Development and Validation of the State Regulatory Focus Scale

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Abstract

Promotion- and prevention-focused regulation influence a variety of workplace behaviors, including innovation and safety performance. Although regulatory foci are theorized to vary both between- and within-individuals, little within-person research has been conducted. One reason for this gap is the lack of a well-validated state regulatory focus scale. Thus, across four studies (total $N = 1,300$), we develop and validate the State Regulatory Focus Scale (SRFS). We find that the scale scores are reliable, exhibit measurement invariance, and demonstrate convergent, divergent, and predictive validity. In addition, the SRFS detects changes in state regulatory foci in response to a regulatory focus induction. Overall, within-person regulatory foci relationships matched meta-analytic estimates, although were weaker compared to the between-person level relationships. We conclude with recommendations for future research.

Keywords: regulatory focus; scale development; state; within-person; repeated-measures

Individuals pursue a variety of goals at work, such as goals to perform well, innovate, and follow safety regulations. Additionally, individuals vary in the *ways* they pursue these various goals. In particular, regulatory focus theory posits two regulatory systems which drive the means via which individuals pursue goals (Higgins, 1997, 1998). Promotion-focused regulation involves eager pursuit of idealistic outcomes, whereas prevention-focused regulation involves vigilant avoidance of negative outcomes. Importantly, there is extensive meta-analytic evidence that regulatory foci predict a range of workplace behaviors, including innovation and safety behaviors (Gorman et al., 2012; Lanaj, Chang, & Johnson, 2012). However, whereas regulatory foci are theorized to vary both between- and within-people, to date regulatory focus research has emphasized between-person relationships, leaving the degree to which within-person fluctuations influence work behaviors relatively unexplored. The current research addresses this limitation.

Specifically, we argue that a primary reason for the dearth of within-person regulatory focus research is the lack of a well-validated *state* regulatory focus scale. Whereas numerous trait-level regulatory focus scales have been developed (e.g., Higgins et al., 2001; Lockwood, Jordan, & Kunda, 2002; Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008; Wallace, Johnson, & Frazier, 2009), state-level regulatory focus measures have not received rigorous validation efforts. Instead, researchers have adapted trait regulatory focus scales for state-level measurement *ad hoc* (Dong, Liao, Chuang, Zhou, & Campbell, 2015; Koopmann, Lanaj, Bono, & Campana, 2016; Lin & Johnson, 2015) often resulting in unvalidated and construct deficient scales. In contrast, Fay, Urbach, and Scheithauer (2019) developed a novel *momentary-chronic* (i.e., state-trait) regulatory focus measure, yet their validation efforts and the resulting scale also had important limitations, which we address later in the paper.

Therefore, in the present paper we introduce and validate the State Regulatory Focus

Scale (SRFS). This measure has the potential to facilitate important insights, as within-person fluctuations in regulatory focus may provide levers for behavioral change. For instance, regulatory fit theory suggests that matching regulatory foci to the requirements of the task at hand can improve motivation and performance (Higgins, 2000, 2005). Whereas promotion focus is well suited for divergent (i.e., creative) thinking tasks which rely on eager goal pursuit strategies (Friedman & Förster, 2001), prevention focus is well suited for convergent (i.e., analytical) thinking tasks which rely on vigilant goal pursuit strategies (Förster, Higgins, & Bianco, 2003). Indeed, there is meta-analytic evidence for varying benefits of promotion- and prevention-focus across domains (Gorman et al., 2012; Lanaj et al., 2012). Yet, this work has been largely restricted to the between-person level of analysis. Importantly, it may also be possible to adjust regulatory foci *in the moment* to match the task at hand (Scholer & Miele, 2016; Scholer, Miele, Murayama, & Fujita, 2018). Doing so may result in performance benefits analogous to those traditionally observed at the between-person level. Yet, additional research is required before momentary adjustment of regulatory foci can be leveraged as a motivational tool. A brief, reliable, and valid method of assessing state-level regulatory focus is necessary for moving this, and other state regulatory focus research forward. To this end, in the remainder of this paper we describe the development of the SRFS.

