

A Meta-Analytic Examination of Work and General Locus of Control

Qiang Wang, Nathan A. Bowling, and Kevin J. Eschleman
Wright State University

The current meta-analysis examined the hypothesized consequences of work and general locus of control. As expected, work locus of control generally yielded stronger relationships with work-related criteria (e.g., job satisfaction, affective commitment, and burnout) than general locus of control. We also found some evidence that general locus of control yielded relatively stronger relationships with general criteria (e.g., life satisfaction, affective commitment, and burnout). Regression analysis found several unique effects for both work and general locus of control.

Keywords: locus of control, personality, meta-analysis

Supplemental materials: <http://dx.doi.org/10.1037/a0017707.supp>

Over four decades of psychological research has focused on locus of control, which is a personality trait that represents the extent to which people believe that the rewards they receive in life can be controlled by their own personal actions (Lefcourt, 1976; Rotter, 1966). This research distinguishes between individuals who have an internal locus of control (i.e., those who believe that they can control their own lives) and individuals who have an external locus of control (i.e., those who believe that their lives are controlled by outside influences, such as other people or fate). Locus of control has gained extensive research attention within several subdisciplines of psychology, including clinical, developmental, and social psychology. This research has found that locus of control is related to a variety of variables, such as marital problem solving (Miller, Lefcourt, & Ware, 1983), academic achievement (Crandall, Katkovsky, & Crandall, 1965), longevity (Krause & Shaw, 2000), and quality of parent–child relationships (Campis, Lyman, & Prentice-Dunn, 1986).

A meta-analysis by Ng, Sorensen, and Eby (2006) provides a recent review of research examining the role of locus of control in the workplace. Although that study found that work locus of control and general locus of control yielded similar relationships with work-related criteria, we believe that there are strong theoretical reasons to expect differences in the predictive validity of these two constructs. As discussed below in the Method section, we used a more sensitive test than Ng et al. to examine the differential effects of these two constructs.

We should note a few additional features that distinguish the current meta-analysis from that of Ng et al. (2006). First, whereas Ng et al. examined moderator effects for three criterion variables (global job satisfaction, job performance, and mental well-being), the current meta-analysis examined moderator effects for 24 cri-

terion variables. Second, the current meta-analysis used a different set of primary studies than were included by Ng et al. Specifically, we included 51 samples not included by Ng et al. Finally, we conducted regression analyses to examine the unique effects of work locus of control and general locus of control. Such analyses were not included in Ng et al.

In the following section, we review the relationship between locus of control and several criterion variables that are routinely examined in organizational research. We then discuss the distinction between work locus of control and general locus of control, and using the growing literature on frame-of-reference effects (Bing, Whanger, Davison, & VanHook, 2004; Hunthausen, Truxillo, Bauer, & Hammer, 2003; Lievens, De Corte, & Schollaert, 2008; Schmit, Ryan, Stierwalt, & Powell, 1995), we provide arguments for why these two conceptualizations of locus of control should have different effects on work-related criteria.

Relationships Between Locus of Control and Key Criterion Variables

Much attention has been given to the theoretical processes linking locus of control to the criterion variables examined in the current study. Because these mechanisms have been discussed extensively in previous reviews (e.g., Judge & Bono, 2001; Ng et al., 2006; Spector, 1982), we only briefly summarize them here.

First, many of the effects of locus of control may occur via perceptual processes. Specifically, internals may be predisposed to perceive the work environment positively, whereas externals may be predisposed to perceive the work environment negatively (Judge, Locke, & Durham, 1997; Judge, Locke, Durham, & Kluger, 1998). These processes, which explain why different workers employed in objectively identical environments often view their jobs very differently from one another, may account for locus of control's relationships with job attitudes, employee well-being, withdrawal intentions, perceived work stressors, perceived autonomy, and perceptions of supervisor competence (e.g., leader initiating structure). Job attitudes and perceptions of the work environment may in turn influence employee withdrawal behaviors (e.g., absenteeism; Hanisch & Hulin, 1991; Spector, 1982).

Qiang Wang, Nathan A. Bowling, and Kevin J. Eschleman, Department of Psychology, Wright State University.

Correspondence concerning this article should be addressed to Nathan A. Bowling, Department of Psychology, Wright State University, 3640 Colonel Glenn Highway, Dayton, OH 45435-0001. E-mail: nathan.bowling@wright.edu

Second, locus of control may influence job performance and career success via effects on motivational processes. Internals, for example, are more likely than externals to set challenging goals for themselves and are more likely to persist in pursuing those goals in the face of adversity (Erez & Judge, 2001; Hollenbeck, Williams, & Klein, 1989; Yukl & Latham, 1978). These goal-setting processes are likely to contribute to the relatively superior performance and career success of internals (Locke, & Latham, 1990; Mento, Steel, & Karren, 1987; Wofford, Goodwin, & Premack, 1992).

