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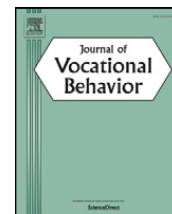
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A meta-analysis of the regulatory focus nomological network: Work-related antecedents and consequences

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ABSTRACT

Regulatory focus theory (Higgins, 1997, 1998) has received a great deal of recent attention in the organizational behavior literature. Despite the amount of new evidence surrounding regulatory focus and its relationships with other variables, a quantitative summary of this literature is lacking. The authors used meta-analysis to summarize correlations from 77 empirical studies that included self-report measures of promotion and prevention focus. Meta-analytic effect sizes between promotion and prevention focus and work-related variables are reported. In general, results indicated that promotion and prevention focus are orthogonal constructs and each construct is uniquely related to other theoretically relevant constructs. The results also demonstrate the importance of regulatory foci to organizational researchers as well as the need for a unified approach to their measurement.

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Regulatory focus theory (Higgins, 1997) has received a considerable amount of research attention in recent years, especially in the organizational sciences. Regulatory focus theory posits that security-related regulation differs from nurturance-related regulation. Nurturance-related regulation involves a *promotion* focus and security-related regulation is characterized by a *prevention* focus. In a promotion focus, an individual is concerned with advancement, growth, and accomplishment, and the individual's objectives are goals, hopes, ideals, and aspirations. In a prevention focus, an individual is concerned with security, safety, and responsibility, and the individual's goals are duties, obligations, and necessities.

Theoretically, regulatory focus can be both a stable disposition, influenced by other variables such as personality (Wallace & Chen, 2006) or early life experiences (Higgins, 1997, 1998), as well as a psychological state that can be evoked by situational cues (e.g., Friedman & Forster, 2001; Liberman, Idson, Camacho, & Higgins, 1999). Higgins (1997, 1998) argued that situational cues that emphasize nurturance needs, attainment of ideals, and potential gains tend to induce a promotion focus, whereas situational cues that emphasize security needs, fulfillment of obligations, and potential losses tend to induce a prevention focus. Thus, in a work context, employees with a promotion focus tend to engage in work activities because of the desirable economic and growth outcomes it offers (Johnson & Chang, 2008). A promotion focus strategy at work may be to accomplish a greater quantity of work more quickly (Wallace & Chen, 2006). In contrast, employees with a prevention focus tend to complete their work out of a sense of obligation as well as fear of letting others down, avoiding mistakes, and other negative outcomes (Johnson & Chang, 2008). A prevention focus strategy at work may be to adhere to work-related rules, responsibilities, and regulations (Wallace & Chen, 2006).

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Despite the recent explosion in regulatory focus research, many questions have emerged. The purpose of this study is to answer the following questions: (a) What self-report measures are being used to measure promotion and prevention focus?, (b) To what extent are promotion and prevention focus empirically related?, (c) How are promotion and prevention focus related to other work-related individual difference variables?, and (d) Does regulatory focus predict job satisfaction and task performance over and above that of other well-established work-related constructs? Toward this end, we used meta-analysis to examine the relationships among the two dimensions of regulatory focus and key variables of interest. By answering these questions, we believe this quantitative review provides the groundwork for future theoretical advancement. Consistent with previous nomological network meta-analyses (e.g., Payne, Youngcourt, & Beaubien, 2007), we attempted to define the nomological network surrounding the dimensions of regulatory focus by exploring their relationships with variables that can be classified as antecedents and consequences. With this goal in mind, we used the framework depicted in Fig. 1 to organize the variables examined in the present study.

Antecedents of regulatory focus

Anxiety

Carver (2004) asserted that anxiety is part of an underlying motivational system that governs human behavior. More anxious individuals are expected to take more caution in their decisions and subsequent behaviors they exhibit in general. Specifically, a more anxious individual is expected to perceive situations as more threatening when compared to a less anxious person (Barnes, Harp, & Jung, 2002). Because anxious individuals are motivated to avoid negative consequences, we expected anxiety to be positively related to prevention focus and negatively related to promotion focus.

Optimism

Optimism represents a general predisposition to expect favorable or positive outcomes (Macan, 2007; Scheier & Carver, 1985). Maintaining a positive outlook is subsequently expected to relate to an individual's motivation to achieve outcomes and their subsequent levels of effort and performance. Because a promotion focus is characterized by concerns with gains and prevention focus is characterized by concerns with losses, (Higgins, 1997, 1998), we expected that optimism would be positively related to promotion focus and negatively related to prevention focus.

