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Validation of a New General Self-Efficacy Scale

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Researchers have suggested that general self-efficacy (GSE) can substantially contribute to organizational theory, research, and practice. Unfortunately, the limited construct validity work conducted on commonly used GSE measures has highlighted such potential problems as low content validity and multidimensionality. The authors developed a new GSE (NGSE) scale and compared its psychometric properties and validity to that of the Sherer et al. General Self-Efficacy Scale (SGSE). Studies in two countries found that the NGSE scale has higher construct validity than the SGSE scale. Although shorter than the SGSE scale, the NGSE scale demonstrated high reliability, predicted specific self-efficacy (SSE) for a variety of tasks in various contexts, and moderated the influence of previous performance on subsequent SSE formation. Implications, limitations, and directions for future organizational research are discussed.

Self-efficacy, defined as "beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Wood & Bandura, 1989, p. 408), has been studied extensively in organizational research (Bandura, 1997; Gist & Mitchell, 1992; Stajkovic & Luthans, 1998). Research has found that self-efficacy predicts several important work-related outcomes, including job attitudes (Saks, 1995), training proficiency (Martocchio & Judge, 1997), and job performance (Stajkovic & Luthans, 1998).

According to social cognitive theory (Bandura, 1986, 1997), self-efficacy beliefs vary on three dimensions: (a) level or magnitude (particular level of task difficulty), (b) strength (certainty of successfully performing a particular level of task difficulty), and

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(c) generality (the extent to which magnitude and strength beliefs generalize across tasks and situations). Bandura's restrictive words "given situational demands" have given self-efficacy a narrow focus, and most researchers have limited their research to the magnitude and strength dimensions, conceptualizing and studying self-efficacy as a task-specific or state-like construct (SSE) (e.g., Gist & Mitchell, 1992; Lee & Bobko, 1994).

More recently, researchers have become interested in the more trait-like generality dimension of self-efficacy, which has been termed general self-efficacy (GSE) (e.g., Eden, 1988, 1996, in press; Gardner & Pierce, 1998; Judge, Erez, & Bono, 1998; Judge, Locke, & Durham, 1997). GSE is defined as "one's belief in one's overall competence to effect requisite performances across a wide variety of achievement situations" (Eden, in press) or as "individuals' perception of their ability to perform across a variety of different situations" (Judge, Erez, et al., 1998, p. 170). Thus, 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, in press; Gardner & Pierce, 1998; 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 is SSE (Eden, 1988). The most powerful antecedent of GSE is the aggregation of previous experiences (Shelton, 1990; Sherer et al., 1982). Shelton (1990) proposed that GSE emerges over one's life span as one accumulates successes and failures across different task domains. Discussing the generality of self-efficacy beliefs, Bandura (1997) stated:

> Powerful mastery experiences that provide striking testimony to one's capacity to effect personal changes can also produce a *transformational restructuring of efficacy beliefs* that is manifested across diverse realms of functioning. Such personal triumphs serve as transforming experiences. What generalizes is the belief that one can mobilize whatever effort it takes to succeed in different undertakings. (p. 53)

Thus, accumulation of successes in life, as well as persistent positive vicarious experiences, verbal persuasion, and psychological states, augment GSE.

According to Judge et al. (1997), GSE strongly relates to other self-evaluation constructs, including self-esteem, locus of control, and neuroticism. Judge and colleagues (Judge, Bono, & Locke, 2000; Judge, Locke, Durham, & Kluger, 1998; Judge, Thoresen, Pucik, & Welbourne, 1999) have found particularly high correlations between GSE and self-esteem. Chen, Gully, Whiteman, and Kilcullen (2000) have further shown that GSE is positively related to learning goal orientation. In addition, Chen, Gully, and Eden (2000) found that GSE is positively related to other motivational traits, including need for achievement and conscientiousness.

One important outcome of GSE is SSE. Eden (1988, in press) has argued that GSE positively influences SSE across tasks and situations. Specifically, the tendency to feel efficacious across tasks and situations (i.e., GSE) "spills over" into specific situations,

as reflected by positive relationships between GSE and SSE for a variety of tasks (Shelton, 1990; Sherer et al., 1982). Thus, individuals with high GSE expect to succeed across a variety of task domains.

Beyond GSE's main effect on a variety of variables, consistent with Brockner's (1988) plasticity concept, GSE is hypothesized to moderate the impact of external influences (e.g., performance feedback, training, and experimental treatments) on a variety of dependent variables, including SSE. For example, according to the plasticity hypothesis, we would predict that the SSE of high-GSE individuals is less susceptible to external influences than is the SSE of low-GSE individuals (Eden, 1988, in press). In other words, high GSE can act as an effective shield against adverse—and potentially ego-bruising—events and circumstances.

Beyond Brockner's (1988) largely corroborative research, the plasticity hypothesis has been confirmed in three field experiments, in which significant interactions demonstrated that the impact of experimental treatments on motivation and performance was greater among participants with low GSE than among those whose GSE was high (Eden & Aviram, 1993; Eden & Kinnar, 1991; Eden & Zuk, 1995). Thus, as predicted based on sound theory, internally and externally valid experimentation has shown that GSE acts as both a main effect predictor variable and as a moderator of motivational processes of major interest to organizational scholars.

Nevertheless, the 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 exact a price in terms of theoretical comprehensiveness and proportion of variance explained in motivation research. Moreover, given that jobs and roles in organizations are becoming increasingly broad, complex, and demanding (e.g., Ilgen, 1994; Ilgen & Pulakos, 1999), high GSE is a valuable resource for organizations because it can maintain employees' work motivation throughout rapidly changing and stressful job demands and circumstances and buffer them from the potentially demotivating impact of failure.

Criticisms of GSE

Despite theoretical advances and the accumulation of empirical research on GSE, social cognitive theorists (e.g., Bandura, 1986, 1997; Mischel & Shoda, 1995; Stajkovic & Luthans, 1998) have continued to argue that the utility of GSE for both theory and practice is low. For instance, researchers have questioned whether GSE is a construct distinct from self-esteem (e.g., Stanley & Murphy, 1997), despite conceptual distinctions between the two constructs (Brockner, 1988; Eden, 1988, in press; Gardner & Pierce, 1998). Furthermore, Bandura (1997) claimed that GSE measures "bear little or no relation either to efficacy beliefs related to particular activity domains [i.e., SSE] or to behavior" (p. 42).

