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Relationship of Core Self-Evaluations to Goal Setting, Motivation, and Performance

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A newly developed personality taxonomy suggests that self-esteem, locus of control, generalized self-efficacy, and neuroticism form a broad personality trait termed core self-evaluations. The authors hypothesized that this broad trait is related to motivation and performance. To test this hypothesis, 3 studies were conducted. Study 1 showed that the 4 dispositions loaded on 1 higher order factor. Study 2 demonstrated that the higher order trait was related to task motivation and performance in a laboratory setting. Study 3 showed that the core trait was related to task activity, productivity as measured by sales volume, and the rated performance of insurance agents. Results also revealed that the core self-evaluations trait was related to goal-setting behavior. In addition, when the 4 core traits were investigated as 1 nomological network, they proved to be more consistent predictors of job behaviors than when used in isolation.

The role of personality in research on work motivation has a checkered history. As Gellatly (1996) noted, "Attempts to empirically link personality characteristics with motivational variables have produced inconsistent results" (p. 474). A primary reason for these inconsistencies is the lack of personological frameworks from which to study the dispositional basis of motivation. One exception is the five-factor model, which has provided a framework that has been shown to be useful with respect to one trait—conscientiousness—and one central aspect of motivation—self-regulation (Barrick, Mount, & Strauss, 1993; Gellatly, 1996). Kanfer and Heggestad (1997) more recently developed a new model linking trait achievement and trait anxiety to self-regulatory motivation.

In this article, we take a similar approach, namely, that personality variables are related to motivation to perform through self-regulatory mechanisms. However, we rely on a relatively new—and untested—personality concept, core self-evaluations, which are "basic conclusions" or "bottom-line evaluations" that represent one's appraisal of people, events, and things in relation to oneself (Judge, Locke, & Durham, 1997). The core self-evaluations model includes four traits: neuroticism, self-esteem, locus of control, and generalized self-efficacy—the first three of which are some of the most widely investigated traits in personality psychology and are also heavily investigated in industrial–organizational psychology.[1] Thus, the purpose of this article was to explore the potential common effect of these traits on motivation and performance through self-regulatory mechanisms.

Although the four core traits have been the subject of more than 48,000 studies, only a small fraction of this population of studies has included more than a single core trait. Thus, in the vast majority of cases, these traits are studied in isolation, which is regrettable because research has demonstrated that a single personality variable often is a poor predictor of job behavior (Ghiselli, 1973; Guion & Gottier, 1965). In the relatively unusual case when two of the traits are included in the same study, in almost all cases they are viewed as entirely separate variables in both the personality (e.g., Abouserie, 1994; Horner, 1996) and applied psychology (e.g., Hesketh, 1984; Tiggemann & Winefield, 1984) literatures. The core self-evaluations concept may provide some needed integration—both in personality psychology and, perhaps, in the relations of these traits to work outcomes such as motivation and job performance.

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[1] A search of the PsycINFO database, 1967–2000, revealed 15,636 studies with citations to neuroticism (or the alternative terms emotional stability or emotional adjustment); 18,264 studies with citations to self-esteem; and 12,247 studies with citations to locus of control. We could find no other trait (e.g., extraversion, need for achievement) with as many citations as these three traits.

Judge, Erez, and Bono (1998) recently claimed that the core self-evaluations concept would be related to performance primarily through motivation. In this article, we considered this claim by linking core self-evaluations to goal-setting motivation and task performance. Despite impressive support for goal-setting theory, research has shown that difficult and specific goals motivate people only to the degree that individuals commit to them (Erez & Zidon, 1984; Locke & Latham, 1990). Hollenbeck and Klein (1987) argued that goal commitment is a function of the expectancy of goal attainment (people will not be committed to goals that they think they cannot achieve) and the attractiveness of goal attainment (people will only strive to achieve goals that they find attractive). It is plausible that core self-evaluations will be related to both components of goal commitment. A great deal of research supports the link between the individual core traits and expectancy motivation (e.g., Dipboye, Phillips, & Shahani, 1985; Hollenbeck & Brief, 1987), though few studies have related the individual core traits and goal commitment per se. Thus, we hypothesized that individuals with positive core self-evaluations would be more motivated to perform and exhibit higher levels of task performance. Furthermore, we hypothesized that the relationship between core self-evaluations and performance would be partially explained (mediated) by motivation, specifically by goal level and goal commitment.

There is intuitive appeal to the conceptualization of personality variables that traditionally have been perceived as separate traits as belonging to one broad construct. In fact, the current trend in personality research is to regard a few broad traits as containing most of the information necessary to predict behavior (Ones & Viswesvaran, 1996; Paunonen, 1998). However, direct empirical tests of the relative predictive power of narrow versus broad traits are essential to determine whether it is advantageous to combine traits into one broad factor. Accordingly, another purpose of this article was to explore the relative validity of core self-evaluations versus the four traits in predicting motivation and performance.

We present the results of three studies. The first study explored the relationships among the four core traits. Specifically, Study 1 tested whether the four traits form a higher order factor. In the second study, we tested whether there is a relationship between core self-evaluations and motivation and performance by exploring the relationships among the constructs in a laboratory setting. The third study tested whether these relationships could be replicated in a field setting and further tested whether the relationship between core self-evaluations and performance is mediated by goal-setting behavior. We also compared the predictive validity of the single core trait relative to the four individual traits.

Study 1

Method

Participants and Procedure

Undergraduates enrolled in required courses at a southeastern university completed a battery of personality instruments. Participation was voluntary, and participants received extra credit. Four hundred seventy-three students, whose ages ranged from 17 to 47 years, with a median age of 20 years, participated in the study. Fifty-five percent were female, and 74% were White.

Measures

Locus of control. Locus of control was measured with the Internal subscale of Levenson's (1981) Internal, Powerful Others, and Chance Scale (IPC). Responses were based on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale (α = .73).

Neuroticism. Neuroticism was measured with the 12-item Neuroticism subscale from the NEO Five-Factor Inventory (NEO-FFI; Costa & Mc-Crae, 1992).[2] Responses were based on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale (α = .88).