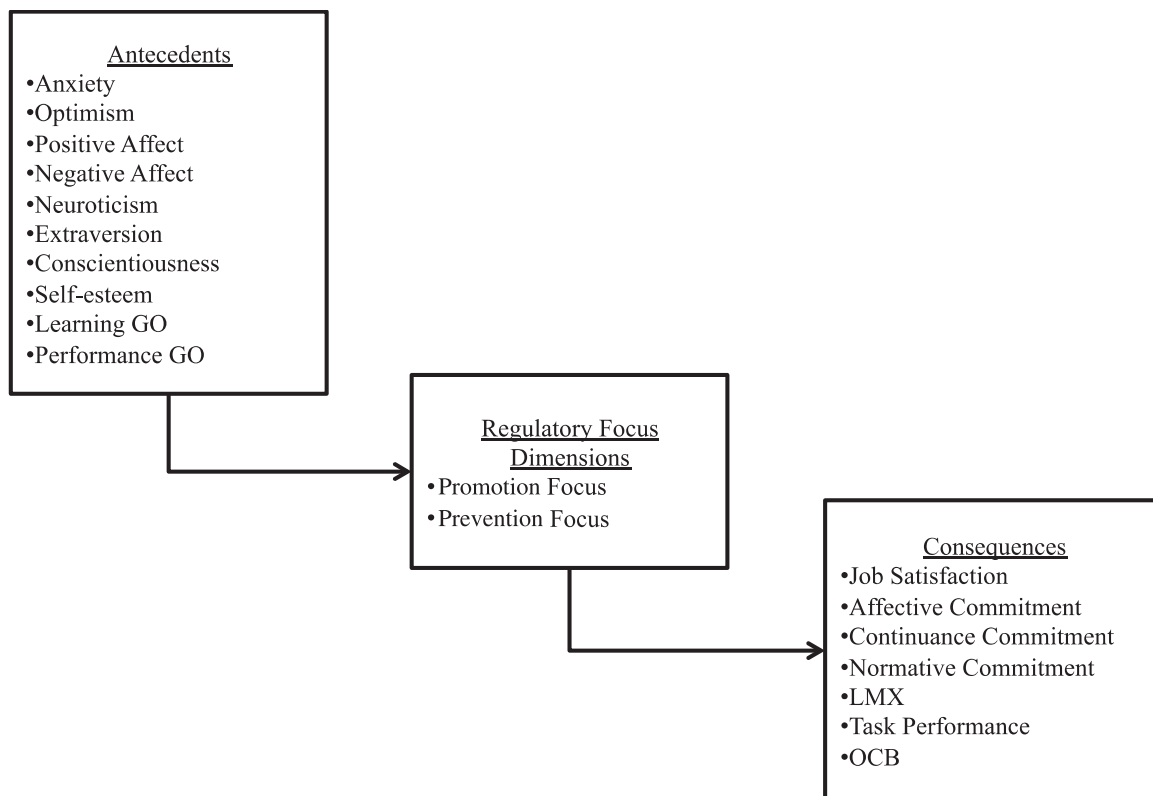


Fig. 1. Organizing framework for the variables examined. GO = goal orientation. LMX = leader-member exchange. OCB = organizational citizenship behavior.

Positive affect

Positive trait affectivity refers to a predisposition to feel positive emotions (Watson & Clark, 1984). From a self-regulation perspective, it has been postulated that positive affect indicates that an individual is meeting their own standards of goal progress, and will therefore devote their attention to the achievement of other goals (, 1998). Because both positive affect and promotion focus involve sensitivity to rewards and the experience of positive emotions (Johnson & Chang, 2008; Larsen, Diener, & Lucas, 2002), we expected positive affect to be positively related to promotion focus.

Negative affect

Negative trait affectivity refers to a predisposition to feel negative emotions (Watson & Clark, 1984). In general, individuals with a high level of negative affect tend to view situations in a pessimistic way. Because both negative affect and prevention focus entail sensitivity to punishments and the experience of negative emotions (Johnson & Chang, 2008; Larsen et al., 2002), we expected negative affect to be positively related to prevention focus.

Neuroticism

Neuroticism, often labeled emotional stability (or more specifically the lack thereof), is a personality characteristic related to feelings of tension, worry, and anxiety (Costa & McCrae, 1985). Neuroticism is similar to prevention focus in that they are both characterized by emotions associated with failure (Higgins, 1989). In general, an individual with a high level of neuroticism is expected to maintain a focus on whether they are doing the 'wrong thing' in general, and accordingly in work or other performance-related situations. Thus, we expected neuroticism to be positively associated with prevention focus and negatively associated with promotion focus.

Extraversion

Extraversion is a personality characteristic described by being outgoing, enjoying social interactions, and related to feelings of eagerness and enthusiasm (Costa & McCrae, 1985). Extraversion has been hypothesized to be a channel for expressing promotion-focused emotions (Higgins, 1989). In other words, an individual with a high level of extraversion is expected to become more engaged in their environment, otherwise described as an approach temperament (Bjørnebekk, 2008; Clark & Watson, 1999). Thus, we posited that extraversion would be positively related to promotion focus and negatively related to prevention focus.

Conscientiousness

Conscientiousness is a personality construct that reflects dependability as well as need for achievement (Barrick & Mount, 1991). Thus, conscientiousness relates to motivational processes reflecting approach motivation (Kanfer & Heggestad, 1997). Because both conscientiousness and promotion focus theoretically reside in the larger domain of approach motivation (Higgins et al., 2001), we expected conscientiousness to be positively related to promotion focus.

Self-esteem

Individuals with higher levels of self-esteem tend to direct their attention to possible gains rather than losses (Wang & Lee, 2006). Because promotion focus is characterized by concerns with gains, we expected self-esteem to be positively related to promotion focus. As prevention focus is characterized by concerns with losses, we expected self-esteem to be negatively related to prevention focus.

Learning goal orientation

Learning goal orientation is indicated by a preference for developing competence through expanding one's abilities by mastering challenging situations (Dweck & Leggett, 1988). Learning goal orientation is typically associated with a belief that ability can be developed and that effort is needed for successful task performance (VandeWalle, Cron, & Slocum, 2001). Because promotion focus is also concerned with goal achievement in growth and mastery situations, we expected promotion focus to be positively related to learning goal orientation.

Performance goal orientation

Performance goal orientation refers to a preference for demonstrating competence by seeking favorable judgments and avoiding negative judgments (Dweck & Leggett, 1988). Performance goal orientation is typically associated with a belief that ability is difficult to develop and innate ability is needed for successful task performance (VandeWalle et al., 2001). Since prevention focus shares a similar concern with avoiding negative feedback, we expected prevention focus to be positively related to performance goal orientation.