The frequent failure of GSE to predict behavior in previous research inspired by Bandura's social cognitive theory can be explained in terms of the concept of "specificity matching" (Eden, 1996, in press), that is, matching the specificity or generality of the efficacy or motivational construct measured to the specificity or generality of the performance predicted. According to Eden, the better the match, the greater the predictability. Most previous research has found that SSE predicts outcomes best (see Bandura, 1986, 1997), probably because the outcomes most often measured have been

highly specific, such as learning to operate specific computer software (e.g., Martocchio & Judge, 1997). However, Eden and Aviram (1993) found that GSE predicted general performance best whereas Eden and Granat-Flomin (2000) found that SSE predicted specific domain performance and GSE did not. Specificity matching is likely to increase predictability. In this sense, GSE is not proposed as a substitute or replacement for SSE; rather, it is a supplement that is predicted to be useful when the performance under scrutiny is generalized.

Locke and Latham (1990) also eschewed GSE scales as being "not nearly as accurate or as precise" (p. 348) as measures of SSE. Moreover, although social cognitive theorists (e.g., Bandura, 1997; Cervone, 1997) have advocated an inductive approach to measuring GSE (i.e., aggregating SSE measures across domains into a composite), GSE is most frequently measured directly, using items tapping general efficacy beliefs (e.g., "I do not seem capable of dealing with most problems that come up in life") (Sherer et al., 1982). In question is whether global, trait-like measures of GSE can predict SSE across tasks and situations. We believe the evidence for GSE's important role is clear. However, as summarized in the following section, the GSE measure used for gathering most of the confirmatory data falls short on some of the psychometric qualities such a measure should have, and the lack of systematic construct validity research on current GSE measures may have contributed to the ambiguities surrounding the GSE construct.

GSE Measurement and Research

Sherer et al. (1982; see also Sherer & Adams, 1983) developed a 17-item general Self-Efficacy Scale (SGSE) to measure "a general set of expectations that the individual carries into new situations" (p. 664). The SGSE scale has been the most widely used GSE measure. We found more than 200 published studies that have used or cited the SGSE scale.[1] Although the SGSE scale was developed for clinical and personality research, it has also been used in organizational settings. The evidence with regard to the reliability and validity of the SGSE scale in organizational studies is summarized below.

Reliability of the SGSE Scale

Internal consistency reliability for the SGSE scale in organizational research has been moderate to high (α = .76 to .89) (e.g., Cable & Judge, 1994; Earley & Lituchy, 1991; Gardner & Pierce, 1998; Riggs & Knight, 1994; Schaubroeck & Merritt, 1997; Smith & Foti, 1998). Using the Hebrew version of the SGSE scale, Eden and colleagues (Dvir, Eden, & Banjo, 1995; Eden & Aviram, 1993; Eden & Kinnar, 1991; Eden & Zuk, 1995) have obtained similar coefficients alpha in Israeli samples. However, the only study that reported the SGSE scale's test-retest reliability (Chen & Gully, 1997) yielded a low estimate (r = .23) across only 3 weeks. Thus, although the SGSE scale has been found to be internally consistent in numerous organizational studies, the little known about its test-retest reliability is not encouraging. However, only one study has examined this issue. Establishing the stability of any GSE measure is crucial, given that GSE has been conceptualized as a stable, trait-like construct.

Validity of the SGSE Scale

Most of organizational research using the SGSE scale has focused on its predictive validity. Research has found that the SGSE scale correlates significantly with several achievement-related demographic variables (e.g., military rank, educational level) (Sherer et al., 1982) and with such outcomes as job search decisions (Cable & Judge, 1994), the number of training and development courses attended (Tharenou, Latimer, & Conroy, 1994), and leader emergence (Smith & Foti, 1998). However, there are other findings that cast doubt on the SGSE scale's validity.

Although the SGSE scale has been found to be positively and significantly related to SSE in some studies (e.g., Betz & Klein, 1996; Woodruff & Cashman, 1993), it has failed to predict SSE in other studies (e.g., Earley & Lituchy, 1991; Eden & Zuk, 1995). It even correlated negatively with SSE in one study (Stanley & Murphy, 1997). These inconsistencies may be explained in part by findings indicating that, consistent with Brockner's (1988) plasticity hypothesis, the SGSE scale interacts with experimental interventions to predict subsequent SSE (Eden & Aviram, 1993; Eden & Kinnar, 1991; Eden & Zuk, 1995). However, Chen and Gully (1997), using the SGSE scale, could not replicate such results when examining the interactive influence of performance feedback and GSE on subsequent SSE.

There is a serious discrepancy between the conceptualization of GSE as an undifferentiated belief in one's generalized ability as a unitary construct on one hand and the multifactorial structure of the SGSE scale on the other. Although GSE has been conceived as unidimensional (e.g., Eden, 1988, in press; Gardner & Pierce, 1998; Judge et al., 1997), Woodruff and Cashman (1993) found that the SGSE items measure three distinct empirical factors reflecting self-perceptions of behavior initiation, effort, and persistence. Perusal of SGSE items (e.g., "If something looks too complicated, I will not even bother to try it," "I give up easily," "If I can't do a job the first time, I keep trying until I can," respectively) intuitively supports Woodruff and Cashman's post hoc interpretation of the SGSE scale's empirical factors. Bosscher and Smit (1998) and Chen and Gully (1997) have replicated Woodruff and Cashman's results, finding the same three-factor structure.

The multidimensionality of the SGSE scale is problematic for several reasons. Conceptually, behavior initiation, effort, and persistence are not self-efficacy; rather, they are its consequences (Bandura, 1997). Speaking to this point, Bandura (1991) stated that "people's beliefs in their efficacy influence the choices they make, their aspirations, how much effort they mobilize in a given endeavor, [and] how long they persevere in the face of difficulties and setbacks" (p. 257). In fact, Sherer et al. (1982) stated that the "[SGSE] items were constructed to cover the range of *behavioral implications* of self-efficacy" (p. 669, emphasis added). Thus, such SGSE items as "I give up on things before completing them" and "When unexpected problems occur, I don't handle them well" tap outcomes of efficacy perceptions. This suggests that a closer examination of the content validity of the SGSE scale was needed. This also suggests that internal consistency reliability estimates of the NGSE scale may be contaminated by the relationships between GSE and its consequences.