Self-esteem. Rosenberg's (1965) 10-item Self-Esteem Scale was used to measure self-esteem. Responses were based on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale (α = .89).

Generalized self-efficacy. Generalized self-efficacy was measured with an 8-item scale that combined items from Jones (1986) and Sherer et al. (1982; see Judge, Bono, & Locke, 2000). Responses were based on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale (α = .90).

Analysis

To investigate the validity and structure of the core self-evaluations concept, we used both principal-components analyses and confirmatory factor analyses. Principal-components analysis is useful for extracting factor scores to be used in subsequent analyses. Confirmatory factor analysis procedures permit testing the number of factors in the data as well as the structure of those factors. Covariance structure modeling was estimated in the present study by using LISREL 8 (Jöreskog & Sörbom, 1993). In the confirmatory factor analyses, we investigated potential structural relations between higher and lower order latent variables, because second-order factors may account for correlated errors that are very common in "first-order" confirmatory factor analysis (Gerbing & Anderson, 1984). For example, in a first-order factor analysis of self-esteem, generalized self-efficacy, locus of control, and neuroticism, we may find highly correlated errors among the constructs that could be explained by a second-order core self-evaluations factor. We report the following fit statistics: chi-square with corresponding degrees of freedom, root-mean-square error of approximation (RMSEA), nonnormed fit index (NNFI), incremental fit index (IFI), and parsimonious normed fit index (PNFI), which corrects fit statistics for lack of parsimony.

Results

A core self-evaluations factor was extracted by factor analyzing the data at the item level. A principal-components analysis of the items measuring the four dispositional variables identified eight factors with eigenvalues greater than 1.0. The first factor explained 25.8% of the variance in the items and had an eigenvalue of 10.57. Thus, a factor score was created by multiplying the items by their factor weights from the components analysis. The correlations between the core self-evaluations that emerged at the item level and the individual dispositions at the scale level (corrected for unreliability) are reported in Table 1.

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[2] The Revised NEO Personality Inventory (NEO-PI-R) was used by special permission of the Publisher, Psychological Assessment Resources, Inc., 16204 North Florida Avenue, Lutz, Florida 33549, from the NEO Five-Factor Inventory, by Paul Costa and Robert McCrae, Copyright 1978, 1985, 1989 by PAR, Inc. Further use or reproduction of the NEO-PI-R is prohibited without permission of PAR, Inc.

Table 1

Means, Standard Deviations, and Intercorrelations Among Core Self-Evaluations, Locus of Control, Neuroticism, Self-Efficacy, and Self-Esteem in Study 1

Variable	M	SD	1	2	3	4	5
1. Core self-evaluations	0.00	1.00	—				
2. Locus of control	52.27	9.18	.62	(.73)			
3. Neuroticism	33.81	9.32	−.71	−.32	(.88)		
4. Generalized self-efficacy	22.49	9.44	.77	.15	−.33	(.90)	
5. Self-esteem	41.21	7.00	.90	.62	−.54	.69	(.89)

Note. $N = 473$. Reliabilities are in parentheses along the diagonal. Correlations were corrected for unreliability. Correlations greater than .25 are significant at the $p < .01$ level. Correlations greater than .10 are significant at the $p < .05$ level. Correlations between the four traits and the core self-evaluations factor were similar, though not equivalent, to factor loadings.

We compared a first-order factor model in which the factors were not allowed to correlate and a second-order factor model.[3] In the first-order model, the items were loaded on their respective construct (e.g., self-esteem items on the self-esteem construct). The fit indices for the first-order model were as follows: χ^2(753, $N = 473$) = 2,094.02, *ns*; RMSEA = .27; NNFI = .80; IFI = .82; and PNFI = .69. This poor fit can be attributed to the substantial relationships among the core traits. In the second-order model, the latent constructs were allowed to load on a second-order latent factor. The fit of this model was as follows: χ^2(749, $N = 473$) = 1,520.67, *ns*; RMSEA = .09; NNFI = .89; IFI = .90; and PNFI = .75. The loadings of the four latent constructs on the second-order factor were as follows: locus of control, .77 ($p < .01$); neuroticism, −.54 ($p < .01$); self-efficacy, .81 ($p < .01$); and self-esteem, .96 ($p < .01$). Thus, the second-order model was preferred over the first-order model. These results suggest that core self-evaluations is a higher order factor that explains the associations among the four lower level traits.

Study 2

Method

Participants

Students enrolled in a required course at a northeastern university were asked to participate in a laboratory study investigating the correlates of task performance. Participation was voluntary, and those who participated received extra credit. One hundred and twelve undergraduate students participated in the study. Ages ranged from 17 to 48 years, with a median age of 19 years. Seventy-six percent of participants were female, and 86% were White.

Procedure

On arriving at the lab, students completed a personality questionnaire. After participants completed this questionnaire, the experimenter gave each participant two typewritten pages to read and left the room. The first page informed the students that they were going to take an anagram-solving test. After solving a sample anagram, participants were given 10 anagrams to solve. Of the 10 anagrams, 2 were insoluble. If a participant did not open the door within 45 min, he or she was stopped. Participants then answered a brief questionnaire about the test. When participants had completed the questionnaire, they were thanked and debriefed.

Measures

Locus of control. Locus of control was measured with the full 24-item IPC scale ($\alpha = .80$).

Self-esteem. Self-esteem was measured with Rosenberg's (1965) Self-Esteem Scale ($\alpha = .89$).

Generalized self-efficacy. Generalized self-efficacy was measured using the same scale as that used in Study 1 ($\alpha = .80$).

Neuroticism. Neuroticism was measured with the Negative Affect Schedule (NAS; Watson, Clark, & Tellegen, 1988). Brief (1998) and Watson (2000) consider the NAS to be a measure of neuroticism. The NAS asks respondents to indicate, on a 1–5 scale, the degree to which they generally experience 10 different feelings and emotions (e.g., "ashamed," "distressed"). The reliability (α) of the NAS in this study was .81.

