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SHERER ET AL. GENERAL SELF-EFFICACY SCALE: DIMENSIONALITY, INTERNAL CONSISTENCY, AND TEMPORAL STABILITY

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ABSTRACT

The present study examined the psychometric properties of English version of Sherer et al.'s 17-item General Self-efficacy Scale with a sample of 607 university students (Men = 253, Mean age = 22.13, *SD* = 1.78; Women = 354, Mean age = 22.14, *SD* = 1.19) in education levels 1 to 4. The scale was self-administered. Using 12.0 version of SPSS software, data were analyzed for the total sample. Results exhibited acceptable levels of internal consistency, temporal stability, and construct validity. Cronbach's alpha was 0.85 ($p < .0001$). The corrected item-total correlations ($r = .25$ to .66, $p < .0001$, mean $r = 0.47$, $p < .0001$) supported convergent validity of the scale. Temporal stability in terms of test-retest reliability was calculated on a separate sample of 138 students with $r = .60$ ($p < .01$). Principal component analysis with varimax rotation resulted in three-factor solution indicating that the scale is multidimensional (Factor loadings were: *F1* = .461 to .598, *F2* = .452 to .731, & *F3* = .443 to .764). The present results are in agreement with the previous research findings. However, factor loadings are moderate. The discussion includes implications, limitations, and directions for future research.

Key terms: General self-efficacy, Reliability, Construct validity

INTRODUCTION

Self-efficacy has been conceptualized and studied both as a state like concept called specific self-efficacy (SSE) (e. g., Gist & Mitchell, 1992; Lee & Bobko, 1994; Wood & Bandura, 1989) and a trait like construct referred to as general self-efficacy (GSE) (e. g., Eden, 1988; Judge, Erez, & Bono, 1998; Judge, Locke, & Durham, 1997). Wood & Bandura, (1989, p.408) defined self-efficacy as "beliefs in one's capabilities to mobilize the motivation, cognitive responses, and courses of action needed to meet given situation demands". On the other hand, Judge, et al. (1998, p. 170) defined general self-efficacy as "individuals' perception of their ability to perform across a variety of different situations ". According to Chen, Gully, & Eden, (2001, p. 63), "GSE captures differences among

individuals in their tendency to view themselves as capable of meeting task demands in a broad array of contexts".

Several researchers (e. g., Eden, 1988; Judge et al., 1997) have suggested that SSE is a motivational state and GSE is a motivational trait. According to Eden, both GSE and SSE denote beliefs about one's ability to achieve desired outcomes, but the constructs differ in the scope (i.e., generality or specificity) of the performance domain contemplated. As such, GSE and SSE share similar antecedents (e.g., actual experience, vicarious experience, verbal persuasion, psychological states) (Bandura, 1997). However, GSE is much more resistant to ephemeral influences than SSE (Eden). The aggregation of previous experiences is the most powerful antecedent of GSE (Shelton, 1990; Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, & Rogers, 1982). Shelton proposed that GSE emerges over one's life span as one accumulates successes and failures across different task domains. Thus, accumulation of successes in life, as well as persistent vicarious experiences, verbal persuasion, and psychological states, augment GSE.

Continued empirical self-efficacy research in organizational and educational settings is of immense practical value because self-efficacy has several positive as well as negative outcomes. Past findings have shown that a strong sense of personal efficacy is related to better health, higher achievement, and more social integration (Bandura, 1997; Schwarzer, 1992). Personal efficacy plays a vital role in educational attainment. Intellectual growth is partially determined by individual's belief in personal ability to master various subjects and regulate self-learning (Schunk, 1989). Self-efficacy has powerful effects on learning because people try to learn only those behaviors that they think they will be able to perform successfully (Gist & Mitchell, 1992). Chen, Gully, Whiteman, and Kilcullen (2000) have found that GSE is positively related to learning goal orientation. Furthermore, research has shown that GSE is positively related to other motivational traits, including need for achievement and conscientiousness (Chen, Gully, & Eden, 2000 as cited in Chen, et al., 2001). According to Smith (2002), "strong efficacy beliefs, along with fundamental learning tools supplied by formal education, result in students who possess skills necessary for social and economic stability" (p. 1).

On the negative side, efficacy beliefs influence the amount of stress and anxiety individuals experience as they engage in an activity (Pajares & Miller, 1994; Bandura, 1997). Recent research results show that GSE negatively correlates with negative affect, anxiety, depression, anger, and physical symptoms (e.g., Leganger, Kraft, & Røysamb, 2000; Luszczynska, Gutiérrez-Donã, & Schwarzer, 2005).