Research has also suggested that the SGSE scale may not operationalize a variable distinct from global self-esteem (self-esteem hereafter), although self-efficacy and self-esteem are conceptually distinct. Self-esteem has been defined as "the overall affective evaluation of one's own worth, value, or importance" (Blascovich &

Tomaka, 1991, p. 115). Although both GSE and self-esteem are general self-evaluation constructs (Judge et al., 1997) and, hence, should be substantially correlated, GSE is a more *motivational* construct whereas global self-esteem is a more *affective* construct (Brockner, 1988; Eden, 1988, in press; Gardner & Pierce, 1998). Several researchers (e.g., Chen & Gully, 1997; Eden & Aviram, 1993) have found that the SGSE scale is correlated highly with the Rosenberg (1965) Self-Esteem Scale ($r = .75$ to .91). However, Mathieu and Farr (1991) demonstrated that measures can be highly correlated yet capture distinct constructs that demonstrate different patterns of relationships with other variables. Although the SGSE scale has failed to predict SSE over and above self-esteem in one study (Stanley & Murphy, 1997), it correlated with SSE for a variety of tasks consistently higher than self-esteem in another study (Betz & Klein, 1996). Additionally, in two studies Chen and Gully (1997) found through exploratory factor analyses that the SGSE items and the Rosenberg self-esteem items loaded on the same latent factors. This pattern of findings is potentially problematic because it suggests there is limited discriminant validity for distinguishing the SGSE scale from measures of self-esteem. However, the discriminant validity of GSE and self-esteem measures has yet to be tested using confirmatory factor analysis. Confirmatory factor analysis is called for given the well-articulated theoretical distinction between GSE and self-esteem.

To summarize, although the SGSE scale has fairly high internal consistency reliability and predictive validity, its multidimensionality and seemingly low content and discriminant validity make findings difficult to interpret. The finding that the SGSE scale does not capture a construct distinct from self-esteem, coupled with factorial structure and content (in)validity findings, makes it impossible to be sure which construct or constructs the SGSE measures. Of particular concern is whether the SGSE scale captures self-perceptions of behavior initiation, effort and persistence, self-esteem, GSE, or some combination of these constructs. It is not known whether predictions made with the SGSE scale are attributable to GSE or to other related constructs (e.g., self-esteem, persistence). For these reasons, we concluded that the SGSE scale has not demonstrated sufficient validity to warrant its continued use without further evaluation. Thus, because so much GSE research has relied on the SGSE scale, the *unique* contribution of GSE, as distinct from its correlates, to organizational theory, research, and practice remains unclear.

The Present Research

As argued by Eden (1988, in press), both GSE and SSE contribute to the understanding of motivation and behavior. SSE is a proximal state that positively relates to individuals' decisions to engage and persist in task-related behavior. The importance of the GSE construct to organizational research lies in its ability to (a) predict SSE across situations and tasks, (b) predict general and comprehensive performance criteria, and (c) buffer against the debilitating effects of adverse experiences on subsequent SSE. Unfortunately, lack of systematic construct validity research on GSE measures has prevented substantive researchers from maximally utilizing the GSE construct in organizational research. Future GSE research would be better served by an improved measure that does not share the SGSE scale's apparent limitations. Accordingly, the purpose of the present study was to test a new GSE measure that will reduce the uncer-

tainties beclouding the validity of the SGSE scale by building on the developmental work initiated by Chen and Gully (1997).

Based on Eden's (1988, in press) conceptualization of GSE, Chen and Gully (1997) developed an 11-item instrument and, in their exploratory work, found that 7 of the new GSE items diverged from the Rosenberg Self-Esteem Scale and the SGSE scale. They also found that the new GSE scale (NGSE) predicted SSE and moderated the influence of previous performance on subsequent SSE, whereas self-esteem and the SGSE scale did not. Although their study provided initial evidence for the validity of the NGSE scale, it was exploratory. Furthermore, given that they dropped 4 items from their NGSE scale, it was possible that the remaining 7 NGSE items did not fully capture the construct domain of GSE. Hence, we decided to further develop the Chen and Gully measure. Following guidelines suggested by Hinkin (1998), Nunnally (1978), and Nunnally and Bernstein (1994), we set out to compare the construct validity of the NGSE scale with that of the SGSE scale. For this purpose, we conducted three studies. In Study 1, we revised the NGSE scale and compared its content validity to that of the SGSE scale. Studies 2 and 3 further compared the reliability and validity of the NGSE scale and the SGSE scale in various samples.

Study 1

Scale Development

We retained the seven NGSE items Chen and Gully (1997) had found to be distinct from the SGSE scale and self-esteem. Because we wanted to ensure that the content domain of GSE would be well captured by the NGSE scale, we created seven additional NGSE items, intending to eliminate redundancies later. Consistent with procedures employed by Chen and Gully, when wording the new items we carefully referred to Eden's GSE conceptualization, which is consistent with definitions provided by other researchers (Gardner & Pierce, 1998; Judge et al., 1997; Judge, Erez, et al., 1998). Each of the first two authors independently generated between three and five new items. We combined the items and rewrote or eliminated any that were poorly worded, were clear duplicates, or seemed inconsistent with our GSE definition. The third author then reviewed the items for clarity, consistency with theory, and redundancy. This effort yielded a total of 14 NGSE items, 7 of which were new and 7 carried over from Chen and Gully's study. The NGSE scale was scored on a 5-point Likert-type scale from *strongly disagree* (1) to *strongly agree* (5).