Task motivation. Motivation was measured using two methods. First, persistence in solving the anagrams was measured by the time participants invested in trying to solve the 10 anagrams (8 soluble and 2 insoluble). Second, participants were asked to state their agreement with three motivational questions ("I did not perform as well as I could because I was not motivated to do well," "I really wanted to succeed on this test," and "I would look forward to taking the same test in the future"). Participants rated these items on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The alpha reliability of this 3-item scale was .68.

Task performance. As is common in motivation research (Hollenbeck & Brief, 1987), the number of anagrams correctly solved was taken as a measure of performance.

Results

The core self-evaluations factor was extracted by factor analyzing the data at the item level. The principal-components analysis of the items of the four dispositional variables identified 15 factors with eigenvalues greater than 1.0. The first factor explained 20.11% of the variance in the items and had an eigenvalue of 10.46. A factor score was created by multiplying the items by their factor weights from the components analysis. The correlations between the core self-evaluations factor and the individual dispositions (corrected for unreliability) are reported in Table 2.

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[3] A second-order factor model is mathematically and functionally equivalent to a first-order correlated factor model (Bollen, 1989). However, a second-order factor model, if it is tenable, is preferred over the correlated factor model because it more explicitly considers the structural nature of the constructs (Gerbing & Anderson, 1984).

Table 2
Means, Standard Deviations, and Intercorrelations Among Core Self-Evaluations, Motivation, and Task Performance in Study 2

Variable	M	SD	1	2	3	4	5	6	7	8
1. Core self-evaluations	0.00	1.00	—							
2. Locus of control	115.94	14.05	.69	(.80)						
3. Neuroticism	21.17	6.76	−.58	−.52	(.89)					
4. Generalized self-efficacy	43.71	6.64	.34	.34	−.47	(.80)				
5. Self-esteem	42.97	6.64	.61	.47	−.62	.59	(.81)			
6. Task performance	0.00	1.00	.35	.31	−.20	.03	.14	—		
7. Persistence in solving anagrams	0.00	1.00	.24	.26	−.34	.11	.10	.22	—	
8. Task motivation	0.00	1.00	.39	.35	−.31	.04	.21	.52	.30	(.68)

Note. N = 112. Reliabilities are in parentheses along the diagonal. Correlations were corrected for unreliability. Task performance, task motivation, and the measure of persistence were standardized. Correlations greater than .25 are significant at the p < .01 level. Correlations greater than .19 are significant at the p < .05 level. Correlations between the four traits and the core self-evaluations factor were similar, though not equivalent, to factor loadings.

Confirmatory Factor Analysis

In an effort to replicate Study 1 results concerning the core self-evaluations construct, we conducted a parallel analysis using Study 2 data. Because of the small sample size, as recommended by Schaubroeck, Ganster, and Fox (1992), for each scale, items were assigned randomly to three sets or parcels to form indicators for the latent variables. The indices of fit for this hypothesized model were as follows: $\chi^2(54, N = 112) = 184.25, ns$; RMSEA = .15; NNFI = .72; IFI = .78; and PNFI = .58. When a second-order factor was extracted from the data, the fit statistics of this model were as follows: $\chi^2(50, N = 112) = 84.78, ns$; RMSEA = .08; NNFI = .92; IFI = .94; and PNFI = .66. The loadings of the four traits on the second-order factor were as follows: locus of control, .59 ($p < .01$); neuroticism, −.76 ($p < .01$); self-efficacy, .79 ($p < .01$); and self-esteem, .88 ($p < .01$). Here again, the results indicate that a second-order core self-evaluations factor could be extracted from the relationships among the four traits.

Relationship of Core Self-Evaluations to Task Motivation and Performance

The correlations of the core self-evaluations factor with task motivation and performance are reported in Table 2. The relationship between task performance and the core self-evaluations factor was positive and significant ($r = .35, p < .01$). The core concept also was positively related to both measures of motivation ($r = .39, p < .01$, and $r = .24, p < .05$), suggesting that those individuals with positive core self-evaluations were more motivated to perform than those with negative core self-evaluations. To test whether task motivation mediated the relationship between core self-evaluations and task performance, we followed the mediation procedure of Baron and Kenny (1986). The results are presented in Table 3. The first regression indicated that there was a relationship between core self-evaluations and task performance that potentially could be mediated by motivation. The second regression indicated that core self-evaluations was related to motivation. The third regression showed that when motivation was included in the first regression, the relationship between core self-evaluations and task performance dropped considerably, but not to an insignificant level. These results indicate that motivation partially mediated the relationship between performance and core self-evaluations.

Study 3

Method

Setting, Participants, and Procedure

The setting for Study 3 was a regional division of a *Fortune* 500 company in the insurance industry located in the southeastern United States. Surveys were administered to insurance agents during the agency's annual meeting. A cover letter accompanied the survey, explaining the purpose of the study and promising respondents that their answers would be completely confidential. The agents were given 20 min during the meeting to complete the surveys. One hundred and twenty-four agents returned usable surveys, representing a 95% response rate. Average age of respondents was 43 years, their average tenure with the agency was 11.9 years, and 16% were female.

Measures

In this study, all items were evaluated by participants using a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Self-esteem. Self-esteem was measured with Rosenberg's (1965) Self-Esteem Scale ($\alpha = .81$).

Generalized self-efficacy. Generalized self-efficacy was measured using the same scale as that used in Studies 1 and 2 ($\alpha = .78$).

Locus of control. As in Study 1, the Internal subscale of the IPC scale was used to measure locus of control ($\alpha = .74$).

Neuroticism. Neuroticism was measured with the 12-item Neuroticism scale from the NEO-FFI ($\alpha = .79$).

Table 3
Core Self-Evaluations and Task Performance: Mediating Effect of Motivation in Study 2

Variable	β	R^2
1. First regression (task performance)		.12**
Core self-evaluations	.35**	
2. Second regression (task motivation)		.17**
Core self-evaluations	.41**	
3. Third regression (task performance)		.29**
Core self-evaluations	.18*	
Task motivation	.44**	

Note. Dependent variables are in parentheses.
*$p < .05$. **$p < .01$.