Consequences of regulatory focus

Job satisfaction

Job satisfaction has remained a popular attitudinal outcome/criterion variable in organizational research (Jex & Britt, 2008). Specifically, job satisfaction reflects an overall evaluation of one's job, reflecting both cognitive and attitudinal aspects. Despite characteristics of the actual job, individual differences have been demonstrated as effective predictors of job satisfaction, including personality (Judge, Heller, & Mount, 2002) and affect (Connolly & Viswesvaran, 2000). In addition, promotion focus is expected to be positively related to job satisfaction, as individuals with a higher level of promotion focus are likely to seek positive ways to improve aspects of their job. Moreover, prevention focus is expected to be negatively related to job satisfaction, as individuals with a stronger prevention focus are expected to focus on negative aspects of their job, specifically to avoid adverse outcomes.

Affective commitment

Much like job satisfaction, organizational commitment represents a popular and important attitudinal criterion variable in organizational research (Jex & Britt, 2008; Markovits, Ullrich, van Dick, & Davis, 2008; Riketta & Van Dick, 2005). Further, it can take several distinct forms, including affective, normative, and continuance commitment. Affective commitment reflects the extent to which individuals identify with an organization and feel a genuine sense of loyalty toward it (Meyer & Allen, 1991, 1997). Affective commitment is related to a strong psychological bond that is formed with the organization. The stronger the attachment between an individual and the bond they form, the more likely they are to extend themselves and exhibit extra-role behaviors, such as organizational citizenship behavior. Hence, the organization becomes a part of their identity and they like working there. Markovits et al. (2008) demonstrated that affective commitment was more strongly related to promotion focus, and less strongly related to prevention focus, due to the fact that individuals with a higher level of promotion focus would be more intrinsically motivated (Kark & Van-Dijk, 2007). In the present study, we also expect that promotion focus will be positively related to affective commitment.

Continuance commitment

Continuance commitment reflects an employee's perceptions regarding the relative investments they have made to the organization and the relative costs associated with leaving or seeking membership in another organization (Meyer & Allen, 1991, 1997). In other words, it is a calculative evaluation based on time or effort invested in an organization as well as alternative opportunities of equal value (Markovits et al., 2008). Given that individuals with a high prevention focus should be concerned with avoiding negative outcomes or uncertainty, we expect that prevention focus will be positively related to continuance commitment in the present meta-analytic study.

Normative commitment

In contrast with the aforementioned bases of organizational commitment, normative commitment is based on an employee's feeling of obligation to the organization, such that staying is the 'morally right' thing to do (Markovits et al., 2008; Meyer & Allen, 1991, 1997). Regulatory focus theory posits that individuals with a high prevention focus are motivated out of a sense of obligation or duties. As noted by Markovits et al., individuals with a prevention focus are more likely to be influenced by social pressures in organizations, and are motivated by perceived normative behavior and expectations. Hence, we expect prevention focus to be positively related to normative commitment.

Leader-member exchange (LMX)

In addition to attitudes, we also expect that regulatory focus will be related to LMX. A high level of LMX indicates that both managers and subordinates will view their relationship in an expanded view, in a much broader context than simply the duties outlined in a job description (Graen & Uhl-Bien, 1995). In addition, a high-LMX relationship is characterized by increased information sharing, trust, and commitment, and an emphasis on group over individual goals (Yukl, 2006). Further, high-LMX relationships are associated with higher levels of motivation and energy related innovative/creative problem solving (Atwater & Carmeli, 2009). Because individuals with a promotion focus can be expected to focus on realizing positive outcomes, it is expected that LMX will be positively related to promotion focus. In addition, individuals who have low levels of LMX are expected to maintain a greater focus on avoiding negative outcomes, as their relationship with their supervisor is expected to be more bound by formal job requirements, and maintain a focus on their self gains. Hence, LMX is expected to be negatively related to prevention focus.

Task performance

Task performance is arguably the most widely studied criterion in the organizational behavior and management literature (Murphy & Cleveland, 1995). Task performance generally involves the required tasks that are formally associated with a particular job. As promotion focus involves an emphasis on one's capacity to reap positive outcomes, it is expected that promotion focus will

be positively related to task performance. In contrast, it is expected that high levels of prevention focus may inhibit individuals from identifying ways to improve work performance. Specifically, the propensity to focus on avoiding negative outcomes should actually lead to a decreased level of task performance.

Organizational citizenship behavior

Organizational citizenship behavior (OCB) generally refers to behaviors that are not explicitly required in a formal job description, yet, in the aggregate, contribute to effective organizational performance (Organ, 1988). OCB has become an important criterion variable that is distinct from task performance, and is associated with a different nomological network of antecedents and other variables (Hoffman, Blair, Meriac, & Woehr, 2007). Because individuals with a high promotion focus look for ways to improve their environment, it is expected that promotion focus will be positively related to OCB. In contrast, rather than focusing on improvement, individuals with a high prevention focus are expected to seek out ways to avoid failure; thus it is expected that prevention focus will be negatively related to OCB.

Method

We conducted a comprehensive literature review to identify published and unpublished studies containing self-report measures of the promotion and prevention dimensions of regulatory focus. First, we conducted a search of online databases (e.g., Web of Science, PsycInfo, Dissertation Abstracts, ABI Inform) using keywords such as *regulatory focus*, *regulatory foci*, *regulatory fit*, *promotion focus*, *prevention focus*, and *self-regulation* as well as their variants. Second, we examined the reference lists of published articles on regulatory focus. Third, we scanned the Society for Industrial and Organizational Psychology and Academy of Management conference programs for unpublished papers between 1999 and 2009. Finally, we contacted key researchers in the field to solicit unpublished data and manuscripts. Our search resulted in 147 studies that included regulatory focus.

