., McDonnell, L., Pascal, A., Pauly, E., & Zellman, G. (1976). Analysis of the school preferred reading programs in selected Los Angeles minority schools . Santa Monica, CA: RAND. (ERIC Document Reproduction Service No. 130 243).

Ashton, P., Buhr, D., & Crocker, L. (1984). Teachers' sense of efficacy: A self- or norm-referenced construct. Florida Journal of Educational Research, 26(1), 29-41.

Ashton, P. T., Olejnik, S., Crocker, L., & McAuliffe, M. (1982, April). Measurement problems in the study of teachers' sense of efficacy. Paper presented at the Annual Meeting of the American Educational Research Association, New York.

Bandura, A. (1990). Multidimensional scales of perceived academic efficacy . Stanford, CA: Stanford University.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman.

Bentler, P. M. (1990). Comparative Fit Indexes in structural models. Psychological Bulletin, 107(2), 238-246.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. Psychological Bulletin, 88, 588-606.

Bergman, P., McLaughlin, M., Bass, M., Pauly, E., & Zellman, G. (1977). Federal programs supporting educational change: Vol. VII. Factors affecting implementation and continuation . Santa Monica, CA: RAND. (ERIC Document Reproduction Service No. 140 432).

Bliss, J., & Finneran, R. (1991, April). Effects of school climate and teacher efficacy on teacher stress. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Borton, W. M. (1991, April). Empowering teachers and students in a restructuring school: A teacher efficacy interaction model and the effect on reading outcomes. Paper presented at the annual meeting of the American Educational Research Association, Chicago (ERIC Document Reproduction Service No. 335 341).

Brissie, J. S., Hoover-Dempsey, K. V., & Bassler, O. C. (1988). Individual, situational contributors to teacher burnout. Journal of Educational Research, 82(2), 106-112.

Byrne, B. M. (1991). The Maslach Burnout Inventory: Validating factorial and invariance across intermediate, secondary and university educators. Multivariate Behavioral Research, 26(4), 583-605.

Byrne, B. M. (1994). Burnout: Testing for the validity, replication, and invariance of causal structure across elementary, intermediate, and secondary teachers. American Educational Research Journal, 31(3), 645-673.

Byrne, B. M., Shavelson, R. J., & Muthén, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. Psychological Bulletin, 105, 456-466.

Cheung, W. M., & Cheng, Y. C. (1997, April). A multi-level analysis of teachers' self-belief and behavior, and student' educational outcomes. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Cohen, S. (1988). Psychosocial models of the role of social support in the etiology of physical disease. Health Psychology, 7, 269-297.

Coladarci, T. (1992). Teachers' sense of efficacy and commitment to teaching. Journal of Experimental Education, 60, 323-337.

Cudeck, R., & Browne, M. W. (1983). Cross-validation of covariance structures. Multivariate Behavioral Research, 18, 147-167.

Doyle, W. (1986). Classroom organization and management. In M. Wittrock (Ed.), Handbook of Research on Teaching (Third ed., pp. 392-431). New York: MacMillan.

Emmer, E. T., & Hickman, J. (1991). Teacher efficacy in classroom management and discipline. Educational and Psychological Measurement, 51, 755-765.

Forsyth, A. D., & Carey, M. P. (1998). Measuring self-efficacy in the context of HIV risk reduction: Research challenges and recommendations. Health Psychology, 17(6), 559-568.

Friedman, I. A. (1995). Student behavior patterns contributing to teacher burnout. Journal of Educational Research, 88(5), 281-289.

Fuchs, L. S., Fuchs, D., & Bishop, N. (1992). Instructional adaptation for students at risk. Journal of Educational Research, 86, 70-84.

Gibson, S., & Dembo, M. H. (1984). Teacher efficacy: A construct validation. Journal of Educational Psychology, 76(4), 569-582.

Guskey, T. R. (1981). Measurement of responsibility teachers assume for academic successes and failures in the classroom. Journal of Teacher Education, 32, 44-51.

Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instrucional innovation. Teaching and Teacher Education, 4, 63-69.

Guskey, T. R., & Passaro, P. D. (1994). Teacher efficacy: A study of construct dimensions. American Educational Research Journal, 31, 627-643.

Hoy, W. K., & Woolfolk, A. E. (1993). Teachers' sense of efficacy and the organizational health of schools. The Elementary School Journal, 93, 356-372.

Imants, J., & Van Zoelen, A. (1995). Teachers' sickness absense in primary schools, school climate and teachers' sense of efficacy. School Organization, 15(1), 77-86.

Maslach, C., & Schaufeli, W. B. (1993). Historical and conceptual development of burnout. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), Professional burnout: Recent developments in theory and research (pp. 1-16). Washington, DC: Taylor & Francis.

McDonald, R. P., & Marh, H. W. (1990). Choosing a multivariate model: Noncentrality and Goodness of fit. Psychological Bulletin, 107(2), 247-255.

Meijer, C. J. W., & Foster, S. F. (1988). The effect of teacher self-efficacy on referral change. Journal of Special Education, 22, 378-385.

Moore, W., & Esselman, M. (1992, April). Teacher efficacy, power, school climate and achievement: A desegregating district's experience. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco.

Mulaik, S. A., James, L. R., van Alstein, J., Bennett, N., Lind, S., & Stilwell, C. D. (1989). Evaluation of goodness-of-fit indices for structural equation models. Psychological Bulletin, 105, 430-445.

Parkay, F. W., Greenwood, G., Olejnik, S., & Proller, N. (1988). A study of the relationship among teacher efficacy, locus of control, and stress. Journal of Research and Development in Education, 21(4), 13-22.

Riemsma, R., Elving, W., Taal, E., & Boer, H. (1998). Constructie en evaluatie van de Sociale Mobilisatie Schaal. [Construction and evaluation of the Social Mobilization Scale]. Gedrag & Gezondheid, 25(6), 303-310.

Riggs, I., & Enochs, L. (1990). Toward the development of an elementary teacher's science teaching efficacy belief instrument. Science Education, 74(625-638).

Rose, J. S., & Medway, F. J. (1981). Measurement of teachers' beliefs in their control over student outcome. Journal of Educational Research, 74, 185-190.

Ross, J. A. (1998). Antecedents and consequences of teacher efficacy. In J. Brophy (Ed.), Advances in research on teaching (Vol. 7, pp. 49-74). Greenwich, CT: JAI Press.

Rotter, J. B. (1966). Gerneralized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80, 1-28.

Soodak, L., & Podell, D. (1993). Teacher efficacy and student problem as factors in special education refferal. Journal of Special Education, 27, 66-81.

Tschannen-Moran, M., Woolfolk-Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. Review of Educational Research, 68(2), 202-248.

Woolfolk, A. E., Rosoff, B., & Hoy, W. K. (1990). Teachers' sense of efficacy and their beliefs about managing students. Teaching and Teacher Education, 6, 137-148.

Table 1
Chi-Squares and Fit Indexes of the Teacher Interpersonal Self-Efficacy Models

	χ^2	df	AGFI	RMR	TLI	CFI	PCFI
Calibration Sample (N = 416)							
Initial 24-Item Models							
Model 0	6998.31	276	.17	.38			
Model 1	3766.31	252	.29	.16	.43	.48	.44
Model 2	1915.57	251	.60	.09	.73	.75	.68
Model 3	868.61	249	.82	.05	.90	.91	.82
23-Item Models							
Model 0	6968.76	253	.15	.39			
Model 3, respecified	842.69	227	.81	.05	.90	.91	.82
Validation Sample (N = 416)							
Initial 24-Item Models							
Model 0	6416.45	276	.19	.35			
Model 1	3569.40	252	.32	.19	.41	.46	.42
Model 2	1630.94	251	.64	.08	.75	.78	.71
Model 3	803.56	249	.83	.05	.90	.91	.82
23-Item Models							
Model 0	6385.97	253	.18	.36			
Model 3, respecified	773.77	227	.83	.04	.90	.91	.82