Regulatory Focus Theory

According to regulatory focus theory, individuals possess two independent regulatory systems which govern goal-pursuit behaviors (Brockner & Higgins, 2001; Higgins, 1997, 1998). Each regulatory focus is comprised of three important components: the *needs* the systems serve (growth vs. safety), the *framing* of goals (aspirations vs. responsibilities), and the *type of outcomes* to which the system is sensitive (gains vs. losses). *Promotion focused regulation* stems

from a need for growth and development. It is characterized by an emphasis on aspirations and desired outcomes. Therefore, in general the more promotion focused an individual is, the more sensitive they are to information regarding the potential gains (versus non-gains) of goal pursuit. Furthermore, individuals with stronger promotion focus generally prefer eager goal pursuit strategies which approach positive outcomes (Higgins, 2000). In contrast, *prevention focused regulation* stems from a need for safety and security. It is characterized by an emphasis on responsibilities and obligations and therefore, the more prevention focused an individual is, the more sensitive they are to information regarding the potential losses (versus non-losses) associated with goal pursuit. Individuals with stronger prevention focus generally prefer vigilant goal pursuit strategies which avoid negative outcomes (Higgins, 2000). In sum, to ensure construct validity, regulatory focus scales must capture all three aspects of regulatory focus theory.

From its inception, authors have consistently theorized that regulatory focus varies both between- and within-individuals (Higgins, 1997). Specifically, although individuals generally possess chronic levels of each regulatory focus, situations may elicit changes in momentarily held regulatory foci. Yet, measurement of state regulatory focus has been surprisingly scarce in comparison to the measurement of trait regulatory focus. Instead, evidence for variance in state regulatory focus has come primarily from experimental induction studies which have allowed researchers to *infer* changes in state regulatory foci from the behavioral and perceptual outcomes of the inductions (e.g., Higgins et al., 2001; Higgins, Roney, Crowe, & Hymes, 1994). However, these studies have not provided evidence for the validity of the manipulations (e.g., manipulation checks), leaving open the possibility that the inductions meant to elicit regulatory foci may have instead induced other closely related but distinct constructs, such as behavioral activation and

inhibition (BAS/BIS; Summerville & Roese, 2008). Furthermore, the extent of *naturally* occurring (i.e., unmanipulated) within-person variability in regulatory focus, and the consequences of such variability, remains largely unknown. Thus, future research is needed to verify the extent to which regulatory foci vary within-people and the antecedents and consequences of such variability.

Adapting Trait Regulatory Focus Scales

One possible approach to address the lack of a state regulatory focus scale is to adapt existing trait scales for within-person measurement. This may be achieved by rewriting trait scale items to refer to the present timeframe (Heggestad et al., 2019). However, there are several reasons existing trait regulatory focus scales may not be well suited for adaptation. First, state-level scales are typically used in multi-wave studies in which the same participants are sampled repeatedly over time. Scales designed for repeated measurement must be succinct to reduce participant fatigue (Ohly, Sonnentag, Niessen, & Zapf, 2010); indeed, Ohly et al. recommend repeated measures scales contain less than five items per construct. Yet, in contrast, most trait regulatory focus scales range from 5-9 items per regulatory foci (Higgins et al., 2001; Lockwood et al., 2002; Neubert et al., 2008; Wallace et al., 2009).

Second, some trait regulatory focus scales contain items that refer to historical experiences which do not vary with time. Specifically, Higgins et al.'s (2001) scale refers to childhood experiences and relationships with one's parents (e.g., "How often did you obey rules and regulations that were established by your parents?"). Thus, these items cannot be adapted for state-level measurement. Finally, as a result of the theoretical complexity of regulatory focus, many existing regulatory focus measures fail to capture the full scope of the construct (Neubert et al., 2008). That is, trait regulatory focus scales frequently omit one or more of the previously

described construct parameters (i.e., needs, goal-framing, and sensitivity to type of outcomes).