Table 4
Means, Standard Deviations, and Intercorrelations of Study 3 Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Core self-evaluations	0.00	1.00	—										
2. Locus of control	44.23	4.68	.67	(.74)									
3. Neuroticism	25.12	5.89	−.69	−.65	(.79)								
4. Generalized self-efficacy	33.97	3.76	.73	.74	−.69	(.78)							
5. Self-esteem	44.22	4.62	.75	.74	−.79	.73	(.81)						
6. Conscientiousness	46.02	5.44	.36	.37	−.30	.52	.39	(.77)					
7. Goal setting	10.19	2.58	.42	.44	−.21	.39	.29	.17	(.71)				
8. Goal commitment	21.54	2.94	.59	.57	−.36	.66	.43	.35	.52	(.89)			
9. Activity level	91.54	93.39	.32	.22	−.24	.08	.19	.16	.29	.27	—		
10. Sales volume	50,672	59,840	.35	.34	−.29	.18	.22	.01	.28	.25	.72	—	
11. Rated performance	2.97	0.76	.44	.35	−.24	.22	.26	.12	.29	.29	.55	.55	—

Note. $N = 124$. Reliabilities are in parentheses along the diagonal. Correlations were corrected for unreliability. Correlations greater than .25 are significant at the $p < .01$ level. Correlations greater than .19 are significant at the $p < .05$ level. Correlations between the four traits and the core self-evaluations factor were similar, though not equivalent, to factor loadings.

Conscientiousness. Conscientiousness was measured with the 12-item Conscientiousness scale from the NEO-FFI ($\alpha = .80$).

Goal setting. Goal setting was measured with the following 3 items: "Over the past year, I have set regular dollar sales goals"; "Over the past year, I have set regular sales-call goals"; and "My sales goals that I have set for myself are difficult to achieve" ($\alpha = .71$).

Goal commitment. Goal commitment was measured with 5 items taken from Hollenbeck, Williams, and Klein's (1989) scale. The items were adapted to the sales context of the study. An example item included "I am strongly committed to pursuing my sales goals" ($\alpha = .89$).

Activity level. Agents' activity levels were assessed from monthly reports submitted by agents and kept in their files. These records indicated various aspects of activity (e.g., number of phone calls to prospective clients, potential clients identified, interviews with clients). The agency assigned points to each activity reported according to agency-published guidelines. The annual sum of these monthly points was used as a measure of activity level. Thus, individuals who displayed higher levels of activity, consistent with definitions of motivation as amplitude of effort (Naylor, Pritchard, & Ilgen, 1980), were presumed to be more motivated.

Sales volume. An objective measure of agents' sales performance was assessed by the annual dollar-value business that agents brought to the insurance agency in the year in which the study was conducted. This information was taken from company records.

Rated performance. On the basis of the reported yearly records of the agents' activities, sales volume performance, and productivity, the president of the agency rated each agent's performance on the following scale: 1 = *not adequate for job*, 2 = *below average*, 3 = *average*, or 4 = *above average*.

Results

As in Studies 1 and 2, a core self-evaluations factor was extracted by factor analyzing the data at the item level. The principal-components analysis of the items of the four dispositional variables identified 12 factors with eigenvalues greater than 1.0. The first factor explained 23.65% of the variance in the items and had an eigenvalue of 9.70. A factor score was created by multiplying the items by their factor weights. Table 4 provides the correlations between the individual dispositions (corrected for unreliability) and the core self-evaluations factor.

Confirmatory Factor Analysis

To replicate earlier results concerning the core self-evaluations construct, using Study 3 data we conducted a first-order confirmatory factor analysis to test whether the three subsets of items loaded on each of their corresponding, uncorrelated four latent variables. The indices of fit for this hypothesized model were as follows: $\chi^2(54, N = 124) = 273.02$, *ns*; RMSEA = .19; NNFI = .57; IFI = .65; and PNFI = .49. To verify the existence of the overall core construct, a second-order factor was estimated that would explain the associations among the first-order factors. The fit statistics of this model were as follows: $\chi^2(50, N = 124) = 68.52$, $p = .04$; RMSEA = .06; NNFI = .96; IFI = .97; and PNFI = .68. The loading of the four latent constructs on the second-order factor were as follows: locus of control, .87 ($p < .01$); neuroticism, −.90 ($p < .01$); self-efficacy, .83 ($p < .01$); and self-esteem, .88 ($p < .01$). Thus, the results indicate that a second-order factor could be extracted from the relationships among the four core traits.[4]