Sample and Procedure

Participants were 316 undergraduates (mean age = 24; 78% female) enrolled in a variety of upper-level psychology courses at a large mid-Atlantic university, who received extra course credit for their participation; 179 participated during a summer semester and 187 during the following fall semester. These samples did not differ significantly on demographic characteristics, mean NGSE, or NGSE test-retest coefficients; therefore, they were combined in the analyses. Participants completed questionnaires thrice during a semester: on the first day of class, prior to a midsemester exam, and on the last day of class. To control order effects, we randomized the order in

which the GSE items appeared on each of the survey forms. Average intervals between the three surveys were 22 days (range = 9 to 44) between the first and second survey, 46 days (range = 13 to 77) between the second and third surveys, and 67 days (range = 28 to 100) between the first and third surveys. The number of students who completed the first, second, and third surveys was 275, 247, and 222, respectively; of these, 163 completed all three surveys, 206 completed the first and second surveys, 189 completed the first and third surveys, and 195 completed the second and third surveys. Multivariate analysis of variance (MANOVA) detected no significant differences between participants who provided full data and those who did not.

Item Reduction and Reliability

We calculated average interitem correlations and factor loadings for the 14 NGSE items across all three administrations. We identified 6 items that were nearly linearly redundant with other items, indicating that there would be little or no loss in sampling of content domain if they were eliminated. Moreover, including highly intercorrelated items that evidently oversample the same content domain would artificially inflate the internal consistency reliability estimate (e.g., Boyle, 1991). Based on item face validity, interitem correlations, and factor loadings, we retained the 8 items that best captured GSE (see the appendix). Principal components analyses yielded a single-factor solution for these 8 NGSE items on all three occasions (α = .87, .88, and .85, respectively). The test-retest reliability coefficients for the 8-item NGSE scale were high, r_{t1-t2} = .65, r_{t2-t3} = .66, r_{t1-t3} = .62. Thus, the final 8 NGSE items yielded a scale that is theory based, unidimensional, internally consistent, and stable over time.

Content Validity

Two independent panels (8 graduate students in industrial and organizational psychology and 14 psychology undergraduates) examined the content validity of the NGSE scale and the SGSE scale. We gave these students the definitions[2] of GSE and self-esteem and asked them to indicate whether the 8 NGSE items, the 17 SGSE items, and the 10 Rosenberg self-esteem items capture GSE, self-esteem, or some other construct similar to GSE and self-esteem. To control for order effects, the 35 items were randomly ordered on a single form. The respondents were instructed to base their designations on the definitions provided (for a description of a similar content validation procedure, see Anderson & Gerbing, 1991).

Results from the graduate students were as follows: (a) 98% of the NGSE items were sorted as "GSE" and 2% as "Self-esteem"; (b) 54% of the SGSE items were sorted as "GSE," 10% as "self-esteem," and 36% as "other"; and (c) 7.5% of the self-esteem items were sorted as "GSE" and 92.5% as "self-esteem." Results from the undergraduates indicated that (a) 87% of the NGSE items were sorted as "GSE," 11% as "self-esteem," and 3% as "other"; (b) 64% of the SGSE items were sorted as "GSE," 14% as "self-esteem," and 22% as "other"; and (c) 11% of the self-esteem items were sorted as "GSE," 83% as "self-esteem," and 6% as "other." These results provide evidence for discriminant and content validity of the GSE and self-esteem measures, and suggest that the content of the NGSE items is substantially more consistent with the GSE construct than is the content of the SGSE items.

Study 2

In Study 2, we first examined the reliability and dimensionality of the NGSE scale and the SGSE scale. Then, we tested whether the NGSE scale and the SGSE scale are distinct from self-esteem. Consistent with the GSE conceptualization, we expected that GSE measures would be distinct from the Rosenberg self-esteem measure. Although GSE may also be highly related to other constructs, such as locus of control, researchers have consistently shown that measures of GSE are more highly related to self-esteem than to other related constructs (Eden & Aviram, 1993; Judge et al., 2000; Judge, Erez, et al., 1998; Judge, Locke, et al., 1998; Stanley & Murphy, 1997). Thus, it was particularly important to focus our discriminant validity analyses on self-esteem. Next, we compared the predictive validity of the NGSE scale and the SGSE scale by testing whether GSE positively relates to SSE for 10 occupational tasks. We predicted that GSE would correlate positively with SSE for performing different tasks.

Finally, we examined whether GSE moderates the influence of previous performance on subsequent SSE. Consistent with previous findings showing that GSE acts as a moderator (Chen & Gully, 1997; Eden & Aviram, 1993; Eden & Kinnar, 1991; Eden & Zuk, 1995; Schaubroeck & Merritt, 1997; Speier & Frese, 1997), as well as Brockner's (1988) plasticity hypothesis, we predicted that GSE would moderate the influence of previous exam performance on subsequent exam SSE, such that previous exam performance would have a more positive relationship with subsequent exam SSE among low-GSE individuals compared with high-GSE individuals.

Method

SAMPLE AND PROCEDURE

We collected data from 323 undergraduates in several upper-level psychology courses at a large mid-Atlantic university. Average age was 23 (range = 18 to 47). Of the undergraduates, 77% were women, 27% were not employed, 43% were employed part-time (i.e., fewer than 20 hours per week), and 30% were employed full-time (i.e., more than 20 hours per week). Participants received extra credit and a chance to win one of two $50 cash prizes. The receipt of extra credit points and the chance of winning the $50 prize were contingent solely on providing complete data.

Fourteen days prior to their first semester exam, participants received a packet that contained the first survey and were asked to complete it on their own time and return it during the next class. It included measures of GSE, self-esteem, and occupational SSE. GSE and self-esteem items were dispersed randomly in a single block to control order effects. We handed out 404 surveys, of which 323 (80%) were returned. Participants completed a second survey during a class session that, on average, took place 2 days after receiving their exam grade and 20 days after completion of the first survey. The second survey included measures of GSE and exam SSE. GSE items were randomly dispersed in a single block in the questionnaire; 323 participants provided complete data from the first survey and 261 provided complete data from both surveys. MANOVA detected no significant differences between participants who provided full data and those who did not.