Third, locus of control may influence interpersonal relationships at work via effects on one's behavior in social situations. Specifically, internals generally possess better social skills, are more considerate of others, and are more effective at influencing people than externals (Kapoor, Ansari, & Shukla, 1986; Lefcourt, Martin, Fick, & Saleh, 1985; Phares, 1965; Ringer & Boss, 2000). This suggests that internals will have better interpersonal relationships with supervisors and coworkers than externals. Fourth, locus of control is expected to influence how one copes with stressful situations. Because of their proactive tendencies, internals are more likely than externals to engage in problem-focused coping behaviors, such as making and following plans to reduce or eliminate the stressor and seeking instrumental social support (Gianakos, 2002; Ng et al., 2006). Finally, locus of control may be related to stress and health-related outcomes due to perceptions of control being inherently beneficial for one's well-being (Hackman & Oldham, 1976; Karasek, 1979; Ng et al., 2006).

General Locus of Control and Work Locus of Control

Locus of control has been conceptualized as a hierarchical construct, with general locus of control existing at the highest level within this hierarchy (Chen, Goddard, & Casper, 2004; Lefcourt, 1976; Phares, 1976; Rotter, 1975). As the broadest conceptualization of the construct, general locus of control refers to the extent to which one generally attributes rewards to one's own behavior rather than to external causes, such as luck or other people (example general locus of control items include "I can pretty much determine what will happen in my life" and "My life is determined by my own actions"; Levenson, 1981). Unlike narrower conceptualizations of the construct, general locus of control does not make reference to a specific context or situation.

Several context-specific subdimensions, such as health locus of control (Wallston, Wallston, Kaplan, & Maides, 1976), marital locus of control (Miller et al., 1983), and parental locus of control (Campis et al., 1986), exist at lower levels of the hierarchy. The current study focuses specifically on work locus of control, which is another context-specific subdimension. Work locus of control represents the extent to which people attribute rewards at work to their own behavior (example work locus of control items include "People who perform their jobs well generally get rewarded" and "Most people are capable of doing their jobs well if they make the effort"; Spector, 1988).

We expected that work locus of control would yield stronger relationships with work-related criteria than general locus of control. This prediction is consistent with the growing literature on frame-of-reference effects, which suggest that domain-specific personality measures that ask participants about their behavior at work are more strongly associated with work-related criteria than general personality measures (see Bing et al., 2004; Hunthausen et

al., 2003; Lievens et al., 2008; Schmit et al., 1995). Hunthausen et al. (2003), for example, found that a work-specific measure of conscientiousness was more strongly related to job performance than a general measure of conscientiousness.

Frame-of-reference researchers have given several explanations for the enhanced predictive validity of domain-specific personality measures (Lievens et al., 2008). First, domain-specific personality measures may have superior validity because they reduce the presence of *between-subjects variability* in item interpretation (Bing et al., 2004; Holtz, Ployhart, & Dominguez, 2005). In other words, different research participants are likely to interpret a set of domain-specific items in more or less the same way. When asked about their behavior at work, for example, it is expected that all participants will use a work-related frame of reference. In contrast, because general personality measures do not specify the frame of reference to be used when interpreting items, it is likely that different participants will use different frames of reference. When completing a general personality measure, for example, some participants may consider their behavior as a student, whereas others may consider their behavior as a spouse. This between-subjects variability in item interpretation is expected to have negative effects on scale reliability and validity (Bing et al., 2004; Holtz et al., 2005).

A second explanation for the superior validity of domain-specific personality measures is that compared with general measures, they are less likely to produce *within-subject inconsistency* in item interpretation (Lievens et al., 2008). Participants asked to complete a work-specific measure of personality, for example, are likely to consider only their behavior at work and are unlikely to use other domains (e.g., family life, school) as frames of reference. On the other hand, when responding to general personality measures, participants may use different frames of reference for different items. One respondent may, for example, consider his or her behavior as a student when responding to the first item, his or her behavior as a parent when responding to the second item, and his or her behavior as an employee when responding to the third item. This within-subject inconsistency in item interpretation has been found to have a negative effect on the reliability and validity of personality measures (Lievens et al., 2008).

We should note, however, that domain-specific personality measures produce improved validity only when they use a frame of reference that is conceptually relevant to the criteria being studied. Lievens et al. (2008), for example, used measures of general, school-specific, and work-specific personality as predictors of college grade point average. They found that although school-specific personality yielded relatively high validities compared with general personality, work-specific personality had validities that were similar to those of general personality. Thus, domain-specific personality measures produce enhanced validities only when they use a frame of reference that is theoretically related to the study criteria.

The above discussion on frame-of-reference research has clear implications for the study of work locus of control. Compared with general locus of control, work locus of control can be expected to produce less between-subjects variability and within-subject inconsistency in item interpretation. This occurs because work locus of control measures explicitly identify the domain that participants are expected to use to respond to the items. As a result, work locus of control is expected to be more strongly related to work-related criteria than general locus of control.

Hypothesis 1: Work locus of control will yield stronger relationships with work-related criteria than general locus of control.¹

Work Locus of Control and the Principle of Compatibility

The principle of compatibility (Fishbein & Ajzen, 1974) suggests that the magnitude of the relationship between two variables will be greatest when both are assessed at the same level of specificity. Thus, general or context-free variables are expected to be the best predictors of general criteria (e.g., general life satisfaction, physical health), whereas context-specific variables are expected to be poor predictors of general criteria. Rosenberg, Schooler, Schoenbach, and Rosenberg (1995), for example, found that general self-esteem yielded stronger relationships with general health outcomes than academic self-esteem. For this reason, general locus of control should yield especially strong relationships with general criteria.