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[4] We also tested the dimensionality of the two goal-setting variables. In this analysis, we specified a model that constrained self-reported goal setting and goal commitment to load on their separate constructs. We compared this model with an alternative model that was designed to investigate the possibility that goal setting and goal commitment are not distinct factors and, therefore, that this model consisted of only one factor. Although the two-factor model fit the data acceptably, $\chi^2(16, N = 124) = 54.82$, *ns*; RMSEA = .05; NNFI = .86; IFI = .92; and PNFI = .51, it did not fit the data significantly better than the single-factor model, $\chi^2(17, N = 124) = 54.82$, *ns*; RMSEA = .04; goodness-of-fit index = .90; NNFI = .87; IFI = .92; and PNFI = .54. Because the single-factor model was more parsimonious than the two-factor model, we concluded that this was the model that should be used in the structural model analysis. Thus, in subsequent analyses, goal setting and goal commitment were allowed to load on the same construct.
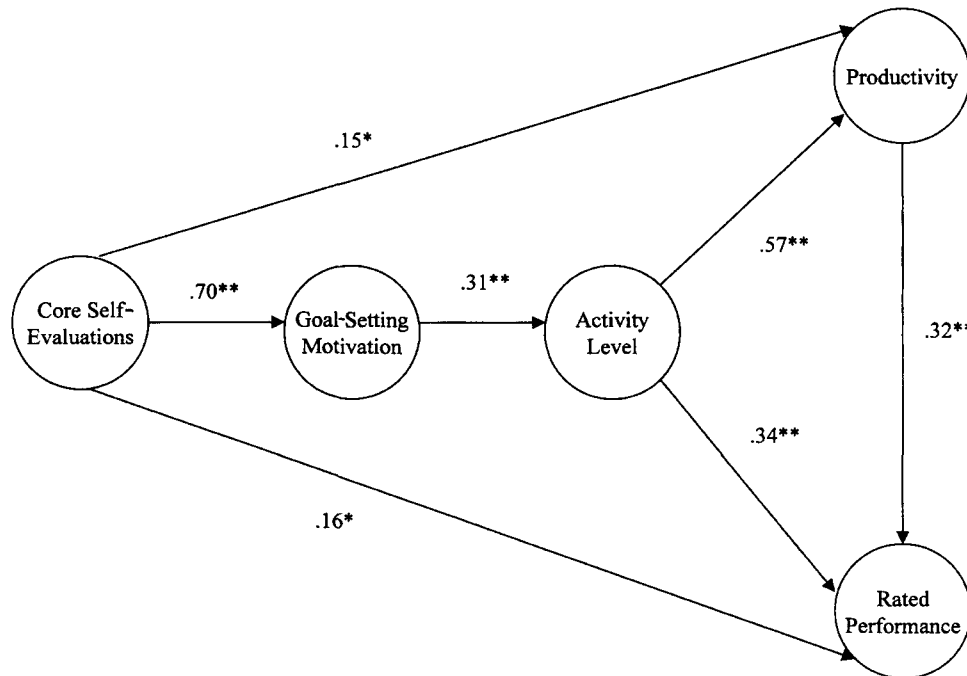
Figure 1. LISREL estimates of the relationship of core self-evaluations to goal setting, motivation, and job performance. $*p < .05.$ $**p < .01.$

Relationship of Core Self-Evaluations to Task Motivation and Performance

Table 4 provides the correlations among the variables. Results revealed that core self-evaluations was related to motivation and performance. To test the mediating effect of goals on the relationship between core self-evaluations and job performance, we specified a structural model using LISREL.[5] LISREL estimates of the hypothesized model are presented in Figure 1. Results showed that core self-evaluations had a strong relationship with goal-setting motivation, as well as with sales volume and rated performance. Results also revealed that goal-setting motivation was related to agents' activity level and that activity level was significantly related to sales volume and rated performance. In turn, sales volume influenced rated performance. The total and indirect effects of this model are reported in Table 5. Fit statistics for the structural model were as follows: $\chi^2(24, N = 124) = 53.15, p < .01$; RMSEA $= .10$; NNFI $= .90$; IFI $= .94$; and PNFI $= .59$.

Comparison of Predictive Validity of the Lower and Upper Level Traits

The correlations between the core self-evaluations construct, the individual core traits, and the criterion variables in Studies 2 and 3 are reported in Tables 2 and 4. A perusal of these correlations reveals that the core self-evaluations trait was significantly related to all eight of the performance and motivation outcomes in Studies 2 and 3. In contrast, the lower level traits were less consistently related to the outcomes (significantly related to 24 of the 36 criterion variables). These results suggest that when the four dispositions were investigated as one core disposition, they proved to

be, overall, more consistent predictors of criteria than when used in isolation.

In addition, we conducted a usefulness analysis (Darlington, 1990) to determine the contribution of the core self-evaluations factor over the prediction of any single core trait. In this analysis, each individual lower level trait was entered first into a regression to predict the criterion variables, and then the core self-evaluations factor was added to the equations to ascertain the increase in the multiple correlation. These results were then compared with the reverse situation, whereby the core self-evaluations factor was entered in the first step and the individual trait was entered in the second step. To remove the possibility that the core self-evaluations construct was more predictive because of higher reliability (because of a larger number of items), the predictor–criterion correlations were first corrected for attenuation in the individual traits. As shown in Table 6, the usefulness analysis indicated that core self-evaluations significantly increased the multiple correlation in 30 of the 32 relationships, beyond the correlation provided by any individual trait. At the same time, the individual traits significantly increased the multiple correlations in only 6 of the 32 relationships, with the core self-evaluations factor controlled for.

In the next analysis, we estimated the relative contribution of the lower level traits and the higher order factor to the criteria. We

[5] In the structural model, we allowed the four core self-evaluation traits to load on one latent factor, goal setting and goal commitment were allowed to load on a common goal-setting motivation construct, and each of the other constructs (i.e., activity level, sales volume, and rated performance) loaded on its own latent construct.

Table 5
Direct, Indirect, and Total Relationships Between Core Self-Evaluations, Motivation, and Performance

Relationship	Core self-evaluations and sales volume	Core self-evaluations and rated performance	Core self-evaluations and activity level	Goal setting and sales volume	Goal setting and rated performance
Direct	.15*	.16*			
Indirect	.12**	.16**	.22**	.18**	.16**
Total	.27**	.32**	.22**	.18**	.16**
Proportion mediated	.44	.50	1.00	1.00	1.00

Note. Proportion of relationship mediated was calculated by dividing the indirect relationship by the total relationship.
* $p < .05$. ** $p < .01$.

used Cohen and Cohen's (1983) set correlation, which yields a single index of the amount of shared variance between a predictor variable and a group of criterion variables. Thus, set correlations can be interpreted as incremental variance explained. This method is similar to canonical correlational analysis but avoids some of the problems associated with this method (see Cohen & Cohen, 1983). When core self-evaluations was used to predict all criterion variables simultaneously, in Study 2, the set correlation was .20 ($p < .01$). In comparison, the set correlations for the lower order traits were as follows: locus of control, .17 ($p < .01$); neuroticism, .16 ($p < .01$); self-efficacy, .01 (ns); and self-esteem, .05 (ns). Thus, in Study 2, core self-evaluations accounted for 3% more variance in the criteria as a whole than did locus of control, 4% more than did neuroticism, 19% more than did self-efficacy, and 15% more than did self-esteem. When this comparison was made with respect to the five criterion variables in Study 3, the set correlation for core self-evaluations was .42 ($p < .01$). The set correlations for the lower order traits were as follows: locus of control, .35 ($p < .01$);

neuroticism, .18 ($p < .01$); self-efficacy, .40 ($p < .01$); and self-esteem, .29 ($p < .01$). Thus, core self-evaluations was a better predictor of the criteria than the isolated traits.