MEASURES

GSE was measured using the 17-item SGSE scale and the 8-item NGSE scale developed in Study 1. Self-esteem was measured using the Rosenberg 10-item Self-Esteem Scale ($\alpha = .91$) (Rosenberg, 1965). The 30-item Kuder Task Self-Efficacy Scale (Lucas, Wanberg, & Zytowski, 1997) assessed SSE for 10 occupational tasks ($\alpha = .70$ to .91). A 9-item measure assessed exam SSE ($\alpha = .83$) (Phillips & Gully, 1997). Scores on a midsemester exam measured performance. Graders did not have access to self-efficacy and self-esteem scores and were blind to the hypotheses. The exams tested the participants on similar amounts of material and were similar in format across the courses.

Results and Discussion

RELIABILITY AND FACTORIAL DIMENSIONALITY

Table 1 presents descriptive statistics and intercorrelations. Internal consistency reliability was high for both the NGSE scale ($\alpha = .86$ and .90) and the SGSE scale ($\alpha = .88$ and .91) at Times 1 and 2, respectively. Test-retest coefficients show that both the NGSE scale and the SGSE scale were stable ($r = .67$ and .74, respectively). Principle components analysis conducted on both occasions revealed that the NGSE scale is unidimensional (eigenvalues = 4.17 and 4.76, accounting for 52% and 59% of the total item variance, respectively). In contrast, analyses of the SGSE scale yielded three dimensions with eigenvalues greater than 1, accounting for 45% and 58% of the total SGSE item variance at Times 1 and 2, respectively. These three factors were similar across analyses and replicated previous findings (Bosscher & Smit, 1998; Chen & Gully, 1997; Woodruff & Cashman, 1993), suggesting that although the SGSE scale has high reliability, it is multidimensional. As Cortina (1993) has shown, high internal consistency reliability does not necessarily imply factorial unidimensionality. In contrast, and consistent with the GSE conceptualization, the NGSE scale again was found to be both highly reliable and unidimensional.

DISCRIMINANT VALIDITY

The correlations of the GSE and self-esteem scales were quite high (see Table 1). We conducted a confirmatory factor analysis to test whether the GSE and self-esteem measures are sufficiently distinct. Following Williams and Anderson (1994), we created four indicators (which included a random subset of items) for each of the GSE and self-esteem scales. Next, we tested for factorial equivalence using LISREL 8 (Jöreskog & Sörbom, 1993). Specifically, we compared the fit of five different models: (a) a three-factor model (i.e., the two GSE factors and the self-esteem factor are independent of one another), (b) three two-factor models (one in which the correlation between the NGSE factor and the SGSE factor was set at 1, one in which the correlation between the NGSE factor and the self-esteem factor was set at 1, and one in which the correlation between the SGSE factor and the self-esteem factor was set at 1), and (c) a one-factor model (in which all three factors were set to correlate at 1).

Table 1
Descriptive Statistics, Reliability Coefficients, and Intercorrelations in Study 2

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. NGSE (T1)	3.87	0.54	(.86)																
2. SGSE (T1)	3.74	0.54	.78**	(.88)															
3. Rosenberg	3.90	0.72	.75**	.71**	(.91)														
4. Exam performance	74.09	14.72	.07	.10	.07	—													
5. NGSE (T2)	3.91	0.54	.67**	.60**	.53**	.20**	(.90)												
6. SGSE (T2)	3.76	0.56	.62**	.73**	.58**	.16**	.74**	(.91)											
7. Exam SSE	3.41	0.59	.35**	.25**	.34**	.47**	.43**	.28**	(.83)										
8. Art[a]	3.18	1.10	.33**	.31**	.28**	.13*	.20**	.22**	.16*	(.82)									
9. Clerical[a]	3.79	0.90	.28**	.30**	.19**	.15**	.30**	.36**	.19**	.25**	(.70)								
10. Computational[a]	2.67	1.17	.34**	.35**	.29**	.12*	.29**	.24**	.17**	.38**	.38**	(.89)							
11. Literature[a]	3.44	0.96	.28**	.23**	.27**	.02	.28**	.27**	.20**	.35**	.37**	.32**	(.76)						
12. Mechanical[a]	2.87	1.15	.32**	.33**	.21**	.12*	.26**	.25**	.22**	.41**	.39**	.73**	.33**	(.88)					
13. Musical[a]	3.26	1.12	.23**	.22**	.17**	−.03	.20**	.18**	.03	.40**	.36**	.25**	.36**	.26**	(.82)				
14. Outdoors[a]	3.54	0.97	.27**	.29**	.19**	.13*	.26**	.26**	.17**	.36**	.54**	.43**	.34**	.57**	.38**	(.80)			
15. Persuasive[a]	3.42	0.99	.26**	.20**	.27**	−.04	.15*	.20**	.08	.13*	.37**	.11*	.30**	.13*	.29**	.36**	(.74)		
16. Science[a]	3.42	1.10	.33**	.36**	.24**	.13*	.29**	.29**	.27**	.40**	.41**	.56**	.27**	.66**	.28**	.52**	.15**	(.91)	
17. Social work[a]	4.13	0.82	.30**	.32**	.20**	.02	.25**	.30**	.09	.13*	.58**	.16**	.28**	.22**	.28**	.52**	.42**	.36**	(.75)

Note. N = 261 to 323 for the correlations. Reliability coefficients (alpha) are on the diagonal. NGSE = New General Self-Efficacy Scale, SGSE = Sherer et al. (1982) General Self-Efficacy Scale, Rosenberg = Rosenberg (1965) Self-Esteem Scale, T1 = Time 1, T2 = Time 2.
a. Occupational self-efficacy subscales.
*p < 05. **p < .01.

Table 2
Goodness-of-Fit Summary Table for General
Self-Efficacy (GSE) and Self-Esteem Scales

Model	df	χ^2	Root Mean Square Error of Approximation	Goodness-of-Fit Index	Comparative Fit Index	Adjusted Goodness-of-Fit Index
1. Three-factor model[a]	51	144.31	.075	.93	.97	.90
2. Two-factor model 1[b]	52	181.74	.088	.91	.96	.86
3. Two-factor model 2[c]	52	227.43	.100	.89	.94	.83
4. Two-factor model 3[d]	52	355.23	.130	.81	.90	.71
5. One-factor model[e]	54	409.87	.140	.77	.88	.67

Note. $N = 323$.
a. All three factors are free to correlate.
b. The New General Self-Efficacy (NGSE) scale and the Sherer et al. (1982) General Self-Efficacy Scale (SGSE) correlate at 1.0.
c. The NGSE scale and self-esteem correlate at 1.0.
d. The SGSE scale and self-esteem correlate at 1.0.
e. The NGSE scale, the SGSE scale, and self-esteem all correlate at 1.0.