Hypothesis 2: General locus of control will yield stronger relationships with general criteria than work locus of control.

Method

We used meta-analysis (Hunter & Schmidt, 2004) to test each of our hypotheses. Below we discuss the literature search strategy and the analytic methods used to conduct the meta-analysis.

Literature Search

Work locus of control. Several strategies were used to locate primary studies included in the work locus of control meta-analysis. First, we reviewed Spector's (2008) online bibliography of work locus of control research. Using the search term *work locus of control*, we located additional studies via the PsycINFO database. We also used PsycINFO and Google Scholar to locate studies that cited Spector's (1988) seminal article on work locus of control.

Each of the studies included in the work locus of control meta-analysis satisfied the following criteria. First, only studies that reported work locus of control's relationship with one or more of the hypothesized correlates or consequences were included in our analyses. Furthermore, each study in our database used a sample of employed adults, and all were conducted in a field setting. We thus excluded unemployed samples and laboratory studies. Sixty-four work locus of control studies met these inclusion criteria.

General locus of control. To compare the potential effects of work locus of control with the potential effects of general locus of control, we conducted additional meta-analyses examining the relationships between general locus of control and the criterion variables. In our search for general locus of control studies, we first used the reference section from the Ng et al. (2006) meta-analysis to locate relevant studies. In addition, we used PsycINFO to locate studies not included by Ng et al. This latter search used the search term *locus of control*.

Each of the general locus of control studies used a field sample of employed adults and examined the relationships between general locus of control and at least one of the criterion variables. Laboratory studies and samples using unemployed participants were excluded. This search yielded 124 general locus of control samples. Considered

together, the work locus of control and general locus of control literature searches thus yielded 184 samples. Of these samples, 51 were not included in the Ng et al. (2006) meta-analysis.

Meta-Analytic Strategy

We used Hunter and Schmidt's (2004) method to conduct the meta-analysis. Specifically, we computed the mean sample-weighted uncorrected correlation. We did not correct for unreliability because many of the primary studies used in our analyses did not provide unreliability estimates. Although Hunter and Schmidt recommended using artifact distributions to estimate missing reliability data, we did not do this because this method has been found to yield inaccurate results (Hall & Brannick, 2002).

We used 95% confidence intervals to test whether effects sizes were statistically significant. Specifically, effect sizes were deemed to be statistically significant when their 95% confidence intervals excluded zero.

Moderator Analyses Comparing Work Locus of Control and General Locus of Control

We examined whether work locus of control and general locus of control yielded differential effects on the criterion variables. In these analyses, Spector's (1988) scale was coded as a measure of work locus of control and the following were coded as measures of general locus of control: Rotter's (1966) Internal-External Control Scale; Levenson's (1973, 1974, 1981) locus of control scale; the Desired Control Measure (Reid & Ziegler, 1980); Paulhus's (1983) Spheres of Control Scale; the Sense of Mastery Scale (Pearlin & Schooler, 1978); the MacDonald-Tseng Locus of Control Scale (MacDonald, 1973); the locus of control scale of the Occupational Stress Indicator (Cooper, Sloan, & Williams, 1988); the Adult Nowicki-Strickland Internal-External Control Scale (Nowicki & Duke, 1974); the controllability scale of Russell's (1982) Causal Dimension Scale; the locus of control scale by Lumpkin (1985); the locus of control scale used by Wolfe and Robertshaw (1982); the one-item perceived control measure (Crohan, Antonucci, Adelman, & Coleman, 1989); a revised version (Valecha & Ostrom, 1974) of Rotter's (1966) Internal-External Control Scale; Duffy, Shiflett, and Downey's (1977) locus of control scale; Jones and James's (1979) scale; Klonowicz's (2001) scale; Lesage and Rice's (1977) scale; and the Personal Control Inventory (Pulkkinen & Rönkä, 1994).

To test for differential relationships for work and general locus of control, we used Steiger's (1980) *z* test, which is sometimes referred to as a Hotelling-Williams test (Ilies, Nahrgang, & Morgeson, 2007). This analysis, which tests whether two dependent correlations are significantly different from each other, has been used in several meta-analyses (e.g., Ilies et al., 2007; Judge & Piccolo, 2004; Judge, Piccolo, & Ilies, 2004; Podsakoff, LePine, &

¹ In each of our hypotheses, high scores reflect an internal locus of control and low scores reflect an external locus of control. This is consistent with the way in which locus of control is coded in some studies (e.g., Judge & Bono, 2001; Ng et al., 2006), but is inconsistent with the way it is coded in others (i.e., some studies have coded locus of control measures such that high scores reflect an external locus of control; e.g., Rotter, 1966; Spector, 1988).

LePine, 2007). In these analyses, the correlations are considered dependent because the relationships being compared share a common criterion variable (Ilies et al., 2007). To conduct these analyses, we entered the following information into a spreadsheet designed to calculate Steiger's test:² (a) the correlation between work locus of control and the criterion variables, (b) the correlation between general locus of control and the criterion variables, (c) the correlation between work locus of control and general locus of control, and (d) the sample size (N). Compared with the regression approach used by Ng et al. (2006), these analyses are expected to have greater statistical power to detect moderator effects. This is because the regression approach employed by Ng et al. computes statistical significance with k as the sample size, whereas Steiger's analysis uses N . Following Viswesvaran and Ones's (1995) suggestion, we used the harmonic mean to compute N for these analyses.