The above analyses indicate that, overall, core self-evaluations was a stronger and more consistent predictor of the criteria than any single trait. However, these analyses do not answer the question of whether the four traits should be combined into one construct. If the four core traits included in an analysis predict the criteria above and beyond the core self-evaluations factor, then it should prove beneficial to include all four traits in the analysis without combining them into one factor. To answer this question, we followed the procedure offered by Ree, Earles, and Teachout (1994). These researchers developed this procedure to investigate whether specific abilities (s) contributed to predicting criterion above and beyond the general ability factor (g). We used this procedure to investigate whether the unique portion of the four traits added to the variance explained in the criterion variables.

Table 6
Usefulness Analyses of Multiple Correlations From Study 2 and Study 3

Variable	Study 2					Study 3		
	Rated performance	Sales volume	Activity level	Goal setting	Goal commitment	Task performance	Task persistence	Reported motivation
1. Locus of control	.35**	.34*	.22**	.44**	.58**	.31**	.26**	.35**
2. Core self-evaluations	.10**	.04†	.10**	.03*	.06*	.05*	.01	.06*
1. Core self-evaluations	.44**	.35**	.32**	.42**	.59**	.35**	.24**	.30**
2. Locus of control	.01	.03	.00	.05**	.05**	.01	.03	.03
1. Neuroticism	.24**	.29**	.24**	.22*	.36**	.20*	.34**	.31**
2. Core self-evaluations	.23**	.07*	.08*	.21**	.23**	.15**	.00	.09**
1. Core self-evaluations	.44**	.35**	.32**	.42**	.59**	.35**	.24**	.30**
2. Neuroticism	.01	.01	.00	.01	.00	.00	.10**	.02
1. Self-efficacy	.22*	.18†	.08	.39**	.66**	.03	.11	.05
2. Core self-evaluations	.23**	.19**	.31**	.05*	.02*	.33**	.13*	.35**
1. Core self-evaluations	.44**	.35**	.32**	.42**	.59**	.35**	.24**	.39**
2. Self-efficacy	.02†	.02	.07**	.02	.03**	.01	.00	.01
1. Self-esteem	.29**	.25**	.21*	.33**	.49**	.14	.10	.21*
2. Core self-evaluations	.15**	.10**	.12**	.09**	.10**	.22**	.15*	.18**
1. Core self-evaluations	.44**	.35**	.32**	.42**	.59**	.35**	.24**	.39**
2. Self-esteem	.00	.00	.00	.00	.00	.01	.01	.00

Note. Numbers in the second stages are changes in multiple correlations.
† $p < .10$. * $p < .05$. ** $p < .01$.

In this analysis, core self-evaluations was represented by the first factor from the earlier principal-components analyses. To maximize the predictive efficiency of the unique portion of the four traits, hence the portion of the traits that was not represented by core self-evaluations, we used the remaining unrotated principal component as their measures (Brogden, 1946; Ree et al., 1994). Thus, in Study 2, these were Factors 2–15, and in Study 3, these were Factors 2–12. In regression analyses predicting all eight criterion variables from Studies 2 and 3, we entered the core self-evaluations factor first and then entered the remaining 14 and 11 factors, respectively. A significant change in R^2 indicates that specific factors added significant variance beyond the variance explained by the core self-evaluations factor. The results are presented in Table 7 and show that the unique portions of the four traits did not add significant variance beyond the contribution of core self-evaluations to any of the criterion variables.[6] These analyses indicate that the specific trait factors did not contribute to the prediction of performance and motivation beyond the core self-evaluations factor.

Role of Conscientiousness

Because conscientiousness has been found to be the most consistent personality predictor of job performance (Barrick & Mount, 1991), it is important to investigate the incremental validity of core self-evaluation over and above the effects of conscientiousness. We investigated this incremental validity in Study 3 by partialing out the effect of conscientiousness from the correlations between core self-evaluations and the criterion variables. Doing so changed very little the correlations between core self-evaluations and rated performance, sales volume, and activity level (on average, the correlation decreased by .007). Partialing out conscientiousness did reduce the correlations of core self-evaluations with the goal variables but by relatively little (i.e., from .41 to .38 for goal setting and from .57 to .51 for goal commitment). Thus, core self-evaluations appeared to have incremental validity above and beyond the influence of conscientiousness. However, these results should be interpreted with caution. Conscientiousness did not seem to be highly related to any of the criterion variables, a departure from past research results. These small correlations are probably idiosyncratic to this specific sample; in other samples in which the

Table 7
Core Self-Evaluations and Specific Traits Variance

Variable	R^2_{CSE}	ΔR^2_S
1. Goal setting	.17**	.12
2. Goal commitment	.32**	.11
3. Activity level	.09**	.06
4. Sales volume	.12**	.07
5. Rated performance	.19**	.06
6. Task performance	.12**	.08
7. Persistence in solving anagrams	.12**	.04
8. Task motivation	.15**	.11

Note. Variables 1 to 5 are from Study 3, and Variables 6 to 8 are from Study 2. R^2_{CSE} = variance explained due to core self-evaluations; ΔR^2_S = change in variance due to the inclusion of the specific traits variance represented by Factors 2 to 15 in Study 2 and Factors 2 to 12 in Study 3.
** $p < .01$.

correlations between conscientiousness and the criterion variables are higher, the incremental validity of core self-evaluations may be smaller.