Chi-square difference tests indicated a significantly better fit for the three-factor model compared with the four alternative models ($p < .05$) (see Table 2). The correlations between the three latent factors were $\phi_{NGSE-SGSE} = .90$, $\phi_{NGSE-Self-Esteem} = .87$, and $\phi_{SGSE-Self-Esteem} = .79$. Consistent with our content-related validity findings, these results indicate that both the NGSE scale and the SGSE scale are distinct from, albeit highly related to, self-esteem. Unlike results from our content validation, which showed that compared with the SGSE scale, the NGSE scale is more consistent with the GSE construct than with the self-esteem construct, the latent correlation of the NGSE scale with self-esteem was slightly (although not significantly) higher than the latent correlation of the SGSE scale with self-esteem. The findings also suggest that the NGSE scale and the SGSE scale measure distinct constructs.

For exploratory purposes, we examined further the latent correlations of the three SGSE factors with the NGSE and self-esteem factors. We specified a measurement model that included five factors: (a) GSE (captured by the NGSE scale), (b) self-esteem, (c) SGSE Factor 1 (capturing behavior initiation/avoidance; e.g., "I avoid facing difficulties"), (d) SGSE Factor 2 (capturing persistence/effort; e.g., "When I have something unpleasant to do, I stick to it until I finish it"), and (e) SGSE Factor 3 (capturing general self-evaluation; e.g., "I am a self-reliant person"). The latent correlations between the three SGSE factors and the NGSE and self-esteem factors were as follows: $\phi_{NGSE-SGSE1} = .84$, $\phi_{NGSE-SGSE2} = .76$, $\phi_{NGSE-SGSE3} = .89$, $\phi_{Self-Esteem-SGSE1} = .72$, $\phi_{Self-Esteem-SGSE2} = .63$, and $\phi_{Self-Esteem-SGSE3} = .93$. These results indicate that the more motivational components of the SGSE scale (Factors 1 and 2) related more highly with the NGSE scale than with self-esteem, but that the third SGSE factor, which captures self-evaluations, relates more highly to both the NGSE scale and self-esteem than do the other SGSE factors. Thus, consistent with theory, GSE (measured by the NGSE scale) was more highly related to motivational constructs than was self-esteem. To be consistent with previous substantive research, we aggregated the three SGSE factors into a single measure and used this global measure in subsequent validity analyses.

Table 3
Moderated Hierarchical Regression Analyses of Subsequent Specific
Self-Efficacy on Exam Performance and General Self-Efficacy (GSE)

Enter/Step	β	Total R^2	ΔR^2	F Change
Analyses using the New General Self-Efficacy (NGSE) Scale				
Exam performance (EP)	.45**			
GSE (Time 1 NGSE)	.33**	.33	.33	62.89**
EP × GSE	−.10†	.34	.01	3.55†
Analyses using the Sherer et al. (1982) General Self-Efficacy Scale (SGSE)				
EP	.44**			
GSE (Time 1 SGSE)	.20**	.26	.26	45.05**
EP × GSE	−.05	.26	.00	0.82

Note. $N = 261$ for all analyses.
†$p = .06$. *$p < .05$. **$p < .01$.

PREDICTIVE VALIDITY

GSE and occupational SSE. We used LISREL 8 to estimate the correlations of the NGSE scale and the SGSE scale with the 10 occupational SSE scales. Four parcels were set as indicators for the NGSE scale and the SGSE scale, and, for each of the 10 occupational SSE scales, all three items were used as indicators. The fit of the model that freely estimated the correlations between the NGSE scale, the SGSE scale, and the 10 occupational SSE factors was acceptable, $\chi^2(599) = 1291.45$ (root mean square error of approximation = .06, goodness of fit index = .83, adjusted goodness of fit index = .79, comparative fit index = .90). As expected, the correlations of both the NGSE scale and the SGSE scale with all 10 occupational SSE measures were positive and significant ($\phi = .15$ to .43, $p < .001$). In addition, the model in which the correlations of the NGSE scale with occupational SSE factors were set to equal the correlations of the SGSE scale with occupational SSE factors did not fit the data significantly worse, $\Delta\chi^2(10, N = 323) = 5.51$, *ns*, suggesting that the two GSE measures correlated similarly with the 10 occupational SSE measures.

GSE, previous performance, and subsequent exam SSE. Fisher's *r*-to-*z* transformations indicated that the correlation of the NGSE scale with subsequent exam SSE was stronger than correlation of the SGSE scale with subsequent exam SSE at Time 1 ($r = .35 > r = .25$, $z = 2.88$, $p < .01$) and Time 2 ($r = .43 > r = .29$, $z = 3.45$, $p < .001$). When simultaneously entered into a regression equation, both previous exam performance ($\beta = .46$, $p < .01$) and Time 1 NGSE ($\beta = .44$, $p < .01$) significantly predicted subsequent exam SSE, whereas Time 1 SGSE did not ($\beta = −.14$, *ns*).

We conducted moderated hierarchical regression analyses (Cohen & Cohen, 1983) to test whether GSE moderated the influence of previous exam performance on subsequent exam SSE. As shown in Table 3, when measured by the NGSE scale, the moderating effect of GSE on the relationships between previous performance and subsequent SSE approached significance ($p = .06$). As predicted, the positive influence of previous performance on subsequent SSE was stronger among low-GSE individuals than among high-GSE individuals (see Figure 1). In contrast, when measured by the
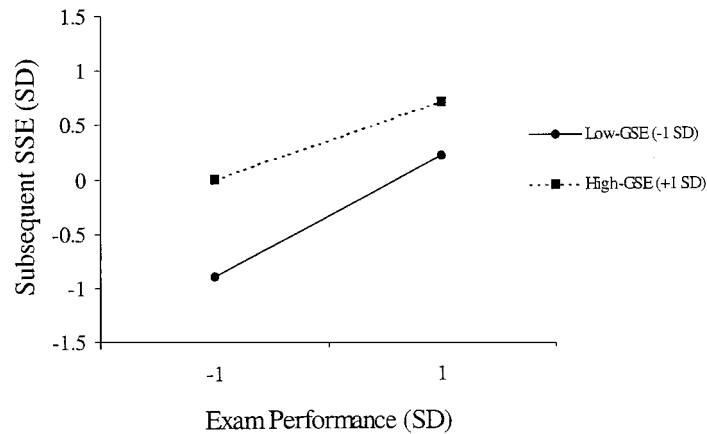
Figure 1:   Effect of Exam Performance on Exam Specific Self-Efficacy (SSE) as Moderated by General Self-Efficacy (GSE)

SGSE scale, GSE did not moderate this relationship. To summarize, replicating Chen and Gully (1997), the predictive validity of the NGSE scale was higher than that of the SGSE scale.