The current study is also distinguished from Ng et al. (2006) by the number of criteria we examined in the moderator analyses. Whereas Ng et al. examined moderator effects for three criterion variables (i.e., job satisfaction, job performance, and mental well-being), the current study examined moderator effects for 24 criterion variables.

Results

Below we present the results of analyses examining the hypothesized consequences and correlates of both work and general locus of control. To be consistent with previous meta-analyses (i.e., Judge & Bono, 2001; Ng et al., 2006), we coded the data such that high scores reflected internal locus of control and low scores reflected external locus of control. This is in contrast to some studies (e.g., Rotter, 1966; Spector, 1988), which coded high scores as indicating an external locus of control.

Hypothesized Consequences of Work and General Locus of Control

Table 1 reports the relationships between work and general locus of control and the criterion variables. Because many of these relationships were examined in the Ng et al. (2006) meta-analysis, we provide only a brief summary of the analyses. First, nearly all the 95% confidence intervals reported in the table exclude zero, which is indicative of a statistically significant relationship. Furthermore, all the significant relationships were in the direction predicted in previous reviews (Judge & Bono, 2001; Ng et al., 2006; Spector, 1982).

Comparison of the Effects of Work and General Locus of Control

Hypothesis 1 predicted that work locus of control would yield stronger relationships with work-related criteria than general locus of control. We found considerable support for this prediction (see Table 1). Specifically, work locus of control yielded a significantly ($p < .01$) stronger relationship than general locus of control in the analyses for global job satisfaction, affective commitment, continuance commitment, burnout, job-induced tension, organizational level, absenteeism, role ambiguity, social support at work, and leader initiating structure.³

Although statistically significant ($p < .01$) and in the hypothesized direction, some of the differences in relationship for work-related criteria were relatively modest. This was true for satisfaction with work itself, job performance, turnover intention, role conflict, work-family conflict, and job autonomy.

We also found some support for Hypothesis 2, which predicted that general locus of control would yield stronger relationships with general criteria than work locus of control. Specifically, general locus of control yielded significantly ($p < .01$) stronger relationships with life satisfaction. Although statistically significant ($p < .01$), the difference in effects sizes was small for problem-focused coping.

Regression Analyses Examining the Unique Effects of Work and General Locus of Control

We conducted regression analyses to examine the unique effects of work and general locus of control (see Table 2). The correlation matrices used in these analyses consisted of the correlation between work locus of control and general locus of control and the correlations between the two forms of locus of control and the criteria reported in Table 1. We used the harmonic mean to compute the sample size for each of these models (Viswesvaran & Ones, 1995).

The standardized regression coefficients (β s) for work and general locus of control are presented in Table 2. In general, these analyses found that work locus of control yielded unique relationships with work-related criteria after controlling for general locus of control. Specifically, work locus of control yielded significant ($p < .01$) unique relationships with global job satisfaction, satisfaction with work itself, affective commitment, continuance commitment, burnout, job-induced tension, job performance, organizational level, salary, turnover intention, absenteeism, role ambiguity, role conflict, work-family conflict, autonomy, leader consideration, social support at work, and leader initiating structure.

The regression analyses also provide evidence that general locus of control was related to general criteria after controlling for work locus of control (see Table 2). Specifically, general locus of control yielded significant ($p < .01$) unique relationships with psychological strain, physical strain, life satisfaction, and problem-focused coping.

Discussion

Locus of Control and Work-Related Criteria

The current study contributes greatly to what is known about the role of locus of control in the workplace. Similar to Ng et al. (2006), we found that locus of control was related to several important criterion variables, including job attitudes, employee well-being, job performance, withdrawal intentions, withdrawal behavior, perceptions of the work environment, interpersonal relationships at work, and coping behavior. Consistent with prior

² We thank Timothy A. Judge and Ronald F. Piccolo for providing us with this calculator.

³ As discussed in the Method section, the correlation between work locus of control and general locus of control was needed to conduct Steiger's (1980) z test. Although it is not reported in any of our tables, we did conduct a meta-analysis of the relationship between work locus of control and general locus of control (mean $r = .49$, $k = 10$, $N = 2,319$). This mean correlation was also used to conduct the regression analyses.

Table 1
 Meta-Analyses for Hypothesized Consequences of Work Locus of Control and General Locus of Control