Next, we evaluated each of these studies for inclusion in the meta-analysis by establishing several rules for the inclusion and exclusion of data. First, we excluded studies that did not provide quantitative data (e.g., theoretical papers). Second, we excluded studies that experimentally manipulated or induced state regulatory focus as opposed to measuring it. Third, we chose to include only explicit measures of study variables (e.g., we excluded regulatory strength measures based on response latencies). Fourth, studies had to report sample sizes along with correlations or sufficient information to compute a correlation (cf. Arthur, Bennett, & Huffcut, 2001).

We examined the data for nonindependence, which occurs when multiple data points come from the same sample of participants. For example, we considered data points based on multiple measures of the same criterion for the sample to be nonindependent and we formed them into a single data point using calculations provided by Hunter and Schmidt (2004). Data points based on multiple time periods of the same or similar criterion for the same sample were also considered to be nonindependent and were combined into a single composite data point. On the basis of these decision rules, we identified 77 studies reporting 468 independent correlations with a total sample size of 13,743 for inclusion in the meta-analysis. Of the studies included, 65 were published and 12 were unpublished manuscripts or dissertations.

Two of the co-authors independently coded each study for sample size, effect sizes, and measurement reliability. Comparison across coding sheets indicated a high average level of agreement (95%). Any discrepancies were resolved through a consensus discussion with the first author. Once all of the study data was coded, we used Arthur et al.'s (2001) SAS PROC MEANS meta-analysis program to compute sample-weighted correlations. In addition to correcting for sampling error, we corrected for predictor unreliability. Because reliability information was not always available for every study, we used an artifact distribution based on the available study information. Corrections for range restriction were not made because of insufficient information. All meta-analytic procedures employed in the present study were in accordance with the recommended guidelines in the Meta-Analysis Reporting Standards (APA Publications and Communications Board Working Group on Journal Article Reporting Standards, 2008).

Results

Self-report measures of Promotion and Prevention Focus

On the basis of our literature search, we identified 14 different self-report measures that purported to measure both the promotion and prevention dimensions of regulatory focus (see Table 1). By far, the two most popular measures of regulatory focus are the General Regulatory Focus Measure (30 studies; GRFM; Lockwood, Jordan, & Kunda, 2002) and the Regulatory Focus Questionnaire (15 studies; RFQ; Higgins et al., 2001). Although a meaningful analysis of any differences between the GRFM and RFQ with respect to their relationships with antecedents or consequences was not possible, we did find that for promotion focus, the mean internal consistency estimate (Cronbach's α) for the GRFM was .82, whereas the mean α for the RFQ was .70. For prevention focus, the mean α for the GRFM was .82, and the mean α for the RFQ was .80. Although not listed in Table 1, some studies measured regulatory focus using proxy measures, such as the Behavioral Activation/Inhibition Scales (BAS/BIS; Carver & White, 1994) or the Portraits Values Questionnaire (PVQ; Schwartz et al., 2001). As is popular in the applied psychology literature, more recent efforts have been directed towards developing work-specific measures of regulatory focus (e.g., Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008).

Table 1
Self-report measures of Regulatory Foci.

Measure	Author(s)	Date	Source	Number of studies in meta-analysis
1. Selves Questionnaire	Higgins	1989	Book chapter	2
2. Regulatory Focus Behavior Measure	Higgins, Roney, Crowe, and Hymes	1994	J. of Personality and Social Psychology	1
3. Regulatory Focus Questionnaire	Higgins, Friedman, Harlow, Idson, Ayduk, and Taylor	2001	European J. of Social Psychology	15
4. General Regulatory Focus Measure	Lockwood, Jordan, and Kunda	2002	J. of Personality and Social Psychology	30
5. Promotion/Prevention Outcomes Measure	Pennington and Roese	2003	J. of Experimental Social Psychology	1
6. Regulatory Focus Quick Assessment	Cunningham, Raye, and Johnson	2005	Cognitive, Affective, and Behavioral Neuroscience	1
7. Modified Regulatory Focus Questionnaire	Semin, Higgins, Gil de Monies, Estourget, and Valencia	2005	J. of Personality and Social Psychology	3
8. Regulatory Focus at Work Scale	Wallace and Chen	2006	Personnel Psychology	7
9. Regulatory Concerns Questionnaire	Keller	2006	Unpublished	1
10. Regulatory Focus Strategies Scale	Ouschan, Boldero, Kashima, Wakimoto, and Kashima	2007	Asian J. of Social Psychology	3
11. Regulatory Focus Scale	Fellner, Holler, Kirchlner, and Schabmann	2007	Swiss J. of Psychology	2
12. Regulatory Focus Reference-Point Scales	Summerville and Roese	2008	J. of Research in Personality	1
13. Work-Based Regulatory Focus Measure	Johnson and Chang	2008	Unpublished	7
14. Work Regulatory Focus Scale	Neubert, Kacmar, Carlson, Chonko, and Roberts	2008	J. of Applied Psychology	1

Note. Proxy measures of regulatory foci are not included in this table.

Orthogonality of Dimensions

A key concern of regulatory focus researchers is the extent to which prevention focus and promotion focus are empirically distinct factors. Higgins (1997, 1998) originally proposed that the two factors were orthogonal. In other words, promotion focus and prevention focus were conceptualized as two independent dimensions rather than opposite ends of a single spectrum. Moreover, some researchers have suggested that over time, individuals could differ in the extent to which they are high on both foci, low on both foci, or high on one focus and low on the other (Forster, Higgins, & Bianco, 2003; Wallace, Chen, & Kanfer, 2005). The accessibility of specific patterns of regulatory foci may also depend on situational and task demands (Brockner & Higgins, 2001; Wallace & Chen, 2006).