One important outcome of GSE is SSE. Research shows that GSE positively influences SSE across tasks and situations (Eden, (1988). Positive relationship between GSE and SSE for a variety of tasks reflects that GSE "spills over" into specific situations (Shelton, 1990; Sherer et al., 1982). Due to this "spill over" effect, individuals with high GSE expects to succeed across a variety of task domains (Chen, et al., 2001).

Review of research literature on self-efficacy indicates that majority of self-efficacy researchers have continued to focus on SSE exclusively while ignoring the generality

dimension of self-efficacy. Further disregard of GSE may limit theoretical comprehensiveness and understanding of proportion of variance explained in motivation research. Moreover, given the present days' increasingly broad, complex, and demanding challenges of life in general and of work place in particular, high GSE is a valuable resource for relatively more successful living. Consequently research involving GSE needs a psychometrically sound measure of GSE. Sherer et al. (1982) General Self-Efficacy Scale (SGSES) is one such instrument. However, most studies evaluating psychometric properties of SGSES have used western and Israeli samples. Such research with a Malaysian sample is nonexistent. Therefore, the present study aimed at evaluating the dimensionality, temporal stability, and construct validity of SGSES using a Malaysian sample. Specifically, this study focused on the following questions in Malaysian perspective:

1. Is SGSES a reliable measure of GSE?
2. Does SGSES possess construct validity?
3. Is SGSES unidimensional?

Method

Participants

The 607 (male =253, female = 354) undergraduate students of International Islamic University Malaysia voluntarily participated in the study. The mean age for the total sample was 22.14 years (SD = 1.46), for the men sample 21.13 years (SD = 1.78), and for the women sample 22.14 years (SD = 1.19). Respondents belonged to education levels 1 (n = 64, 10.50 %), 2 (n = 150, 24.70 %), 3 (n = 228, 37.6%) and 4 (n = 159, 26.20 %).

Measure

General self-efficacy (GSE): The SGSES (Sherer et al., 1982) is a Likert format 17-item scale (example of items include: "When I make plans, I am certain I can make them work ", "I give up easily", "I am a self-reliant person", "I avoid facing difficulties"). The response format is a 5-point scale (1 = strongly disagree, 5 = strongly agree). Sum of item scores reflects general self-efficacy. The higher the total score is, the more self-efficacious the respondent. Sherer et al. developed the GSE scale to measure "a general set of expectations that the individual carries into new situations" (p. 664). The SGSES has been the most widely used GSE measure. The SGSES was primarily developed for clinical and personality research. Later it has also been used in organizational settings.

Reviewing various organizational studies, Chen et al. (2001) found internal consistency reliabilities of SGSES to be moderate to high (α = .76 to .89). In two of their studies using samples of university students and managers, Chen et al. reported high internal consistency reliability for SGSES (α = .88 to .91 respectively). With regard to temporal stability of SGSES, Chen & Gully (as cited in Chen, et al.) obtained a low test-retest estimate (r = .23) across only 3 weeks. However, Chen et al found high test-retest reliability (r = .74 and .90).

Several studies have questioned the unidimensionality of SGSES. For example, Woodruff and Cashman (1993) found that SGSES items measure three distinct empirical factors reflecting self-perception of behaviour initiation, effort, and persistence. Recent investigations also have reported three- factor structure of SGSES (e.g., Bosscher & Smit, 1998; Chen et al. 2001).

Procedure

In the first phase of the study, the SGSES was administered on two different occasions with an interval of six weeks during Semester I, 2004-2005 (n = 138). On both the occasions the scale was administered during regular class hours. Students were informed that the researcher was collecting data for his research project. The students were assured that their responses would remain anonymous and that participation was voluntary. For further data collection, the scale was self-administered during semester 1 and 2, 2005-2006. Participants were approached on the campus and at their colleges (hostels) and those who indicated willingness to be respondents were handed over the scale. Respondents filled out the scales at their leisure time. Participation was entirely voluntary. The front page of the scale described the purpose of this research. At the time of receiving back the filled-out scales the respondents were debriefed. The response rate was high (95 %). Data were analyzed using SPSS 12.0 software for window.

Results

First, gender effect on GSE was examined. The results of independent sample *t*-test indicated absence of any significant difference in mean GSE scores of men (M = 59.17, SD = 9.48) and women (M = 59.36, SD = 8.93), t (605) =.24, p = .81 (see Table 1). Therefore, further analyses were carried out on the whole sample.