For example, the Wallace et al.'s (2009) measure of work-specific regulatory focus does not

contain items related to *safety* and *security* needs. As a consequence of these limitations, in the

present paper, we develop a new scale specifically designed for comprehensive, yet simple and

short measurement of state regulatory focus.

Previous State Regulatory Focus Measurement and its Limitations

Despite the issues identified above, several authors have attempted to measure state

regulatory focus via scale adaptation (Dong et al., 2015; Koopmann et al., 2016; Lin & Johnson,

2015). Yet, these adaptations have been incomplete or lacking important validity evidence. For

example, Dong et al. adapted a trait regulatory focus scale for repeated measurement among a

sample of hairstylists over multiple customer-stylist interactions. However, the authors only

adapted the promotion focus factor, omitting prevention focus. In addition, although the adapted

scale was used for momentary (i.e., state) measurement, the authors validated the scale using

instructions referring to average (i.e., trait) rather than momentary regulatory focus, which may

have confounded their validity evidence.

In another study, Koopmann et al. (2016) examined the effect of daily work events on

fluctuations in regulatory focus and downstream effects on mood and psychosomatic complaints.

To measure fluctuations in regulatory focus, the authors adapted two items per regulatory foci

from Higgins et al.'s (1997) trait regulatory focus measure. Yet, the authors focused only on the

gains and *losses* aspect of regulatory focus, neglecting the other components of the construct. In

addition, the authors sought to validate their measure by correlating it with Lockwood et al.'s

(2002) trait regulatory focus scale. Yet, in doing so, Koopmann et al. also adapted the Lockwood

et al. scale by removing several items. Thus, given that the reduced Lockwood et al. scale was

also unvalidated, it is difficult to infer the validity of Koopman et al's adapted state regulatory

focus scale. Finally, Lin and Johnson (2015) measured state regulatory foci to examine their

effects on voice behaviors at work. They adapted three items per regulatory focus from

Lockwood et al.'s scale. However, the authors did not report all adapted items and did not

provide validity evidence for the adapted scale.

In contrast, Fay et al. (2019) developed a novel momentary-chronic regulatory focus

scale designed to assess both trait and state regulatory focus. However, Fay et al.'s scale did not

include items capturing the *safety needs* aspect of prevention focus. In addition, Fay et al.

presented only limited evidence for the convergent and divergent validity of their scale by failing

to measure constructs in the nomological network of regulatory focus (Gorman et al., 2012;

Lanaj et al., 2012). Instead, to demonstrate concurrent validity, they asked a small sample of

participants ($N = 81$) to report the types of activities (i.e., social activities, obligations, recovery)

in which they were engaged during the time they self-reported their regulatory focus. However,

the extent to which engaging in these activities is related to state regulatory foci is undetermined,

and thus, does not provide evidence for the validity of the scale. Finally, Fay et al. did not

provide evidence for the measurement invariance of their scale, which is a crucial form of

validity for repeated measures scales. Specifically, measurement invariance allows researchers to

infer that changes in observed scores are based on true variation in the underlying construct,

rather than variation in the way the scale is interpreted by participants over time (Vandenberg &

Lance, 2000).

The Current Research

In the current paper we address the limitations of previous trait and state regulatory focus

scales by designing a short but comprehensive state measure of regulatory focus. We began by

creating items and verifying the factor structure of our scale (Study 1). We then collected a longitudinal sample to test the measurement invariance and convergent and divergent validity of the scale (Study 2). Next, we tested the predictive validity of the scale for workplace behaviors (Study 3). Finally, we provided further validity evidence for the SRFS by testing its ability to detect state regulatory foci induced by a common regulatory focus manipulation (Study 4). Therefore, our paper contributes to the literature by providing a psychometrically valid tool that will enable future research on state-level regulatory focus.