We found that, correcting for unreliability in both promotion and prevention focus, the mean corrected correlation (ρ) between the two factors was .10 ($r = .09$ corrected only for sampling error; $SD\rho = .15$). This estimate was based on 62 independent coefficients ($N = 11,765$). For this meta-analytic coefficient, 23.29% of the variance was attributable to sampling error, and 5% to artifacts. Confidence intervals (95%) ranged from .05 to .13, and 95% credibility intervals ranged from $-.18$ to .38. This evidence suggests that although modestly related, promotion and prevention focus are largely orthogonal factors. These results also suggest that the practice of creating a single regulatory focus score based on the dominance or submissiveness of each subfactor is unwarranted. This finding also leads us to agree with other researchers (e.g., Wallace & Chen, 2006), who have suggested that future work using these factors should identify patterns or “profiles” of regulatory focus rather than combining them into a single attribute.

Antecedents of Regulatory Focus

Summary meta-analytic results for these analyses are reported in Table 2. As predicted by regulatory focus theory, promotion focus was positively associated with optimism ($\rho = .35$), positive affect ($\rho = .43$), extraversion ($\rho = .33$), conscientiousness, ($\rho = .28$), self-esteem ($\rho = .24$), and learning goal orientation ($\rho = .38$). On the other hand, promotion focus was negatively related to neuroticism ($\rho = -.19$), and anxiety ($\rho = -.18$). Also, as predicted by regulatory focus theory, prevention focus was positively associated with anxiety ($\rho = .27$), negative affect ($\rho = .33$), and performance goal orientation ($\rho = .25$). Somewhat surprising was the finding that prevention focus was also positively related to conscientiousness ($\rho = .18$). Finally, prevention focus was negatively associated with extraversion ($\rho = -.16$) and self-esteem ($\rho = -.24$).

We further proceeded to examine whether the correlations between promotion and prevention focus were significantly different with respect to each antecedent variable. To do this, we used a formula for testing dependent correlations, presented in Ricketta and Van Dick (2005). These values are reported in Table 2. Specifically, promotion and prevention focus were differentially related to anxiety ($z = 4.57, p < .001$), optimism ($z = 5.57, p < .001$), positive affect ($z = 2.95, p < .01$), negative affect ($z = 5.02, p < .001$), neuroticism ($z = 5.30, p < .001$), extraversion ($z = 9.86, p < .001$), self esteem ($z = 5.90, p < .001$), learning goal orientation

Table 2
Antecedents of Regulatory Foci.

Examined relationship	<i>k</i>	<i>N</i>	<i>r</i>	ρ	<i>SD</i> ρ	% <i>SE</i>	% <i>Artifacts</i>	95% Conf	95% Cred	<i>z</i>
Anxiety										4.57***
Promotion Focus	3	500	-.17	-.18	.10	61.42	3.73	-.25; -.08	-.31; -.06	
Prevention Focus	3	500	.23	.27	.14	26.20	1.24	.07;.40	-.01;.54	
Optimism										5.57***
Promotion Focus	2	263	.30	.35	.06	100.00	5.79	.19;.41	.35;.35	
Prevention Focus	2	263	.02	.02	.06	100.00	6.70	-.10;.14	.02;.02	
Positive Affect										2.95**
Promotion Focus	6	925	.39	.43	.12	32.99	2.60	.30;.49	.22;.63	
Prevention Focus	5	884	.01	.01	.30	6.22	3.06	-.25;.28	-.62;.65	
Negative Affect										5.02***
Promotion Focus	4	760	-.02	-.02	.10	57.42	3.99	-.09;.05	-.15;.11	
Prevention Focus	5	801	.29	.33	.11	41.49	22.08	.19;.39	.18;.48	
Neuroticism										5.30***
Promotion Focus	5	1142	-.18	-.19	.02	100.00	41.47	-.23; -.12	-.19; -.19	
Prevention Focus	5	1142	.28	.31	.21	8.83	.12	.10;.46	-.12;.73	
Extraversion										9.86***
Promotion Focus	4	1054	.30	.33	.08	55.04	16.88	.25;.36	.25;.42	
Prevention Focus	4	1054	-.15	-.16	.06	86.87	2.34	-.20; -.09	-.21; -.12	
Conscientiousness										.14
Promotion Focus	2	684	.25	.28	.07	56.21	4.09	.18;.32	.18;.37	
Prevention Focus	2	684	.17	.18	.10	26.90	.29	.03;.31	0;.37	
Self-esteem										5.90***
Promotion Focus	3	773	.21	.24	.11	30.30	7.74	.09;.34	.05;.43	
Prevention Focus	3	773	-.21	-.24	.09	49.03	4.67	-.31; -.12	-.37; -.11	
Learning GO										3.22**
Promotion Focus	4	542	.34	.38	.13	36.27	2.06	.10;.63	.22;.47	
Prevention Focus	4	542	.05	.05	.16	28.55	7.02	-.04;.13	-.24;.34	
Performance GO										1.78 [†]
Promotion Focus	4	542	-.02	-.02	.05	100.00	12.43	-.11;.06	-.02; -.02	
Prevention Focus	4	542	.22	.25	.30	7.36	1.99	-.07;.52	-.39;.90	

Note. GO = goal orientation; *k* = total number of effect sizes included in the analysis; *N* = sample size across studies; *r* = sample weighted mean correlation; ρ = corrected meta-analytic correlation; *SD* ρ = standard deviation of corrected meta-analytic correlation; %*SE* = percentage of variance attributable to sampling error; %*Artifacts* = percentage of variance attributable to unreliability in the predictor; 95% Conf = 95% confidence interval; 95% Cred = 95% credibility interval; *z* = dependent samples test for significance between correlations of regulatory focus and each antecedent variable; **p*<.05, ***p*<.01, ****p*<.001.
 Note. GO = goal orientation; *k* = total number of effect sizes included in the analysis; *N* = sample size across studies; *r* = sample weighted mean correlation; ρ = corrected meta-analytic correlation; *SD* ρ = standard deviation of corrected meta-analytic correlation; %*SE* = percentage of variance attributable to sampling error; %*Artifacts* = percentage of variance attributable to unreliability in the predictor; 95% Conf = 95% confidence interval; 95% Cred = 95% credibility interval; *z* = dependent samples test for significance between correlations of regulatory focus and each antecedent variable; **p*<.05, ***p*<.01, ****p*<.001; [†]*p*<.05, one-tailed test.

