Psychometric Properties of the Principals’ Sense of Efficacy Scale (PSES) With Turkish Sample

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Abstract

The aim of the research was to test the psychometric properties of the Turkish version of the Principal Sense of Efficacy (PSES-T). Two independent samples of school administrators from Turkey were used for this study. Sample 1 was used for exploratory factor analysis (N=150, 11% women, and 89% male), and the second was used for confirmatory factor analysis (N=150, 10% women, and 90% male). The original 18-item, three factor model of PSES-T did not fit the data obtained from Turkish sample. An exploratory factor analysis (EFA) was conducted to further explore the factor structure of the 18-item PSES-T that better represented the sample data. EFA results show 18-item PSES-T has one factor structure. A confirmatory factor analysis on the PSES-T provided strong support for the one factor structure. Results indicated that the reliability for the PSES-T was high. In addition, construct validity showed consistent associations between social support and PSES-T. The overall findings of the present study provide evidence for the validity and reliability of the PSES with Turkish sample.

Keywords: Principal sense of efficacy, reliability, validity, confirmatory factor analysis, Turkish sample

Introduction

Most of the studies about efficacy are focused on self-efficacy. Self-efficacy is embedded within social cognitive theory and developed roots from the social learning theory. Bandura (1986) indicates that self-efficacy is a concept resulting from the interaction of behaviors, environmental variables and personal variables. Self-efficacy is defined as “beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p.3), or “beliefs in one's abilities to mobilize the motivation, cognitive resources, and courses of action needed to meet situational demands” (Wood & Bandura, 1989, p.48). Self-efficacy is commonly used as a domain-specific construct rather than being a general trait (Bandura, 1986).

Bandura (1997, p.3) stated that self-efficacy would have an influence on: (1) which behavior people choose to pursue, (2) how much effort they spend (3) how long they will persevere in the face of obstacles and failures (4) their resilience to difficulties (5) whether their thought patterns are self-hindering or self-aiding, (6) how much stress or anxiety they experience in coping with environmental demands. Similarly, Gist and Mitchell (1992) proposed that self-efficacy is a very important motivational structure that affects personal preferences, goals, emotional reactions, effort, coping and resistance.

The principal is regarded as a key agent, initiating change by raising the level of expectations for both teachers and students (Tschannen-Moran & Gareis, 2004). Leadership self-efficacy is important because it affects followers’ attitudes and performance (Chemers, Watson, & May, 2000; Lehman,
2007). If principals do not have a high level of self-efficacy, it will affect teachers and students negatively in future (Rossow, 1990; Smith, Guarino, Strom & Adams, 2006). Principal self-efficacy can be defined as a kind of leadership self-efficacy that is related to the level of self-confidence, abilities and skills to act as a leader among other people (Hannah, Avolio, Luthans, & Harms, 2008). Principal self-efficacy is a perception related to planning, organizing and executing tasks and relationships with other people and organizations (Federici & Skaalvik, 2011).

There are few studies related to principal self-efficacy, however, findings of these studies are extremely remarkable (Tschannen-Moran & Gareis, 2004). It is recognized that principals with high self-efficacy maintain their goals, can easily adapt changeable positions (Osterman & Sullivan, 1996), can use their information and experiences while doing their roles more (Lyons & Murphy, 1994), and have positive effects on a successful learning and teaching environment (Smith, Guarino, Strom, & Reed, 2003), participants’ performance, (Semander, Robins, & Ferris, 2006) and organizational commitment (Paglis & Green, 2002; Sweetman & Luthans, 2010; Halbesleben, 2010).

Especially within the last decade, principal self-efficacy has emerged as a significant issue and is of interest to researchers after the development of instruments assessing principal self-efficacy (e.g. Principals Self-Efficacy Scale, Dimmock & Hattie, 1996). Of these instruments, Principal Sense of Efficacy Scale (PSES; Tschannen-Moran & Gareis, 2004) has received much attention (Brown, 2010; Lockard, 2013; McCullers & Bozeman, 2010; Moak, 2010; Versland, 2009; Watts, Kolsun, Cline, & Williams, 2011; Williams, 2012). Although the PSES has found to be a reliable and valid measure when used with United States samples, no evidence exists regarding the use of the instrument within a non-US sample. Validation and reliability studies of the PSES within different cultural context and samples are crucial for the generalizability of the scale. Therefore, the aim of the present study was to examine psychometric qualities of PSES in a Turkish sample.