Study 1

We developed the SRFS following Hinkin's (1998) recommendations. First, we generated items using a deductive approach, relying on the established theoretical foundation of regulatory focus. Next, we determined the factor structure of the scale using Exploratory Factor Analysis (EFA) and verified the internal consistency of the measure. We reduced our items based on the results of the EFA, and finally, collected another sample to confirm the factor structure of the reduced item set using Confirmatory Factor Analysis (CFA).

Study 1a

Method. We developed 16 items to reflect the full regulatory focus construct space, including items that captured the safety vs. growth, aspirations vs. responsibilities, and gains vs. losses aspects of regulatory focus theory. The original 16 items are reported in Appendix A. We recruited 200 participants from Amazon Mechanical Turk (MTurk) to respond to these items, preceded with the stem: "At this moment, I am focused on…". Participants responded using a scale from 1 ("strongly disagree") to 7 ("strongly agree"). Remuneration was $0.50 USD. After excluding careless responses, we retained a final sample of 164 participants (53.1% male, M_{age} = 36.57, SD_{age} = 12.09, 74.4% White).

Results and discussion. We conducted an EFA with oblimin rotation. The scree plot suggested two factors. As shown in Appendix A, all items loaded as expected onto factors representing promotion and prevention focus without any major cross-loadings, with the exception of the item, "my ideals", which was removed from the scale. However, because many items were highly correlated, we reduced the original items to a succinct scale with four items per regulatory foci, which still captured the full regulatory focus construct. The subsequent EFA is depicted in Table 1. Again, the scree plot indicated two factors, and items loaded onto two separate factors interpretable as promotion- and prevention-focus. The reliability of both the promotion and prevention factors were $\alpha = .85$. The correlation between promotion- and prevention-focus was $r = .45, p < .001$.

Study 1b

Method. In Study 1b we collected a new sample of 202 MTurk participants ($N = 176$ retained, 56.3% male, $M_{age} = 36.58$, $SD_{age} = 11.97$, 77.8% White) to confirm the factor structure of the reduced, eight-item scale. Participants responded to the eight items using the same scale stem and response scale as in Study 1a. Participants received $0.50 USD as remuneration.

Results and discussion. Model fit and comparative fit indices are reported in Table 2. CFA revealed that the two-factor model was an excellent fit for the data (Hu & Bentler, 1999). We also compared the two-factor model to a competing one-factor model where all items loaded onto a single factor. Chi-squared difference tests showed that the two-factor model was a significantly better fit for the data than the one-factor model. In this sample, the reliability of the promotion scale scores was $\alpha = .88$, and the reliability of the prevention scale scores was $\alpha = .81$. Promotion- and prevention focus were correlated $r = .17, p = .025$. Thus, Study 1b confirmed that the SRFS has a valid factor structure and is a reliable measure of state regulatory focus. The

SRFS is presented in its final form, including response scale and instructions, in Appendix B.

Study 2

In Study 2 we assessed the measurement invariance of the SRFS. This critical step

ensures that changes in scale scores can be interpreted to reflect construct-level variance rather

than changes in the way participants respond to the scale across measurement periods

(Vandenberg & Lance, 2000). Furthermore, in Study 2 we sought to assess the convergent and

divergent validity of the SRFS. To this end, we examined the relationships between the SRFS

and 1) trait regulatory focus scales (Higgins et al., 2001; Lockwood et al., 2002; Neubert et al.,

2008; Wallace et al., 2009), and 2) variables in the nomological network of regulatory focus,

including goal orientations, Big 5 personality, and affect (Gorman et al., 2012; Lanaj et al.,

2012). Specifically, we expected that the promotion and prevention factors of the SRFS would be

correlated with the promotion and prevention factors of trait regulatory focus, respectively. We

also expected that the SRFS would be related to variables in the nomological network of

regulatory focus in line with meta-analytic estimates (Gorman et al., 2012; Lanaj et al., 2012).