Study 3

The purpose of Study 3 was to replicate some of the findings from Studies 1 and 2 in a different national culture and language. We compared the content-related validity, reliability, dimensionality, and predictive validity of the Hebrew versions of the NGSE scale and the SGSE scale among Israeli managers.

Method

Participants were 54 managers (83% male; mean age = 38) attending an executive MBA program at an Israeli university. On average, participants had 8 direct subordinates and 39 indirect subordinates, were one to two levels from the CEO in their companies, and had 9 years of managerial experience. They volunteered to complete two surveys, both of which included the NGSE scale, the SGSE scale, and leadership SSE, which were administered 2 weeks apart during class time; 48 provided complete data at Time 1, 48 at Time 2, and 42 at Times 1 and 2. No significant differences were detected between those who provided complete data and those who did not.

The Hebrew version of the SGSE scale had been used in previous research (e.g., Eden & Aviram, 1993; Eden et al., 2000; Eden & Kinnar, 1991; Eden & Zuk, 1995). The NGSE was translated into Hebrew by the third author and translated back into English by the first author. No discrepancies were obtained in the translation. The Hebrew versions of the NGSE scale and the SGSE scale are scored on a 5-point scale similar to that used for the English versions. A 28-item leadership SSE measure developed by Eden et al. (2000) was used to capture one's belief with regard to one's ability to perform specific leadership behaviors successfully. The behaviors included in this

Table 4
Descriptive Statistics, Reliability Coefficients, and Intercorrelations in Study 3

Variable	Mean	SD	1	2	3	4	5	6
1. NGSE (T1)	4.14	0.48	(.85)					
2. SGSE (T1)	4.06	0.46	.78	(.88)				
3. Leadership SSE (T1)	4.15	0.34	.68	.68	(.92)			
4. NGSE (T2)	4.16	0.41	.86	.77	.70	(.86)		
5. SGSE (T2)	4.08	0.48	.73	.90	.68	.75	(.91)	
6. Leadership SSE (T2)	4.14	0.34	.73	.69	.90	.75	.70	(.94)

Note. $N = 42$ to 48 for the correlations. Reliability coefficients (alpha) are on the diagonal. NGSE = New General Self-Efficacy Scale, SGSE = Sherer et al. (1982) General Self-Efficacy Scale, SSE = specific self-efficacy, T1 = Time 1, T2 = Time 2. All correlations are significant ($p < .01$).

scale were based on previous research on managerial leadership and were scored on a 5-point Likert-type scale from *strongly disagree* (1) to *strongly agree* (5) ($\alpha = .92$ and .94 at Time 1 and Time 2, respectively). Sample leadership SSE items include "I can create trust among subordinates," "I can facilitate effective communication among subordinates," and "I can motivate my subordinates to exert maximal effort." The GSE items were randomly dispersed in the questionnaire. The leadership SSE measure was administered as a separate block following the GSE measures and demographic items.

Results and Discussion

CONTENT VALIDITY

A panel of 34 Israeli organizational behavior graduate students rated the content validity of the Hebrew versions of the NGSE scale, the SGSE scale, and the Rosenberg Self-Esteem Scale. Results indicated that (a) 88% of the NGSE items were sorted as "GSE," 11% as "self-esteem," and 1% as "other"; (b) 73% of the SGSE items were sorted as "GSE," 18% as "self-esteem," and 9% as "other"; and (c) 7% of the self-esteem items were sorted as "GSE," 91% as "self-esteem," and 2% as "other." These results demonstrate that the content validity of the Hebrew NGSE scale is higher than the content validity of the Hebrew SGSE scale, although the differences were less pronounced compared with those in the English versions.

RELIABILITY AND FACTORIAL DIMENSIONALITY

Descriptive statistics and intercorrelations are provided in Table 4. The Hebrew NGSE and SGSE scales both yielded high internal consistency at Time 1 ($\alpha = .85$ and .88) and Time 2 ($\alpha = .86$ and .91), and test-retest analyses yielded high stability coefficients for both scales ($r = .86$ and .90, respectively). Replicating results from Studies 1 and 2, principal components analysis conducted on the NGSE scale at Times 1 and 2 indicated that the scale is unidimensional. In contrast, and consistent with previous findings, the SGSE scale yielded three factors at Times 1 and 2. Despite the low subject-to-item ratio (6:1 for the NGSE analysis and 3:1 for the SGSE analysis), these results again replicate the finding that the NGSE scale is unidimensional whereas the SGSE scale is multidimensional.

PREDICTIVE VALIDITY

Hierarchical multiple regression demonstrated that Time 1 NGSE predicted an additional 9.6% of the variance in Time 2 leadership SSE ($\beta = .50$, $\Delta F = 8.76$, $p < .01$) over and above the 47.7% accounted for by Time 1 SGSE. In contrast, Time 1 SGSE accounted for only 3.4% of the variance in Time 2 leadership SSE ($\beta = .30$, $\Delta F = 3.14$, $p = .08$) beyond the 53.8% accounted for by Time 1 NGSE. These results partially replicate findings from Study 2, indicating that the predictive validity of the Hebrew NGSE scale is somewhat higher than that of the Hebrew SGSE scale.