(*z* = 3.22, *p* < .01), and performance goal orientation (*z* = 1.78, *p* < .05, one-tailed). However, promotion and prevention focus were not differentially related to conscientiousness (*z* = .14, *p* = .89).

Consequences of Regulatory Focus

Summary meta-analytic results for these analyses are reported in Table 3. As can be seen in Table 4, promotion focus was positively associated with job satisfaction (ρ = .15), affective commitment (ρ = .29), continuance commitment (ρ = .10), normative commitment (ρ = .24), LMX (ρ = .22), task performance (ρ = .27), and organizational citizenship behavior (ρ = .29). In contrast, however, prevention focus was negatively associated with job satisfaction (ρ = -.21). Interestingly, prevention focus was positively related to both continuance commitment (ρ = .31) and normative commitment (ρ = .15). Although prevention focus was negatively related to LMX (ρ = -.17), the confidence interval for this effect size contained zero.

As with the regulatory focus antecedents, we examined whether the correlations between promotion and prevention focus were significantly different with respect to each outcome variable. Here we found that promotion and prevention focus were differentially related to job satisfaction (*z* = 4.74, *p* < .001), affective commitment (*z* = 4.49, *p* < .001), continuance commitment (*z* = 9.46, *p* < .001), LMX (*z* = 5.50, *p* < .001), task performance (*z* = 2.20, *p* < .05), and OCB (*z* = 2.96, *p* < .01).

Incremental Validity of Regulatory Foci

To further explore the nomological network surrounding regulatory foci, we examined the incremental validity of regulatory foci on work outcomes over and above that of theoretically and conceptually similar constructs. Thus, we examined the incremental validity of promotion and prevention on job satisfaction and task performance over and above extraversion, neuroticism, learning goal orientation, and performance goal orientation. The complete meta-analytic correlation matrix is reported in Table 4. As expected, regulatory foci predicted a significant amount of incremental variance in job satisfaction

Table 3
Consequences of Regulatory Foci.

Examined relationship	<i>k</i>	<i>N</i>	<i>r</i>	ρ	<i>SD</i> ρ	% <i>SE</i>	% <i>Artifacts</i>	95% Conf	95% Cred	<i>z</i>
Job satisfaction										4.74***
Promotion Focus	4	616	.14	.15	.13	37.73	1.21	.01; .27	-.06; .36	
Prevention Focus	4	616	-.18	-.21	.08	100.00	32.69	-.26; -.11	-.21; -.21	
Affective Commitment										4.49***
Promotion Focus	4	1110	.25	.29	.06	93.54	71.09	.19; .31	.29; .29	
Prevention Focus	4	1110	.01	.01	.11	27.53	25.94	-.11; .12	-.17; .18	
Continuance Commitment										9.46***
Promotion Focus	2	728	.09	.10	.01	100.00	100.00	.10; .10	.10; .10	
Prevention Focus	2	728	.26	.31	.03	100.00	100.00	.31; .31	.31; .31	
Normative Commitment										1.35
Promotion Focus	2	783	.20	.24	.09	26.39	12.21	.24; .24	.07; .42	
Prevention Focus	2	783	.12	.15	.03	100.00	100.00	.15; .15	.15; .15	
LMX										5.50***
Promotion Focus	2	327	.20	.22	.10	61.39	2.89	.09; .30	.09; .34	
Prevention Focus	2	327	-.16	-.17	.01	100.00	14.29	-.05; -.27	-.17; -.17	
Task Performance										2.20*
Promotion Focus	7	1305	.24	.27	.06	100.00	3.16	.19; .29	.27; .27	
Prevention Focus	7	1305	.03	.04	.27	7.36	.44	-.17; .23	-.53; .60	
OCB										2.96***
Promotion Focus	7	1333	.26	.29	.15	21.25	1.42	.15; .37	.01; .56	
Prevention Focus	7	1333	.01	.02	.19	14.83	5.11	-.13; .15	-.35; .38	

Note. LMX = leader-member exchange; OCB = organizational citizenship behavior; *k* = total number of effect sizes included in the analysis; *N* = sample size across studies; *r* = sample weighted mean correlation; ρ = corrected meta-analytic correlation; *SD* ρ = standard deviation of corrected meta-analytic correlation; %*SE* = percentage of variance attributable to sampling error; %*Artifacts* = percentage of variance attributable to unreliability in the predictor; 95% Conf = 95% confidence interval; 95% Cred = 95% credibility interval; *z* = dependent samples test for significance between correlations of regulatory focus and each outcome variable; **p*<.05, ***p*<.01, *** *p*<.001.

($\Delta R^2 = .04, p < .01$; see Table 5) as well as task performance ($\Delta R^2 = .04, p < .01$; see Table 6). These results provide evidence that regulatory focus is empirically distinct from goal orientation as well as other related individual difference variables.

Discussion

The regulatory focus construct has received increased research attention in the past decade. What has been lacking, however, is an up-to-date quantitative review of the regulatory focus literature. We believe that this paper responds to this need by providing a quantitative summary of studies utilizing self-report measures of promotion focus and prevention focus. In doing so, we sought to advance regulatory focus theory by providing answers to four key questions of interest to researchers interested in studying regulatory focus.