The predicted direction of these relationships are summarized in Table 3.

To assess convergent and divergent validity, we examined relationships between the

SRFS and the aforementioned variables at the between-person level of analysis, rather than at the

within-person level of analysis. First, by definition, trait regulatory foci only vary between-

individuals, and thus we could only examine relationships between trait regulatory foci and the

SRFS at the between-person level of analysis. Second, with regards to the nomological network

of regulatory focus, we noted that most previous research on regulatory focus has been

conducted at the between-person level. Given that relationships at the within-person level are not

always consistent with the between-person level (e.g., Vancouver, Thompson, & Williams, 2001;

Yeo, Loft, Xiao, & Kiewitz, 2009), within-person regulatory foci relationships may not mirror relationships at the between-person level. Thus, to determine the validity of the SRFS, we examined relationships between the SRFS and related variables at the between-person level of analyses, where the SRFS would be expected to reflect meta-analytic findings.

Nonetheless, it is also important to assess the within-person relationships among state regulatory foci and the variables in the nomological network. Specifically, given that goal orientations (Yeo et al., 2009), Big 5 personality (Fleeson, 2001), and affect (Larsen, 1987) exhibit considerable within-person variability, we sought to determine whether within-person fluctuations in regulatory foci could account for within-person fluctuations in these variables. Absent any theoretical reason to suspect differences across level of analysis, yet cognizant of the fact that relationships including motivational variables have been found to vary across level of analysis (e.g., Vancouver et al., 2001; Yeo et al., 2009), we made no formal predictions regarding within-person level regulatory foci relationships.

Method

Participants and procedure. We collected a longitudinal sample of MTurk participants ($N = 505$; 47.1% male, $M_{age} = 35.61$, $SD_{age} = 10.84$, 69.0% White). At Time 1 (Sunday) participants responded to four trait regulatory focus measures. During the following week, at Time 2 through Time 6 (Monday through Friday), participants reported their state regulatory focus, goal orientations, personality, and affect every day, resulting in five repeated measurements of each of these variables. The surveys were available to participants from 8:00am to midnight Eastern Standard Time each day. Survey completion times were evenly distributed across the day. Response rates for follow-up surveys ranged between 89.5% to 94.5%. Inattentive responses were removed at each time, resulting in retained sample sizes between 398

and 472 per day. Participants received $0.50 USD for each survey they completed, with a bonus

of up to $3.00 USD for completing multiple surveys.

       Measures. All measures, along with their response scales are reported in Appendix C.

Trait regulatory focus was measured with four scales: The Regulatory Focus Questionnaire

(Higgins et al., 2001), the General Regulatory Focus Measure (Lockwood et al., 2002), the

Regulatory Focus at Work Scale (Wallace et al., 2009), and the Work Regulatory Focus Scale

(Neubert et al., 2008). State regulatory focus was measured with the SRFS using the same stem

and response scale as in Study 1. Goal orientations were measured with two-items each (Yeo et

al., 2009). Personality was assessed using Donnellan, Oswald, Baird, and Lucas' (2006) 20-item

mini-IPIP. Finally, positive and negative affect were assessed using the 20-item PANAS

(Watson, Clark, & Tellegen, 1988).

Results

       We report the means, standard deviations, reliabilities, intraclass correlations, and

intercorrelations of all study variables in Table 4. However, given our interest in specific

correlations between the SRFS and the remaining study variables, we also present abridged

correlation tables in the remainder of resuls section which highlight the correlations of interest.