Discussion

The results of the present investigation provide the most comprehensive evidence to date on the core self-evaluations construct and the only known evidence on the validity of the construct for motivation and performance. Overall, the results provide somewhat mixed support for core self-evaluations theory and its implications for motivation and performance. On the one hand, the results clearly indicate the existence of a higher order factor that explains the correlations among the individual traits. Support for the higher order trait was provided by rigorous confirmatory factor analyses. The results also provide important support for the validity of the core self-evaluations construct in predicting motivation, in several ways. First, as a rule, the individual core traits were related to motivation and performance. Because these traits, as a set, have never been related to motivation and performance, this finding is important. Second, the core self-evaluations factor displayed higher correlations with motivation and performance, in both a lab and a field study, than did the average individual trait. Indeed, across the two studies, the core self-evaluations factor correlated .12 more strongly with motivation and performance than did the average core trait. Thus, findings from the laboratory and the field converged to demonstrate that individuals with positive core self-evaluations tended to be better performers than those with negative core self-evaluations. When the four dispositions were investigated as one nomological network, the overall construct proved to be a more consistent predictor of job behaviors than when the individual traits were used in isolation. As a group, the unique portions of the traits generally did not add significant variance beyond core self-evaluations. The implication is that the variance underlying the core self-evaluations factor adds something unique to the prediction beyond that provided by any single trait.

On the other hand, several pieces of evidence do not support core self-evaluations theory. First, although the first factor extracted from the exploratory analyses was correlated with most of the items across the four measures, it was not the only factor extracted. Thus, although there appears to be general factor variance attributable to core self-evaluations, there also appears to be specific factor variance not accounted for by the core factor. Second, examination of the correlations in Tables 2 and 4 reveals that the core self-evaluations factor, although correlating more highly with motivation and performance than did locus of control, did so by a relatively small degree. Results of the more rigorous analysis in Table 6 showed that the core self-evaluations factor added significant explanation beyond locus of control, whereas

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[6] We also reversed the order of entering the variables whereby the specific factors were entered on the first step and the core self-evaluations factor was entered next. The results were very similar to those reported in Table 7. The variance explained by core self-evaluations was always significant, whereas the variance explained by the specific factors was insignificant for all the dependent variables. The fact that the results did not change depending on the order of entry was not surprising because the specific factors were orthogonal to the core self-evaluations factor.

locus of control generally did not add beyond the factor. However, it also is clear from Table 6 that the incremental validity provided was relatively small. Finally, of the four core traits, locus of control correlated more strongly with the criterion variables than did the other three traits, which was not predicted by previous writings on the subject (Judge et al., 1998).

In light of this evidence, what can we conclude about core self-evaluations theory and its implications for motivation and performance, and what is the contribution of the present investigation to this knowledge base? First, given that the core self-evaluations construct almost always predicts better than the individual traits, researchers investigating the relationship of self-esteem, generalized self-efficacy, locus of control, or neuroticism to motivation and performance will obtain higher validity in using the traits as a set. Because almost all of the research that has related these traits to motivation and performance has focused on only a single trait, this implication is important.

A second broad implication of the present investigation is that researchers investigating self-esteem, generalized self-efficacy, locus of control, and neuroticism—whether in the context of predicting motivation and performance or in a broader context—should consider the possibility that they indicate a higher order factor. Although the validity of any theory cannot be demonstrated in a single study, the results presented in this study at least suggest that these traits are not as distinct as past researchers have assumed. We do not mean to imply that the core traits are one and the same construct, nor do we mean to suggest that these four traits should never be used in isolation. Indeed, our results suggest that each trait has a unique component and may lend some support to the argument (with respect to locus of control and job performance) that the individual traits may be relevant in some contexts. Given support for the concept of construct correspondence (Ajzen & Fishbein, 1977), the individual core traits may be particularly useful in predicting specific criteria. However, broad constructs also have been proven to be very useful, and these benefits often have been ignored by psychologists (Rushton, Brainerd, & Pressley, 1983). Thus, although we do not mean to discourage research involving the individual core traits, we do believe that such investigations should at least consider the communality among the traits and the possibility that they may indicate a higher order construct that may be more useful.

By the same token, it is important to integrate core self-evaluations theory with existing trait theories. In considering the core self-evaluations model, one might ask how are core self-evaluations different from neuroticism in the Big Five model? Similar to the claim of Watson and Clark (1984) that negative affectivity is broader than neuroticism, core self-evaluations may be broader than, and encompass the domains included in, neuroticism. Core self-evaluations may be broader than neuroticism especially in regard to how it affects the multifaceted process of evaluation and reaction to events. In that sense, neuroticism can be extended to include the other three dispositions of self-esteem, locus of control, and generalized self-efficacy, and as such, core self-evaluations can fit into the Big Five domain. Furthermore, if, as we suggest, the neuroticism domain has not been considered as broadly as it should be, its relationship with a range of behaviors may be stronger than what has been discovered to date.

As with all studies, this research has several limitations. First, this study did not investigate the incremental predictive validity of core self-evaluations beyond the effects of past accomplishments (which may lead to positive self-regard). Second, a comprehensive construct validity of the core self-evaluations factor should investigate its relationships with other dispositional variables in the form of a nomological network. We did not conduct such an analysis in this study, and as such, we have provided only partial evidence for the validity of this construct. One may also question the practical significance of our results because in some cases core self-evaluations did not add much variance to the explained criterion, beyond locus of control. However, scholars recently have started recognizing that the percent variance explanation is a misleading index of the systematic influence of factors (Abelson, 1985). For example, in Study 3, the difference in incremental variance between locus of control and core self-evaluations in predicting the overall criteria (i.e., set correlations analysis) was only 7%. However, this small difference could produce an increase of 26% in success rate (Rosenthal & Rosnow, 1991). From a selection point of view, this increase in success rate is not trivial for the candidates or for the organization selecting them. Nonetheless, future research may still need to investigate the incremental contribution of core self-evaluations relative to the isolated traits. In sum, although this study did not provide overwhelming unequivocal evidence in support of the core self-evaluations model, we believe that it did provide a case for the viability of core self-evaluations as a concept worthy of consideration in future research.