The first question asked, what self-report measures are being used to measure promotion and prevention focus? As mentioned previously, we located 14 different measures that purported to measure these two factors of regulatory focus. After compiling the

Table 4
Meta-analytic correlation matrix.

Variable	1	2	3	4	5	6	7	8
1. Neuroticism	(.84)							
2. Extraversion	-.46 441	(.84)						
3. Learning GO	-.18 ^a 3042	.29 ^a 3215	(.85)					
4. Performance GO	.37 ^a 1415	-.30 ^a 1404	-.23 633	(.78)				
5. Job Satisfaction	-.30 208	.03 208	.02 165	-.05 165	(.89)			
6. Task Performance	-.08 ^b 18,719	.13 ^b 19,511	.22 155	-.06 155	.33 107	(.84)		
7. Promotion Focus	-.19 1142	.33 1054	.38 542	-.02 542	.15 616	.27 1311	(.78)	
8. Prevention Focus	.31 1142	-.16 1054	.05 542	.25 542	-.21 616	.04 1311	.10 11,765	(.79)

Note. GO = goal orientation. Values were obtained from the current meta-analytic data, unless otherwise noted. Values along the diagonal are the mean internal consistency estimates. Italicized values under each meta-analytically derived correlation are the total sample size.

^a Values obtained from Payne et al. (2007).

^b Values obtained from Barrick and Mount (1991).

Table 5
Incremental Validity of Regulatory Foci on Job Satisfaction.

Variable	B	SE B	β	ΔR ²	R ²
Step 1					
Neuroticism	−.38	.06	−.38**		.11**
Extraversion	−.12	.06	−.12*		
Learning GO	.00	.05	.00		
Performance GO	.05	.05	.05		
Step 2					
Neuroticism	−.32	.06	−.32**	.04**	.15**
Extraversion	−.18	.06	−.18**		
Learning GO	−.03	.05	−.03		
Performance GO	.05	.05	.05		
Promotion Focus	.18	.05	.18**		
Prevention Focus	−.17	.05	−.17**		

Note. The harmonic mean used in this analysis was 387. GO = goal orientation.

** $p < .01$.

* $p < .05$.

full list of measures, we asked ourselves why are so multiple measures of the same constructs needed? We see the sheer number of regulatory focus measures that is available as a potential roadblock to the progress of regulatory focus literature. For example, if a researcher is interested in including a regulatory focus measure in a battery of measures, which measure should he/she choose? Lockwood et al. (2002) measure appears to be the most popular by far, used in 30 different studies. Higgins et al. (2001) measure is the next most frequently used inventory, reported in 15 of the studies. Beyond that, there are several additional inventories used less frequently. Unfortunately, at this point, there is no generally accepted standard measurement tool. Future research should continue to examine the measurement properties of these inventories.

The second question asked, what is the empirical relationship between promotion and prevention focus? Although the two dimensions of regulatory focus are theoretically independent, a quantitative summary of the empirical evidence for independence has been lacking. We found that across 77 studies, the average corrected correlation between the two factors was .10 (.09 uncorrected). Thus, assuming perfect reliability, promotion and prevention focus are at best weakly related and appear to be distinct and orthogonal factors. This finding is crucial for establishing the nomological network of regulatory focus, and we believe this finding provides researchers with a solid framework for further refinements in the content and construct validity of promotion and prevention focus.

Further expanding on the regulatory focus nomological network, the third question asked, how are promotion and prevention focus associated with work-related variables? In general, we found that promotion focus was related to positive individual differences and work outcomes, and that prevention focus was related to negative individual differences and work outcomes. There has been some debate as to whether promotion focus is an inherently positive trait or prevention focus is an inherently negative trait, and indeed, our results shed additional light on this issue. We caution readers, however, that our results should not be generalized to answer this question with absolute certainty because contextual variables such as group norms, leadership climate, and task characteristics may influence whether one adopts a promotion or prevention focus in given work situation (Wallace, Little, & Shull, 2008). Thus, although general patterns of relationships emerged in our study, these relationships should not be taken as evidence that promotion focus is *always* preferred to prevention focus across *all* work situations. For instance, prevention focus may be negatively related to errors, or positively related to safety performance, which is critical in several work

Table 6
Incremental Validity of Regulatory Foci on Task Performance.

Variable	B	SE B	β	ΔR ²	R ²
Step 1					
Neuroticism	−.02	.06	−.02		.05**
Extraversion	.07	.06	.07		
Learning GO	.20	.05	.20**		
Performance GO	.01	.05	.01		
Step 2					
Neuroticism	−.01	.06	−.01	.04**	.09**
Extraversion	.02	.06	.02		
Learning GO	.13	.06	.13*		
Performance GO	−.02	.06	−.02		
Promotion Focus	.21	.06	.21**		
Prevention Focus	.02	.05	.02		

Note. The harmonic mean used in this analysis was 387. GO = goal orientation.

** $p < .01$.

* $p < .05$.

contexts. Nonetheless, our results clearly indicate that promotion focus is generally related to several positive work-related antecedents and outcomes and prevention focus is uniquely related to several negative work-related antecedents and outcomes.

From a theoretical standpoint, all of the observed relationships between promotion and prevention focus and their antecedents and consequences were consistent with regulatory focus theory, even those for which no significant difference was found. For conscientiousness, for example, we did not find a significant difference between promotion and prevention focus. This, however, is consistent with regulatory focus theory, which suggests that both promotion and prevention focus entail conscientiousness, but for different goals. Specifically, individuals with a prevention focus may be more concerned with safety performance than task performance (Wallace & Chen, 2006); thus, they are conscientious in the sense that their concern is with avoiding injury rather than achieving maximal task performance.