Table 2
Completely Standardized Solution of the Final Model of the Teacher Interpersonal Self-Efficacy Scale

Item nr.	Item	Calibration Sample M	Calibration Sample SD	Calibration Sample Loading	Validation Sample M	Validation Sample SD	Validation Sample Loading
	Perceived Self-Efficacy in Classroom Management						
13.	I can keep defiant students involved in my lessons	3.22	.89	.80	3.14	.83	.79
15.	I am able to respond adequately to defiant students	3.42	.84	.78	3.32	.83	.73
17.	I can keep a few problem students from ruining an entire class	3.63	.94	.76	3.55	.90	.67
11.	I can manage my class very well	3.65	.84	.72	3.51	.87	.75
8.	I can take adequate measures that are necessary to keep activities running efficiently	3.71	.79	.72	3.65	.78	.73
1.	If a student disrupts the lesson, I am able to redirect him quickly	3.48	1.00	.72	3.43	.93	.72
5.	I can get through to most difficult students	3.46	.90	.68	3.37	.90	.74
4.	There are very few students that I cannot handle	3.75	.98	.68	3.71	1.02	.70
24.	I am able to begin the scholastic year so that students will learn to behave well	3.64	.88	.68	3.52	.93	.61
14.	I am always able to make my expectations clear to students	3.40	.97	.66	3.35	.97	.63
18.	If students stop working, I can put them back on track	3.28	.79	.61	3.25	.80	.55
9.	I can communicate to students that I am serious about getting appropriate behavior	4.08	.69	.51	4.04	.67	.60
22.	I know what rules are appropriate for my students	3.59	.76	.43	3.60	.79	.45
10.	I am not always able to execute several activities at once	2.44	1.36	deleted	2.50	1.40	deleted

Table 2 Continued

Perceived Self-Efficacy in Eliciting Support from Colleagues							
21.	When it is necessary, I am able to ask a colleague for assistance	3.83	.89	.92	3.82	.86	.87
23.	I am able to approach my colleagues if I want to talk about problems at work	3.79	.91	.91	3.77	.92	.87
20.	If I feel confronted by a problem with which my colleagues can help me, I am able to approach them about this	3.63	.91	.80	3.55	.90	.77
7.	I can always find colleagues with whom I can talk about problems at work	3.72	1.14	.79	3.75	1.04	.78
3.	I am confident that, if necessary, I can ask my colleagues for advice	3.88	1.01	.74	3.94	.89	.70
Perceived Self-Efficacy in Eliciting Support from Principals							
19.	I am confident that if necessary I can ask principals for advice	3.48	1.15	.91	3.36	1.23	.90
6.	When necessary, I am able to bring up problems with principals	3.50	1.24	.91	3.43	1.26	.89
2.	I am able to approach principals if I want to talk about problems at work	3.39	1.35	.89	3.36	1.36	.87
16.	When it is necessary, I am able to get principals to support me	3.28	1.20	.87	3.20	1.18	.87
12.	I am confident that, if necessary, I can get principals to help me	3.19	1.25	.86	3.10	1.20	.87

Table 3

Descriptive Statistics of the Subscales of the Teacher Interpersonal Self-Efficacy Scale

	M	SD	α	1	2	3
Calibration Sample (N = 416)						
1. Perceived Self-Efficacy in Classroom Management	3.56	.61	.92	-		
2. Perceived Self-Efficacy in Eliciting Support from Colleagues	3.77	.84	.91	.42	-	
3. Perceived Self-Efficacy in Eliciting Support from Principals	3.37	1.13	.95	.33	.57	-
Validation Sample (N = 416)						
1. Perceived Self-Efficacy in Classroom Management	3.50	.60	.91	-		
2. Perceived Self-Efficacy in Eliciting Support from Colleagues	3.76	.78	.90	.32	-	
3. Perceived Self-Efficacy in Eliciting Support from Principals	3.29	1.13	.94	.32	.57	-

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