Variable	Work locus of control					General locus of control					<i>z</i>
	<i>k</i>	<i>N</i>	Mean <i>r</i>	<i>SD</i>	95% CI	<i>k</i>	<i>N</i>	Mean <i>r</i>	<i>SD</i>	95% CI	
Job attitudes											
Global job satisfaction	69	16,348	.34	.11	[.31, .37]	44	12,197	.22	.15	[.17, .26]	9.42**
Satisfaction with work itself	7	1,643	.31	.09	[.24, .37]	9	3,522	.25	.06	[.20, .29]	3.25*
Affective commitment	16	4,015	.32	.09	[.27, .36]	12	3,697	.19	.10	[.13, .25]	7.31**
Normative commitment	2	481	.21	.12	[.03, .39]	—	—	—	—	—	—
Continuance commitment	3	706	-.16	.07	[-.24, -.07]	3	921	.03	.00	[.02, .04]	-6.43**
Organizational satisfaction	7	1,643	.21	.07	[.15, .26]	2	507	.36	.03	[.32, .41]	-5.19**
Perceived organizational support	4	1,706	.45	.17	[.27, .62]	—	—	—	—	—	—
Employee well-being											
Burnout	5	1,634	-.38	.18	[-.54, -.22]	5	1,548	-.07	.23	[-.28, .12]	-13.34**
Job-induced tension	10	4,021	-.28	.10	[-.35, -.21]	3	848	-.05	.16	[-.24, .13]	-9.48**
Performance and career success											
Job performance	9	3,744	.16	.08	[.10, .21]	16	3,893	.07	.09	[.03, .12]	4.53**
Organizational level	8	2,402	.22	.07	[.17, .26]	7	3,060	.11	.10	[.03, .19]	5.63**
Salary	7	1,859	.14	.11	[.06, .23]	15	8,267	.14	.06	[.10, .17]	0.40
Withdrawal intentions											
Turnover intention	19	3,664	-.20	.11	[-.25, -.15]	10	3,303	-.14	.09	[-.20, -.08]	-3.25*
Withdrawal behavior											
Absenteeism	4	785	-.17	.12	[-.29, -.05]	2	950	-.04	.00	[-.05, -.03]	-4.27**
Work stressors											
Role ambiguity	9	1,359	-.23	.12	[-.32, -.15]	17	7,939	-.12	.13	[-.19, -.06]	-5.33**
Role conflict	8	1,792	-.24	.19	[-.37, -.10]	14	4,508	-.16	.16	[-.25, -.08]	-3.89**
Role overload	6	1,100	-.10	.04	[-.13, -.06]	8	3,150	-.12	.15	[-.23, -.01]	0.75
Role stressor composite	6	1,022	-.21	.12	[-.30, -.11]	—	—	—	—	—	—
Work-family conflict	7	1,337	-.09	.08	[-.15, -.02]	6	12,149	.00	.08	[-.05, .07]	-5.27**
Autonomy											
Job autonomy	13	2,716	.20	.13	[.12, .27]	6	6,261	.13	.07	[.08, .19]	3.58**
Interpersonal relationships at work											
Leader consideration	6	682	.14	.24	[-.05, .33]	5	1,191	.07	.13	[-.04, .19]	2.28
Social support at work	8	3,449	.25	.14	[.14, .35]	14	3,033	.15	.13	[.08, .22]	5.75**
Perceived influence at work	6	922	.23	.10	[.15, .31]	—	—	—	—	—	—
Interpersonal conflict at work	6	997	-.15	.18	[-.30, .00]	—	—	—	—	—	—
Perceptions of supervisor competence											
Leader initiating structure	4	486	.31	.03	[.27, .34]	6	1,459	.08	.15	[-.03, .20]	7.23**
General criteria											
Psychological strain	45	11,180	-.31	.10	[-.34, -.28]	24	7,811	-.27	.11	[-.32, -.23]	-2.44
Physical strain	41	9,553	-.17	.12	[-.21, -.14]	23	6,661	-.19	.10	[-.24, -.15]	1.32
Life satisfaction	4	720	.15	.13	[.02, .27]	19	6,648	.25	.09	[.21, .29]	-4.30**
Problem-focused coping	6	1,969	.10	.06	[.04, .15]	8	2,519	.17	.11	[.09, .25]	-3.38**

Note. Dashes indicate that data were not available for the analysis in question. *k* = number of samples; *N* = total sample size; mean *r* = average weighted correlation coefficient; CI = confidence interval; *z* = Steiger's (1980) test, which was used to examine whether two correlations were significantly different from each other.

* $p < .01$. ** $p < .001$.

research on frame-of-reference effects in personality assessment (Bing et al., 2004; Hunthausen et al., 2003; Lievens et al., 2008; Schmit et al., 1995), but contrary to the results of Ng et al., our analyses suggested that work locus of control consistently yielded stronger relationships with work-related criteria than general locus of control.

There are several explanations for the inconsistency between our findings and the findings of Ng et al. (2006). First, the current study may have found more differences between work and general locus of control because we used a more sensitive test of moderation than Ng et al.⁴ Following previous meta-analyses (e.g., Judge & Piccolo, 2004; Judge et al., 2004), we used Steiger's (1980) *z* test to compare the effects of work and general locus of control. This approach is more powerful than the regression approach used by Ng et al. because it uses *N* rather than *k* as the sample size in

⁴ We retested these moderator analyses for the 24 criterion variables using the regression approach used by Ng et al. (2006). Of the 19 comparisons that were statistically significant ($p < .01$) according to the Steiger (1980) analyses, only two were statistically significant when the regression approach was used. Furthermore, all the analyses that were significant with the regression approach were also significant when the Steiger analyses were used. As a whole, this pattern of results suggests that the Steiger analysis offers a more sensitive test of moderation than the regression approach. As noted by an anonymous reviewer, the fact that the Steiger analysis is more sensitive does not necessarily mean that it is appropriate. However, we believe that the Steiger analysis should be used here because the relatively small *k* of some of the variables makes the use of the regression approach underpowered.