The final question examined whether regulatory focus predicts job satisfaction and job performance over and above that of other well-established work-related constructs. We found that regulatory focus does explain a significant proportion of unique variance in job satisfaction and task performance beyond neuroticism, extraversion, and goal orientation. This finding provides direct evidence of the construct validity of regulatory focus, and answers the call for much needed research that distinguishes regulatory focus from other motivational traits such as personality and goal orientation. We see this finding as particularly important for further refinement of the theory of regulatory focus, and we believe these results can provide a framework for further development of the regulatory focus nomological network. Importantly, these findings demonstrate that the constructs are distinct, and that regulatory focus explains a significant proportion of criterion variance beyond goal orientation and relevant personality constructs.

Implications for Theory and Practice

The findings of the present study have several implications for both theory and practice. Foremost, the model presented in Fig. 1 delineates a set of core hypotheses that provides construct validity evidence for the regulatory focus construct. Results of the present study also reveal that regulatory focus is a distinct construct, when compared with theoretically relevant variables such as goal orientation. Given the potential for construct redundancy, it is important to investigate the degree of shared variance among conceptually/theoretically related variables. Our study provides direct evidence that, although similar theoretically, the two constructs are empirically distinct in their prediction of both job satisfaction and task performance. These findings further underscore the value of studying regulatory focus in organizational settings as it is related to important outcomes, but yet distinct from other achievement or motivation-related variables.

Further, the results of this review indicate that regulatory focus shows promise as a work-related construct as a predictor and a criterion. Indeed, this study's findings showed that promotion and prevention focus are differentially related to key outcomes that are of interest to managers and researchers alike. Given managers' concerns over valid predictors of important work outcomes, practitioners should see value in regulatory focus for selection systems. Given the effect sizes of the relationships between the regulatory foci and outcome variables, regulatory focus is comparable to other popular non-cognitive predictors of performance such as the big five personality constructs (Barrick & Mount, 1991; Oh, Wang, & Mount, 2010; Tett, Jackson, Rothstein, & Reddon, 1999).

Limitations and future directions

As noted by an anonymous reviewer, one limitation of the present study is that some relationships are based on few studies (i.e., $k = 2$ or 3). However, as this represents the first quantitative summary of regulatory focus, more studies can be integrated as they become available. Further, with a few number of studies for some relationships, this did not warrant an exploration of moderator variables. Again, as more studies report relationships between promotion and prevention focus, and their antecedents and outcome variables, researchers should begin to explore moderators of the reported relationships. For example, it is possible that organizational climate variables might have an impact on whether an individual adopts a promotion or prevention focus at work.

In addition, future studies should continue to explore variables not included in the current study. For instance, regulatory focus may be related to other negative outcomes such as counterproductive behavior, turnover, and other relevant outcomes for managers and organizational researchers. We could not identify any published research to include in the present study to evaluate these relationships, but it is possible that the regulatory focus might be important for predicting these outcomes. We generally found that promotion focus was associated with favorable work outcomes and prevention focus was related to unfavorable outcomes. In the present study, we found that prevention focus was positively related to conscientiousness, which is a robust predictor of work performance (Barrick & Mount, 1991; Oh et al., 2010; Tett et al., 1999). Future research should continue to explore situations where prevention focus might be associated with relevant positive organizational constructs. For instance, Wallace and Chen (2006) found that prevention focus was positively related to safety performance, which is of critical importance in several industries. Future studies should explore whether prevention focus is predictive of these outcomes.

Moreover, regulatory focus should continue to be explored in additional contexts that may moderate the relationship between promotion and prevention focus and performance outcomes that may moderate or serve as boundary conditions of the regulatory focus — outcomes relationship. Specifically, normative behavior can have a strong impact on the behaviors individuals choose to exhibit. However, the nuances of how normative behavior or psychological climate impacts regulatory focus have not been explored thus far. Future research should examine the interactions between regulatory focus and the organizational environment/situation.

Furthermore, leadership may be influenced by promotion and prevention focus. In the present study, we found that promotion focus was positively related to LMX. However, other perspectives on leadership may also be relevant for regulatory focus theory. For instance, the full range model of transformational leadership (Bass, 1985, 1991) delineates transactional and transformational leadership as broad sets of leadership behaviors that can be exhibited when influencing others. In short, transactional leadership is often associated with compliance and avoidance of punishment, whereas transformational leadership is associated with an individual's drive to go above and beyond a minimally acceptable level of performance (Yukl, 2006). Given the motivational dynamics surrounding transformational and transactional leadership (Bono & Judge, 2003), it could be expected that transformational leadership might be more strongly associated with promotion focus, where transactional leadership would be more strongly related to prevention focus. Future studies should pursue such relationships.

Regarding the measurement properties of regulatory focus inventories, the current study sheds light on the mean reliability estimates for the most popular inventories. However, future research should continue to explore the predictive validity of each measure. In other words, as more data become available, researchers should continue to explore the psychometric properties of the dominant regulatory focus inventories.

Although the current study elucidates upon several important questions regarding the regulatory focus construct, we urge researchers to continue to expand upon the regulatory focus nomological network by conducting primary studies as well as future quantitative summaries. In addition, as more data are available, future studies should examine moderators that might influence the relationship between regulatory focus and outcomes.

Conclusion

Regulatory focus is a theoretically compelling individual difference variable that has recently received extensive research attention in the organizational sciences. Results of the present study summarize the regulatory focus nomological network, and provide important evidence for the distinctiveness of promotion and prevention focus. However, our findings reveal that there does not appear to be a unified approach to its measurement in the literature. We caution researchers to critically evaluate for themselves the various measures that are available before deciding on their choice of measure. Nonetheless these findings advance regulatory focus theory by providing evidence for the validity of the regulatory focus construct.

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Further Reading

Asterisks (*) denote studies included in the meta-analysis

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