General Discussion

We found that although both GSE measures are internally consistent and stable, the NGSE scale is unidimensional whereas the SGSE scale is multidimensional. Moreover, results from Study 2 indicated that although the two GSE measures are distinct from self-esteem, the NGSE scale and the SGSE scale capture somewhat different constructs. Furthermore, the NGSE scale consistently yielded appreciably higher content validity and somewhat higher predictive validity compared with the SGSE scale. Thus, the results suggest the NGSE scale is a more valid measure of GSE than is the SGSE scale. In addition, the NGSE scale is shorter (8 items) than the SGSE scale (17 items) which, together with the validity evidence, makes it a more appealing measure for use in organizational research.

Implications

As jobs become broader and more complex, measuring dispositional constructs that can predict motivational reactions and behaviors across a variety of work domains becomes increasingly important (e.g., Judge, Erez, et al., 1998; Judge et al., 1997; Judge, Locke, et al., 1998; Judge et al., 1999; Parker, 1998). We found that our NGSE measure related to SSE for a variety of tasks and in different settings, and did so in two national cultures. Given that SSE has been shown to be an important predictor of performance across different studies and settings (Stajkovic & Luthans, 1998), our findings suggest that the NGSE scale may help to explain motivation and performance in a variety of work contexts. In particular, GSE enables individuals to adapt effectively to novel and adverse environments (e.g., during training, socialization, and organizational change) (Judge et al., 1999; Pulakos, Arad, Donovan, & Plamondon, 2000). Thus, our new measure may contribute to the development of more effective selection and training systems, since it predicts SSE across different task domains.

Limitations and Directions for Future Research

We have provided evidence that indicates the NGSE scale has high content validity (i.e., NGSE items are conceptually more consistent with GSE than with self-esteem). However, there still remains the issue of content deficiency, or the degree to which the domain is sufficiently sampled. This can only be determined by comparing the content of the items to the definition of the construct and judging whether the items sufficiently sample the domain as defined. We have defined GSE explicitly to be consistent with current theoretical models, and have attempted to sample the construct domain of GSE

broadly by expanding the scope of our measure at several points in the validation process. Repeatedly, we found that additional items added little or nothing new to our current measure in terms of reliability and content or predictive validity. The only "contribution" of adding items beyond the 8 included in the NGSE scale was artificially to inflate coefficient alpha by adding items that were redundant with items already included and therefore highly intercorrelated with them (e.g., Boyle, 1991). However, despite these empirical findings, content validity is primarily a theoretical issue. As our theories and understanding evolve, it is incumbent upon current and future researchers to continue to assess the validity of the measures in use. As Nunnally and Bernstein (1994) stated:

> In spite of efforts to settle every psychological measurement issue by a flight into statistics, content validity is mainly settled in other ways. Although helpful hints are obtained from analyses of statistical findings, content validity primarily rests upon an appeal to the propriety of content and the way that it is presented. (p. 103)

Future research should examine whether our findings generalize to other samples and settings. In addition, it is important to test the validity and usefulness of GSE within a more elaborate nomological network. Although we found that GSE was highly related to, and yet distinct from, self-esteem, it is important that future research examine the relationship between GSE and other constructs, such as locus of control and neuroticism (e.g., Judge et al., 1997). Also, researchers should examine whether the functional relationships of GSE and other related constructs are different. For instance, to the extent that self-esteem is more affective and GSE is more motivational, it is possible that self-esteem will be more strongly related to affective variables (e.g., state anxiety and job satisfaction) whereas GSE will be more strongly related to motivational variables (e.g., SSE, goals, effort, and performance). Furthermore, future research should directly test whether SSE mediates the relationship between GSE and behavior. It is possible that, consistent with Eden's (1996, in press) specificity-matching principle, SSE mediates the impact of GSE on task-specific behavior, but that GSE directly influences motivated effort on more global task domains (see also Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995).

In addition, future studies should continue to evaluate the relative contributions of GSE and SSE to our understanding of organizational behavior and performance. Some social cognitive researchers might take exception to the notion that trait-like characteristics are important determinants of proximal cognition, motivation, behavior, and performance. However, as Bandura has noted (1997), generic self-efficacy and domain self-efficacy are not entirely independent. Individuals' appraisal of their efficacy in a given domain is based in part on a judgment of their general self-regulatory capabilities. Thus, understanding the relationship between GSE, SSE, self-esteem, and performance may teach us not only how to intervene, but also when it is appropriate to do so. Addressing the differences in theoretical perspectives will require high-quality items that have been rigorously validated.

Examining such possibilities was beyond the scope of the present effort. However, work in progress has yielded promising results. For instance, researchers have found the NGSE scale to be related significantly and positively to job-related SSE among health care employees (Chen, Goddard, & Casper, 1999), social security workers (Eden & Granat-Flomin, 2000), and project outreach tutors (Natanovich & Eden,

1999). In addition, Chen, Gully, et al. (2000) have demonstrated that the NGSE scale consistently relates to learning SSE over and above cognitive ability, goal orientation, state anxiety, and previous performance. Furthermore, Chen, Gully and Eden (2000) demonstrated that GSE (measured by the NGSE scale) correlates more highly with several motivational variables than does self-esteem, whereas self-esteem correlates more highly with various affective variables than does GSE.

Conclusion

Organizational scholars can now treat GSE and SSE more even handedly, lending each its due in their research and practice. The NGSE scale gives them a short but valid tool for harvesting the potential benefits of GSE to organizational research. Considering the evidence for the impact of GSE as a predictor and a moderator variable, its more widespread inclusion in work motivation research is likely to increase the proportion of variance explained in motivation and performance and to improve the precision of our theoretical models of organizational behavior. The many organizational behavior researchers who study macroperformance that transcends specific situations stand to gain the most from using the NGSE scale.

APPENDIX
New General Self-Efficacy Scale

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1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

Notes

1. More specific information with regard to the search we have conducted is available upon request from the first author.

2. Participants were told that (a) general self-efficacy relates to "one's estimate of one's overall ability to perform successfully in a wide variety of achievement situations, or to how *confident* one is that she or he can perform effectively across different tasks and situations," and (b) self-esteem relates to "the overall affective evaluation of one's own worth, value, or importance, or to how one *feels* about oneself as a person."

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