**Method**

**Participants**

**Exploratory Factor Analysis (EFA) sample.** The first sample contained 150 school principals (11% women, and 89% male). Their principal seniority range from 1 to 33 years ($M = 9.8$, $SD = 7.9$). All participants were either principal (%60) or assistant principals (40%).

**Confirmatory Factor Analysis (CFA) sample.** Second sample contained 150 school principals (10% women, and 90% male). Principal seniority ranged from 1 to 37 years ($M = 8.6$, $SD = 7.01$). Of them, 57% were principals and 43% were assistant principals.

**Instruments**

**Principal Sense of Efficacy Scale (PSES).** The PSES (Tschannen-Moran & Gareis, 2004) is an 18-item scale which assesses a principal’s belief about his/her management skills. Respondents rate their confidence on a 9 point Likert-type scale from 1 (none at all) to 9 (a great deal). The PSES consist of three subscales (Efficacy for Management, Efficacy for Instruction, and Efficacy for Moral Leadership). Respectively, sample items include “prioritize among competing demands of the job”, “facilitate student learning in your school”, and “promote ethical behavior among school personnel”. Scores can range from 18 to 162, with higher scores reflecting higher sense of principal efficacy. Construct validity was supported by negative correlation with work alienation and positive correlation with trust in teachers. The scale has good internal consistence with alphas of .91 for the total scale and .86 to .89 for the subscales.
**Interpersonal Social Support.** Questions related to social support used in order to examine criterion-related validity of the PSES-T. Tschannen-Moran and Gareis (2007) observed there was a high level of correlation between principal self-efficacy and social support within school (staff, teachers, parents and students), and a medium level of correlation with social support out of school (superintendent and central-office staff). Similar to Tschannen-Moran and Gareis’s (2007) research, in the current study six questions (eg, “How would you rate the quality of support you receive from central office in your school principals’ task?”) were asked to determine principals’ received support on a 5-point scale. Exploratory factor analysis (EFA) was conducted to explore the factor structure of the interpersonal social support questions. Two factors emerged with eigenvalues over 1.0 (3.0-1.1) which accounted %70 of shared variance. The questions related to social support within school (staff, teachers, parents and students) factor loadings ranged from .77 to .82 and social support out of school (superintendent and central-office staff) factor loadings were .83 and .89.

**Procedures**

Translation process was made in two stages; first, original form was translated to Turkish by authors, second stage, back translation was made by the two language experts and back translated versions was compared with the original version by a native English speaker. In addition to this application to assess language appropriateness, a sample of twelve school administrators was consulted. After feedback from the sample, item wordings and instructions were revised.

All participants were informed of the general purpose and procedure of the study. PSES-T was sent to 1500 school administrators by email. Three hundred and thirteen out of 1500 scale forms returned, with a return rate of 20.1 percent. The scale contained a validity item; this question forced the respondent to mark “3” for that item. After checking the validity item, 13 respondents who marked out of 3 were not included into the analysis. Finally, 300 scales were used for the analysis.

**Results**

**Preliminary Analyses**

Prior to analysis, statistical assumptions were evaluated to ensure normal distribution and multivariate analysis for both samples. The skewness and kurtosis values range from -1.35 to -1.07 and -1.26 to -1.15, suggesting that sample conforms to the assumption of confirmatory factor analysis. Table 1 displays descriptive data of the PSES-T for both samples.

[Insert Table 1 here]

**Structural Validity**

Confirmatory factor analyses (CFA) with AMOS 16.0 were performed using maximum likelihood estimations, in order to assess the structural validity of the PSES-T. In order to assess the model fit cutoff levels were used as: $\chi^2$/df $\leq$ 3, CFI, TLI $\geq$.90, RMSEA, SRMR $\leq$.08 (Hu & Bentler, 1999, Schreiber, Nora, Stage, Barlow, & King, 2006). The model indices were $\chi^2$/df= 2.80, GFI= .794, CFI= .873, TLI=.87, RMSEA=.100, SRMR=.64, suggesting an unacceptable fit of the model to the data.
Concluding that 3 factor 18-item PSES-T did not fit the data obtained from Turkish sample, an exploratory factor analysis (EFA) was conducted to further explore the factor structure of the 18-item PSES-T that better represented the sample data. The adequacy of the data for factor analysis was supported by a Kaiser’s measure of sampling (KMO) value of .88 and, Barlett test of sphericity $\chi^2 = 1207.0$ (p<.000). A principal component factor analysis with varimax rotation was conducted. Factor 1, 2 and, 3 had eigenvalues of 7.39, 1.46, 1.16 and accounted for 41, 8 and, 6.4 % of variance respectively. Although three factors had eigenvalues above 1, examination of the scree plot suggested a strong single factor structure and the size of the eigenvalue for the first factor relative to that of the next largest factor was 7.3: 1.4, suggesting unidimensionality. Factor loadings range from .50- .74 ($M$=.64).