Reliability of SGSES was examined by computing internal consistency and temporal stability. Inter-item and item-total correlations appearing in Table 2 indicate that most of the inter-item correlations ranged from r = .09 - .48 (p = .03 - .0001) and item-total correlations ranged from r = .32 to .66 (p < .0001). Temporal stability was computed on a separate subsample of 138 students. With an interval of six weeks the test-retest reliability was r = .60 (p < .01). Overall Cronbach's alpha was 0.85 (p < .0001). Cronbach's alphas, if item deleted, ranged from .83 to .85 (p < .0001) (see Table 3).

A correlational (Pearson's) analysis of convergent validity was conducted by correlating scores on each SGSES item with SGSES total scores when the corresponding item score was deleted. (Anastasi & Urbina, 1997; Cohen & Swerdlik, 2004; Green & Salkind, 2005; Gregory, 2007).The corrected item-total correlations (r = .23 to .66, p < .0001, mean r = 0.47, p < .0001) showed that SGSES has low to moderate convergent validity of (see Table 3).

Exploratory factor analysis was performed to examine the factor-structure of SGSES. Kaiser-Myer-Olkin statistic (KMO = .89) and Bartlett's test of sphericity (chi-square = 2587.20, df = 136, p = .0001) indicated that the correlation matrix was suitable for factor analysis. A principal component extraction was used, after which the number of factors was determined by both eigenvalues (> 1) and the scree test (Cattell, 1966 as cited in

Field, 2000). These criteria suggested a three-factor solution (eigenvalues 5.18, 1.54, 1.12). The first three unrotated factors together accounted for 46.15 % of the total item variance. Principal component analysis with varimax rotation resulted in three-factor solution indicating that the SGSES is multidimensional (factor loadings were: F_1 = .461 to .598, F_2 = .452 to .731, & F_3 = .443 to .764) (see Table 4). A factor loading of .40 or greater was considered significant (p = .01, two-tailed) ((Stevens, 1992 as cited in Field, 2000).

Discussion

The purpose of this study was to evaluate internal consistency, temporal stability, and dimensionality of SGSES. Present findings show that the SGSES is a an internally consistent and temporally stable measure of GSE. These results are in agreement with previous findings (e.g., Chen et al, 2001).

In terms of corrected item total correlations the SGSES exhibited convergent validity. However, the validity coefficients are low to moderate. Previous studies examined construct validity of SGSES by correlating scale scores with external criterion scores. Thus, the current findings can not be compared with past research results.

With regard to dimensionality of the SGSES, the current findings indicate that the scale is multidimensional. The present findings get support from past research results, which show that the SGSES is a multidimensional measure (e.g., Woodruff & Cashman, 1993; Bosscher & Smit, 1998; Chen et al. 2001). Although the principal component analysis resulted in simple three factor-structure, the factor loadings are low to moderate. Seven items loaded on F1, five on F2, and three on F3.Two items significantly loaded on two components simultaneously. Overall, although SGSES appeared to be an internally consistent and stable measure of GSE, it is multidimensional. This should not sound surprising in the light of past research findings, which show that high internal consistency reliability does not necessarily imply factorial unidimensionality (Cortina, 1993). As regards low factor loadings, it can be explained in terms of sample homogeneity, all respondents were undergraduate students in education levels 1 to 4 and 97.7 % of the respondents aged 20 to 25 years.

Implications

Given the broader and more complex nature of today's performance challenges in organizational as well as educational settings, a psychometrically sound measure of dispositional construct like GSE can help predict motivational reactions and behaviours across a variety work domains. Thus, it is required that all reliable and valid measures of GSE are evaluated before they are used in cultures other than the culture of their origin.

Limitations and Directions for Future Research

The present research has provided evidence that the SGSES is an internally consistent, temporally stable, and valid measure of GSE, but it is multidimensional. However, the SGSES was not compared with other measures of GSE. It is desirable to empirically compare the psychometric features of more extensively constructed measures of GSE in

order to identify the one which can be more gainfully used in future research and practice.

Future research should examine whether the present findings generalize to other samples and settings. In addition, it is important to use the local version of GSE in future research because many people feel more comfortable in expressing their feelings in their own language as compared to a foreign language.

The present sample of undergraduate university students represented a homogeneous sample, which might be one of the factors leading to low correlation coefficients obtained in this study. Future research should involve more diverse heterogeneous sample to rule out the effect of sample homogeneity on correlation measures.

Conclusion

Overall the SGSES appeared to be an internally consistent and stable measure of general self-efficacy, but this scale is multidimensional in structure. Preparation of adapted local version of SGSES may need requisite modifications in some of its items so that the scale becomes unidemensional.