Table 2
Regression Analyses Examining the Unique Effects of Work and General Locus of Control

Criterion variable	β for work locus of control	β for general locus of control	N
Work-related criteria			
Global job satisfaction	.31***	.06	5,223
Satisfaction with work itself	.25**	.12**	2,266
Affective commitment	.29***	.04	3,155
Continuance commitment	-.24**	.15**	1,022
Organizational satisfaction	.04	.35***	995
Burnout	-.45**	.15**	1,775
Job-induced tension	-.34**	.11**	1,613
Job performance	.16**	.00	3,140
Organizational level	.22***	.00	2,554
Salary	.10**	.08**	2,752
Turnover intention	-.17**	-.05*	2,979
Absenteeism	-.20**	.05	1,087
Role ambiguity	-.23**	-.01	2,320
Role conflict	-.21**	-.06*	2,477
Role overload	-.06	-.09**	1,809
Work-family conflict	-.13**	.07*	2,378
Autonomy	.17**	.05	3,127
Leader consideration	.14**	.00	1,096
Social support at work	.24**	.03	2,854
Leader initiating structure	.35**	-.09*	945
General criteria			
Psychological strain	-.23**	-.16**	4,624
Physical strain	-.10**	-.14**	4,373
Life satisfaction	.02	.24**	1,522
Problem-focused coping	.02	.16**	2,245

Note. N was computed with the harmonic mean (Viswesvaran & Ones, 1995).

* $p < .01$. ** $p < .001$.

tests of statistical significance. Second, we may have found more differences between work and general locus of control simply because our analyses examined more criterion variables. Whereas Ng et al. compared the effects of work and general locus of control on three criteria (i.e., job satisfaction, job performance, and mental well-being), we conducted analyses for 24 criteria.

Finally, we may have detected more differences between work and general locus of control as a result of the larger size of our sample database. That is, we included 51 samples that were not included by Ng et al. (2006), and this may have improved our power for detecting moderator effects.

Locus of Control and General Criteria

Also of note, the current study found some evidence for relatively stronger relationships between general locus of control and general criteria than between work locus of control and general criteria. For instance, we found that general locus of control was more strongly related to life satisfaction and problem-focused coping than work locus of control. As a whole, these results are consistent with the principle of compatibility (Fishbein & Ajzen, 1974), which suggests that compared with specific predictors, broadly measured predictors should yield stronger relationships with general criteria.

The Unique Effects of Work and General Locus of Control

The results of the regression analyses are also consistent with the research examining frame-of-reference effects, which has found that contextualized personality measures asking how one behaves at work predict work-related outcomes after the effects of general personality measures have been controlled (Bing et al., 2004). Specifically, we found that work locus of control was related to several work-related criterion variables beyond the effects of general locus of control. Furthermore, the regression analyses for the general criteria are consistent with the principle of compatibility (Fishbein & Ajzen, 1974), because they found that general locus of control yielded stronger unique relationships than work locus of control.

Limitations

We should note a few limitations of the current research. First, most of the studies included in our meta-analysis used cross-sectional data. Thus, although we were able to examine whether locus of control was related to its hypothesized outcomes, we were unable to examine causal relationships. Second, the studies included in the current analyses depended almost exclusively on participant self-reports. Thus, our results may have been vulnerable to the effects of common-method variance. We should note, however, that there is considerable evidence that the problems typically attributed to common-method variance may be largely overstated (Spector, 2006). It may in fact be the case that self-reports are the most accurate means of assessing locus of control, given that individuals likely have better insights into their own control beliefs than outside observers.

A final limitation is that although we found that locus of control was related to several important criterion variables, we were unable to examine the underlying processes responsible for these relationships. Many of these meditational processes, however, have been examined in previous research. Some research, for example, has found that the effect of locus of control on job performance is mediated by motivational processes (e.g., goal setting and goal commitment; Erez & Judge, 2001; Hollenbeck et al., 1989) and that both the perceived (Judge et al., 1997) and objectively measured work environment (Judge et al., 1998) mediated the relationship between locus of control and job attitudes. Because perceived and objectively measured work environment are often modestly related to each other (Spector & Jex, 1991), it is important that future research on meditational processes include both types of situational measures. This would allow researchers to separately examine perceptual and self-selection processes linking locus of control to key criteria (see Judge, Bono, & Locke, 2000; Spector & O'Connell, 1994).

References

- References marked with an asterisk indicate studies included in the meta-analysis that are discussed in the text. For a complete list, go to <http://dx.doi.org/10.1037/a0017707.supp>
- Bing, M. N., Whanger, J. C., Davison, H. K., & VanHook, J. B. (2004). Incremental validity of the frame-of-reference effect in personality scale scores: A replication and extension. *Journal of Applied Psychology, 89*, 150-157.