References

Abelson, R. P. (1985). A variance explanation paradox: When a little is a lot. *Psychological Bulletin, 97,* 129–133.

Abouserie, R. (1994). Sources and levels of stress in relation to locus of control and self esteem in university students. *Educational Psychology, 14,* 323–330.

Ajzen, I., & Fishbein, M. (1977). Attitude–behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin, 84,* 888–918.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173–1182.

Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology, 44,* 1–25.

Barrick, M. R., Mount, M. K., & Strauss, J. P. (1993). Conscientiousness and performance of sales representatives: Test of the mediating effects of goal setting. *Journal of Applied Psychology, 78,* 715–722.

Bollen, K. A. (1989). *Structural equations with latent variables.* New York: Wiley.

Brief, A. P. (1998). *Attitudes in and around organizations.* Thousand Oaks, CA: Sage.

Brogden, H. E. (1946). On the interpretation of the correlation coefficient as a measure of predictive efficiency. *Journal of Educational Psychology, 37,* 65–76.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences.* New York: Erlbaum.

Costa, P. T., Jr., & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and Individual Differences, 13,* 653–665.

Darlington, R. B. (1990). *Regression and linear models.* New York: McGraw-Hill.

Dipboye, R. L., Phillips, A., & Shahani, C. (1985, August). *Self-serving reactions to performance feedback: An image-management approach.*

Paper presented at the conference of the Academy of Management, San Diego, CA.

Erez, M., & Zidon, I. (1984). Effect of goal acceptance on the relation of goal difficulty to performance. *Journal of Applied Psychology, 69,* 69–78.

Gellatly, I. R. (1996). Conscientiousness and task performance: Test of a cognitive process model. *Journal of Applied Psychology, 81,* 474–482.

Gerbing, D. W., & Anderson, J. C. (1984). On the meaning of within-factor correlated measurement errors. *Journal of Consumer Research, 11,* 572–580.

Ghiselli, E. (1973). The validity of aptitude tests in personnel selection. *Personnel Psychology, 20,* 461–477.

Guion, R. M., & Gottier, R. F. (1965). Validity of personality measures in personnel selection. *Personnel Psychology, 18,* 135–164.

Hesketh, B. (1984). Attribution theory and unemployment: Kelley's covariation model, self-esteem, and locus of control. *Journal of Vocational Behavior, 24,* 94–109.

Hollenbeck, J. R., & Brief, A. P. (1987). The effects of individual differences and goal origin on goal setting and performance. *Organizational Behavior and Human Decision Processes, 40,* 392–414.

Hollenbeck, J. R., & Klein, H. J. (1987). Goal commitment and the goal-setting process: Problems, prospects, and proposals for future research. *Journal of Applied Psychology, 72,* 212–220.

Hollenbeck, J. R., Williams, C. R., & Klein, H. J. (1989). An empirical examination of the antecedents of commitment to difficult goals. *Journal of Applied Psychology, 74,* 18–23.

Horner, K. L. (1996). Locus of control, neuroticism, and stressors: Combined influences on reported physical illness. *Personality and Individual Differences, 21,* 195–204.

Jones, G. R. (1986). Socialization tactics, self-efficacy, and newcomers' adjustments to organizations. *Academy of Management Journal, 29,* 262–279.

Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8 user's reference guide.* Chicago: Scientific Software.

Judge, T. A., Bono, J. E., & Locke, E. A. (2000). Personality and job satisfaction: The mediating role of job characteristics. *Journal of Applied Psychology, 85,* 237–249.

Judge, T. A., Erez, A., & Bono, J. E. (1998). The power of being positive: The relation between positive self-concept and job performance. *Human Performance, 11,* 167–187.

Judge, T. A., Locke, E. A., & Durham, C. C. (1997). The dispositional causes of job satisfaction: A core evaluation approach. *Research in Organizational Behavior, 19,* 151–188.

Kanfer, R. A., & Heggestad, E. (1997). Motivational traits and skills: A person-centered approach to work motivation. *Research in Organizational Behavior, 19,* 1–56.

Levenson, H. (1981). Differentiating between internality, powerful others, and chance. In H. M. Lefcourt (Ed.), *Research with the locus of control construct* (Vol. 1, pp. 15–63). New York: Academic Press.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance.* Englewood Cliffs, NJ: Prentice Hall.

Naylor, J. C., Pritchard, R. D., & Ilgen, D. R. (1980). *A theory of behavior in organizations.* New York: Academic Press.

Ones, D. S., & Viswesvaran, C. (1996). Bandwidth–fidelity dilemma in personality measurement for personnel selection. *Journal of Organizational Behavior, 17,* 609–626.

Paunonen, S. V. (1998). Hierarchical organization of personality and prediction of behavior. *Journal of Personality and Social Psychology, 74,* 538–556.

Ree, M. J., Earles, J. A., & Teachout, M. S. (1994). Predicting job performance: Not much more than g. *Journal of Applied Psychology, 79,* 518–524.

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press.

Rosenthal, R., & Rosnow, R. L. (1991). *Essentials of behavioral research: Methods and data-analysis.* New York: McGraw-Hill.

Rushton, J. P., Brainerd, C. J., & Pressley, M. (1983). Behavioral development and construct validity: The principle of aggregation. *Psychological Bulletin, 94,* 18–38.

Schaubroeck, J., Ganster, D. C., & Fox, M. L. (1992). Dispositional affect and work-related stress. *Journal of Applied Psychology, 77,* 322–335.

Sherer, M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The Self-Efficacy Scale: Construction and validation. *Psychological Reports, 51,* 663–671.

Tiggemann, M., & Winefield, A. H. (1984). The effects of unemployment on the mood, self-esteem, locus of control, and depressive affect of school-leavers. *Journal of Occupational Psychology, 57,* 33–42.

Watson, D. (2000). *Mood and temperament.* New York: Guilford Press.

Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive psychological states. *Psychological Bulletin, 96,* 465–490.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070.