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Table 1

Mean Self-efficacy Scores and Standard deviations by Gender

Gender	*n*	*M*	*SD*	*t*	*p*
Men	253	59.17	9.48		
				.24	.81
Women	353	59.36	8.93		

Table 2

Inter-Item and Item-Total Correlations (n = 607)

Items	1	2	3	4	5	6	7	8	9
Item 1	-	-	-	-	-	-	-	-	-
Item 2	.10	-	-	-	-	-	-	-	-
Item 3	.46	.18	-	-	-	-	-	-	-
Item 4	.11	.15	.07*	-	-	-	-	-	-
Item 5	.28	.24	.38	.27	-	-	-	-	-
Item 6	.06*	.17	.21	.07*	.29	-	-	-	-
Item 7	.19	.17	.30	.13	.31	.38	-	-	-
Item 8	.18	.01*	.22	.01*	.13	.15	.12	-	-
Item 9	.38	.12	.41	.01*	.25	.02*	.17	.21	-
Item 10	.17	.26	.29	.21	.41	.20	.37	.15	.23
Item 11	.25	.24	.28	.12	.38	.22	.29	.11	.18
Item 12	.18	.17	.29	.17	.36	.27	.40	.15	.25
Item 13	.37	.09	.47	.11	.34	.12	.22	.13	.42
Item 14	.22	.32	.28	.22	.29	.18	.25	.13	.24
Item 15	.25	.07*	.21	.10	14	.14	.10	.15	.24
Item 16	.37	.26	.40	.20	.48	.24	.35	.12	.31
Item 17	.30	.18	.34	.22	.39	.22	.30	.11	.27
Total	**.52**	**.41**	**.63**	**.37**	**.66**	**.44**	**.56**	**.32**	**.50**

Table 2 Cont'd:

Items	10	11	12	13	14	15	16	17
Item 11	.38	-	-	-	-	-	-	-
Item 12	.49	.39	-	-	-	-	-	-
Item 13	.31	.26	.30	-	-	-	-	-
Item 14	.29	.37	.33	.18	-	-	-	-
Item 15	.15	.16	.14	.23	.15	-	-	-
Item 16	.48	.38	.42	.40	.41	.18	-	-
Item 17	.43	.44	.39	.29	.33	.19	.54	-

Total	**.64**	**.60**	**.65**	**.57**	**.58**	**.38**	**.73**	**.66**

** p > .05; r ≥ ..09, p < .05; r ≥ .14, p < .0001*

Table 3
Item Mean, Scale Mean if item deleted, Corrected Item Total Correlation, and Cronbach Alpha if Item Deleted

Item	Item Mean	Scale Mean if Item Deleted	Corrected Item-Total Correlation	Cronbach Alpha if Item Deleted
Item 1	3.80	55.48	.44	.84
Item2	2.97	56.31	.31	.85
Item3	3.94	55.34	.55	.83
Item4	3.07	56.21	.25	.85
Item5	3.70	55.58	.58	.83
Item6	3.07	56.21	.34	.85
Item7	3.35	55.93	.48	.84
Item8	3.37	55.91	.23	.85
Item9	3.77	55.51	.42	.84
Item10	3.48	55.80	.57	.83
Item11	3.42	55.86	.52	.84
Item12	3.52	55.77	.56	.83
Item13	3.88	55.40	.48	.84
Item14	3.14	55.14	.49	.84
Item15	3.46	55.82	.29	.85
Item16	3.74	55.54	.66	.83
Item17	3.60	55.68	.58	.83

Overall Alpha = .85, $p < .0001$, *r ≥ .23, p = .0001*

Table 4

Rotated Component Matrix

Items	Components		
	1	2	3
1. When I make plans, I am certain I can make them work.	-	.708	-
2. One of my problem is that I can not get down to work when I should.	.562	-	-
3. If I can't do a job the first time I keep trying until I can.	-	.673	-
4. When I set important goals for myself, I rarely achieve them.	.589	-	-
5. I give up on things before completing them.	.536	-	-
6. I avoid facing difficulties.	-	-	.764
7. If something looks too complicated, I will not even bother to try it.	-	-	.660
8. When I have something unpleasant to do, I stick to it until I finish it.	-	-	.443
9. When I decide to do something new, I go right to work on it.	-	.731	-
10. When trying to learn something new, I soon give up if I am not initially successful	.563	-	-
11. When unexpected problems occur, I don't handle them well.	.532	-	-
12. I avoid trying to learn new things when they look too difficult for me.	.461	-	.481
13. Failure just makes me try harder.	-	.672	-
14. I feel insecure about my ability to do things.	.580	-	-
15. I am a self-reliant person.	-	.452	-
16. I give up easily.	.598	.407	-
17. I do not seem capable of dealing with most problems that come up in life.	.570	-	-

Principal Component Analysis with Varimax Kaiser Normalization
$r \geq .40, p < .0001$