- Campis, L. K., Lyman, R. D., & Prentice-Dunn, S. (1986). The Parental Locus of Control Scale: Development and validation. *Journal of Clinical Child Psychology, 15*, 260–267.
- *Chen, G., Goddard, T. G., & Casper, W. J. (2004). Examination of the relationships among general and work-specific self-evaluations, work-related control beliefs, and job attitudes. *Applied Psychology: An International Review, 53*, 349–370.
- Cooper, C. L., Sloan, S. J., & Williams, S. (1988). *Occupational Stress Indicator*. Windsor, England: NFER-Nelson.
- Crandall, V. C., Katkovsky, W., & Crandall, V. J. (1965). Children's beliefs in their own control of reinforcements in intellectual-academic achievement situations. *Child Development, 36*, 91–109.
- *Crohan, S. E., Antonucci, T. C., Adelman, P. K., & Coleman, L. M. (1989). Job characteristics and well-being at midlife: Ethnic and gender comparisons. *Psychology of Women Quarterly, 13*, 223–235.
- Duffy, P. J., Shifflet, S., & Downey, R. G. (1977). Locus of control: Dimensionality and predictability using Likert scales. *Journal of Applied Psychology, 62*, 214–219.
- Erez, A., & Judge, T. A. (2001). Relationship of core self-evaluations to goal setting, motivation, and performance. *Journal of Applied Psychology, 86*, 1270–1279.
- Fishbein, M., & Ajzen, I. (1974). Attitudes towards objects as predictors of single and multiple behavioral criteria. *Psychological Review, 81*, 59–74.
- *Gianakos, I. (2002). Predictors of coping with work stress: The influences of sex, gender role, social desirability, and locus of control. *Sex Roles, 46*, 149–158.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance, 16*, 250–279.
- Hall, S. M., & Brannick, M. T. (2002). Comparison of two random-effects methods of meta-analysis. *Journal of Applied Psychology, 87*, 377–389.
- Hanisch, K. A., & Hulin, C. L. (1991). General attitudes and organizational withdrawal: An evaluation of a causal model. *Journal of Vocational Behavior, 39*, 110–128.
- 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.
- Holtz, B. C., Ployhart, R. E., & Dominguez, A. (2005). Testing the rules of justice: The effects of frame-of-reference and pre-test validity information on personality test responses and test perceptions. *International Journal of Selection and Assessment, 13*, 75–86.
- Hunter, J. E., & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings*. Thousand Oaks, CA: Sage.
- Hunthausen, J. M., Truxillo, D. M., Bauer, T. N., & Hammer, L. B. (2003). A field study of frame-of-reference effects on personality test validity. *Journal of Applied Psychology, 88*, 545–551.
- Ilies, R., Nahrgang, J. D., & Morgeson, F. P. (2007). Leader-member exchange and citizenship behaviors: A meta-analysis. *Journal of Applied Psychology, 92*, 269–277.
- Jones, A. P., & James, L. R. (1979). Psychological climate: Dimensions and relationships of individual and aggregated work environment perceptions. *Organizational Behavior and Human Performance, 23*, 201–250.
- Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology, 86*, 80–92.
- *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., Locke, E. A., & Durham, C. C. (1997). The dispositional causes of job satisfaction: A core evaluations approach. *Research in Organizational Behavior, 19*, 151–188.
- *Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on job and life satisfaction: The role of core evaluations. *Journal of Applied Psychology, 83*, 17–34.
- Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology, 89*, 755–768.
- Judge, T. A., Piccolo, R. F., & Ilies, R. (2004). The forgotten ones? The validity of consideration and initiating structure in leadership research. *Journal of Applied Psychology, 89*, 36–51.
- Kapoor, A., Ansari, M. A., & Shukla, R. (1986). Upward influence tactics as a function of locus of control and organizational context. *Psychological Studies, 31*, 190–199.
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly, 24*, 285–307.
- *Klonowicz, T. (2001). Discontented people: Reactivity and locus of control as determinants of subjective well-being. *European Journal of Personality, 15*, 29–47.
- Krause, N., & Shaw, B. A. (2000). Role-specific feelings of control and mortality. *Psychology and Aging, 15*, 617–626.
- Lefcourt, H. M. (1976). *Locus of control: Current trends in theory and research*. Hillsdale, NJ: Erlbaum.
- Lefcourt, H. M., Martin, R. A., Fick, C. M., & Saleh, W. E. (1985). Locus of control for affiliation and behavior in social interactions. *Journal of Personality and Social Psychology, 48*, 755–759.
- Lesage, P. B., & Rice, J. (1977). *Intérêts et satisfaction au travail, considérations pour les gestionnaires* [Interests and job satisfaction: Considerations for managers]. Montreal, Canada: HEC.
- Levenson, H. (1973). Multidimensional locus of control in psychiatric patients. *Journal of Consulting and Clinical Psychology, 41*, 397–404.
- Levenson, H. (1974). Activism and powerful others: Distinctions within the concept of internal-external control. *Journal of Personality Assessment, 38*, 377–383.
- Levenson, H. (1981). Differentiating among internality, powerful others, and chance. In H. M. Lefcourt (Ed.), *Research with the locus of control construct: Vol. 1. Assessment methods* (pp. 15–63). New York, NY: Academic Press.
- Lievens, F., De Corte, W., & Schollaert, E. (2008). A closer look at the frame-of-reference effect in personality scale scores and validity. *Journal of Applied Psychology, 93*, 268–279.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Lumpkin, J. R. (1985). Validity of a brief locus of control scale for survey research. *Psychological Reports, 57*, 655–659.
- MacDonald, A. P., Jr. (1973). Measures of internal-external control. In J. P. Robinson & P. R. Shaver (Eds.), *Measures of social psychological attitudes*. Ann Arbor, MI: Institute for Social Research.
- Mento, A. J., Steel, R. P., & Karren, R. J. (1987). A meta-analytic study of the effects of goal setting on task performance: 1966–1984. *Organizational Behavior and Human Decision Processes, 39*, 52–83.
- Miller, P. C., Lefcourt, H. M., & Ware, E. E. (1983). The construction and development of the Miller Marital Locus of Control Scale. *Canadian Journal of Behavioural Science, 15*, 266–279.
- Ng, T. W. H., Sorensen, K. L., & Eby, L. (2006). Locus of control at work: A meta-analysis. *Journal of Organizational Behavior, 27*, 1057–1087.
- Nowicki, S., Jr., & Duke, M. P. (1974). A locus of control scale for noncollege as well as college adults. *Journal of Personality Assessment, 38*, 136–137.
- Paulhus, D. (1983). Sphere-specific measures of perceived control. *Journal of Personality and Social Psychology, 44*, 1253–1265.
- Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior, 19*, 2–21.
- Phares, E. J. (1965). Internal-external control as a determinant of amount