Based on the results of the EFA, single factor model with 18 items was tested on second sample by using CFA with maximum likelihood method. Results indicated that single factor PSES-T met goodness-of-fit criteria; $x^2$/df= 2.1, CFI=.93, TLI=.92, RMSEA= .078, SRMR=.48.

**Concurrent Validity**

Because of previous theory (Bandura, 1997) and research (Kruger, 1997; Pati & Kumar, 2010; Tschannen-Moran, & Gareis, 2007; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Özdemir, 2010) suggesting that self- efficacy may be related with social support, potential association between PSES scores and perceived social support were examined. As expected, PSES-T scores had significant low positive correlations with social support from superintendent ($r$=.187) and central-office staff ($r$=.185), and moderate positive correlations with social support from staff ($r$=.350), teachers ($r$=.383), parents ($r$=.286), and students ($r$=.303).

Multiple regression test was conducted to determine whether demographic variables (gender, years of administrative experience, years at school, socio-economic status of students, and school level) were significant predictors of PSES-T. Demographic variables explain 12% of variance in PSES-T ($R^2=.12$, $F (5,145)= 5.02$, $p=.000$). PSES-T was significantly related to years of experiences ($\beta = .22$, $p=.002$) and socio-economic status of student ($\beta = .20$, $p=.004$). Gender, years at school and school level was not significantly related with PSES-T.

**Internal Consistency**

Internal consistency estimates using Cronbach’s alpha suggested high reliabilities for the total scale PSES-T=. .94. T-test was conducted to determine the significance of difference between the average item scores of upper and lower 27% groups and the correlation of the item total score, which was additionally for the reliability analysis. Item-total correlations vary between .51 and .78 and all items presented a significant difference at p<.05 within the lower and upper groups.

**Discussion**

The purpose of this study was to investigate the reliability and validity of PSES-T among school principals. Findings from CFA yielded an unacceptable fit to the data. To our knowledge, no studies conducted CFA to test PSES’s construct validity. The next stage, exploratory factor analysis was conducted in order to determine the structure of the PSES-T with another sample. Although principal component analysis gave similar results with Tschannen-Moran, Gareis (2004), and Nye (2008), one-factor structure was accepted as the results of EFA yielded a unidimensional result and CFA did not support three-factor model. Finally, one factor structure of PSES-T was tested with CFA yielding an acceptable fit to the data.
In keeping with Tschannen-Moran and Gareis (2007) findings the concurrent validity of the PSES-T was supported by correlation between principal self-efficacy and social support. To provide further evidence for the validity of the PSES-T, the relationship between demographic variables and PSES-T was examined. Results showed that there was no significant relations between gender, years at school, school level, and PSES. These findings are similar with the other research examining the potential associations of PSES with, gender (Costa-Hernandez, 2010; Dimmock & Hattie, 1996; Tschannen-Moran & Gareis, 2004; Tschannen-Moran & Gareis, 2007, Santamaria, 2008), years at school (Costa-Hernandez, 2010; Tschannen-Moran & Gareis, 2004), and school level (Dimmock & Hattie, 1996; Santamaria, 2008). Contrary to the results of other research (Costa-Hernandez, 2010; Tschannen-Moran & Gareis, 2004; Tschannen-Moran & Gareis, 2007), but parallel with the theory we find significant relationship between years of experience (Santamaria, 2008; Dimmock & Hattie, 1996), socio-economic status of students and PSES. According to Bandura, an individual’s successful past experiences, namely mastery experiences are the prominent factors that determine the self-efficacy (Bandura, 1997).

The results of this study show that the total scale of PSES demonstrated good consistency (.94). To provide further evidence for the reliability of the PSES, a comparison was made between the average scores of the participants included within the upper and lower groups. The entire item were found to be significant at level p<.05. These findings provide evidence to support the reliability of PSES-T.

In conclusion, the present study provided psychometric support for the PSES-T. However, this study has some limitations. First, test-retest scores were not conducted that the stability of the PSES’s parameters and consistency of participants’ responses cannot be established. Second, we used single questions to measure participants’ perceived social support, but using a scale and measuring interpersonal social support indirectly would give more accurate results. Further research would examine the structure of the PSES with similar populations in other cultures.

References


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