- of social influence exerted. *Journal of Personality and Social Psychology*, 2, 642–647.
- Phares, E. J. (1976). *Locus of control in personality*. Morristown, NJ: General Learning Press.
- Podsakoff, N. P., LePine, J. A., & LePine, M. A. (2007). Differential challenge stressor–hindrance stressor relationships with job attitudes, turnover intentions, turnover, and withdrawal behavior: A meta-analysis. *Journal of Applied Psychology*, 92, 438–454.
- Pulkkinen, L., & Rönkä, A. (1994). Personal control over development, identity formation, and future orientation as components of life orientation: A developmental approach. *Developmental Psychology*, 30, 260–271.
- Reid, D. W., & Ziegler, M. (1980). Validity and stability of a new desired control measure pertaining to psychological adjustment of the elderly. *Journal of Gerontology*, 34, 395–402.
- Ringer, R. C., & Boss, R. W. (2000). Hospital professionals' use of upward influence tactics. *Journal of Managerial Issues*, 12, 92–108.
- Rosenberg, M., Schooler, C., Schoenbach, C., & Rosenberg, F. (1995). Global self-esteem and specific self-esteem: Different concepts, different outcomes. *American Sociological Review*, 60, 141–156.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80, 1–28.
- Rotter, J. B. (1975). Some problems and misconceptions related to the construct of internal versus external control of reinforcement. *Journal of Consulting and Clinical Psychology*, 43, 56–67.
- Russell, D. (1982). The Causal Dimension Scale: A measure of how individuals perceive causes. *Journal of Personality and Social Psychology*, 42, 1137–1145.
- Schmit, M. J., Ryan, A. M., Stierwalt, S. L., & Powell, A. B. (1995). Frame-of-reference effects on personality scale scores and criterion-related validity. *Journal of Applied Psychology*, 80, 607–620.
- Spector, P. E. (1982). Behavior in organizations as a function of employee's locus of control. *Psychological Bulletin*, 91, 482–497.
- *Spector, P. E. (1988). Development of the Work Locus of Control Scale. *Journal of Occupational Psychology*, 61, 335–340.
- Spector, P. E. (2006). Method variance in organizational research: Truth or urban legend? *Organizational Research Methods*, 9, 221–232.
- Spector, P. E. (2008). *Bibliography of studies using the Work Locus of Control Scale*. Retrieved from <http://chuma.cas.usf.edu/~spector/scales/wlcsbibl.html>
- Spector, P. E., & Jex, S. M. (1991). Relations of job characteristics from multiple data sources with employee affect, absence, turnover intentions, and health. *Journal of Applied Psychology*, 76, 46–53.
- *Spector, P. E., & O'Connell, B. J. (1994). The contribution of personality traits, negative affectivity, locus of control and Type A to the subsequent reports of job stressors and job strains. *Journal of Occupational and Organizational Psychology*, 67, 1–11.
- Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin*, 87, 245–251.
- Valecha, G. K., & Ostrom, T. M. (1974). An abbreviated measure of internal–external locus of control. *Journal of Personality Assessment*, 38, 369–376.
- Viswesvaran, C., & Ones, D. S. (1995). Theory testing: Combining psychometric meta-analysis and structural equations modeling. *Personnel Psychology*, 48, 865–885.
- Viswesvaran, C., Ones, D. S., & Schmidt, F. L. (1996). Comparative analysis of the reliability of job performance ratings. *Journal of Applied Psychology*, 81, 557–574.
- Wallston, B. S., Wallston, K. A., Kaplan, G. D., & Maides, S. A. (1976). Development and validation of the Health Locus of Control (HLC) Scale. *Journal of Consulting and Clinical Psychology*, 44, 580–585.
- Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology*, 82, 247–252.
- Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin*, 96, 465–490.
- Wofford, J. C., Goodwin, V. L., & Premack, S. (1992). Meta-analysis of the antecedents of personal goal level and of the antecedents and consequences of goal commitment. *Journal of Management*, 18, 595–615.
- Wolfe, L. M., & Robertshaw, D. (1982). Effects of college attendance on locus of control. *Journal of Personality and Social Psychology*, 43, 802–810.
- Yukl, G. A., & Latham, G. P. (1978). Interrelationships among employee participation, individual differences, goal difficulty, goal acceptance, goal instrumentality, and performance. *Personnel Psychology*, 31, 305–323.

Received July 21, 2008

Revision received August 18, 2009

Accepted August 31, 2009 ■