       Measurement invariance. We used CFA to test the measurement invariance of the

SRFS (Vandeberg & Lance, 2000). Specifically, we specified a factor model with 10 latent

factors: four promotion and four prevention items loaded onto two factors, repeated across five

time points of measurement. This baseline model (Model 1: configural invariance) allowed like

items to correlate across time points, allowed latent factors to covary, and set the means of the

latent factors to zero. All other parameters (factor loadings, item intercepts, and residual

variances) were freely estimated. Thus, this model tested whether items load onto the same

factors across time (configural invariance). The model was an excellent fit for the data (see Table

5). Next, we specified the same factor model with increasing constraints of equivalence across

the parameters. In Model 2 (metric invariance), we constrained like factor loadings to be equal,

thus testing whether the loading weights of each item are the same across time. We compared the

change in fit from Model 1 to Model 2 to demonstrate equally good fit despite increasing

parameter restrictions. Specifically, we used the change in comparative fit index (ΔCFI) to

compare the fit of the models. We used the ΔCFI rather than the $\Delta\chi^2$ test, because when testing

invariance, the ΔCFI test has greater power, is less sensitive to sample size, and has lower Type I

error rates (Meade, Johnson, & Braddy, 2008). Thus, models with ΔCFI less than .002 were

considered invariant. As shown in Table 5, Model 2 was an excellent fit for the data and was not

significantly different from Model 1, demonstrating metric invariance.

Configural and metric invariance are the most crucial forms of measurement invariance

(Vandenberg & Lance, 2000). However, we also examined scalar invariance, equal factor

variance, and equal factor means models. Specifically, Model 3 (scalar invariance) constrained

like item intercepts to be equal across time. Model 4 (equal factor variance) constrained the

latent factor variances to be equal. Finally, in Model 5 (equal factor means), the latent means of

the first time period were set to 0 to allow comparisons between latent means. As shown in Table

5, all models were an excellent fit for the data and all nested models were not significantly

different from the previous model, with the exception of Model 5. Thus, we concluded that the

SRFS is measurement invariant across time, but that factor means vary across time. Given that

changes in factor means may represent meaningful changes in the constructs, unequal factors

means do no pose a threat to the measurement invariance of the SRFS.

Convergent and divergent validity. Next, we assessed the relationships between the

SRFS and trait regulatory focus, as well as variables in the regulatory focus nomological network. To do so, we first disambiguated between- and within-person variance in all repeated measures by within-person centering (Hofmann & Gavin, 1998). Between-person correlations were computed using each participants' mean on the repeated variable, and within-person correlations were computed using person-mean centered variables. Intraclass correlations (ICC1) indicated that 68% of the promotion-, and 73% of the prevention-focus variance resided between individuals.

Between-person level correlations between state regulatory foci and trait regulatory foci are shown in Table 6. The correlations followed the expected pattern: across most scales, state promotion focus correlated with trait promotion focus, and state prevention focus correlated with trait prevention focus demonstrating convergent validity. In contrast, across most scales, state promotion focus exhibited smaller correlations with trait prevention focus, and state prevention focus exhibited smaller correlations with trait promotion focus, demonstrating divergent validity. This pattern held for the Lockwood et al. (2002) and the Neubert et al. (2008) scales. Yet, the Higgins et al. (2001) prevention focus factor did not correlate with the state prevention focus factor, and the Wallace et al. (2009) prevention focus factor failed to differentially correlate with state promotion- and prevention focus. These findings may be reflective of the greater conceptual overlap between the SRFS and the Lockwood et al. and Neubert et al. scales.

Next, we further tested the convergent and divergent validity of the SRFS by examining the between-person correlations between state regulatory focus and goal orientations, personality, and affect. These results are summarized in the first two columns of Table 7. For the most part, the SRFS correlations reflected meta-analytic estimates. Specifically, as expected, state promotion-focus was positively correlated with mastery goal orientation, performance-

approach goal orientation, extraversion, agreeableness, conscientiousness, intellect/imagination, and positive affect, and negatively correlated with neuroticism and negative affect. Exhibiting divergent validity, state promotion-focus was unrelated to performance-avoid goal orientation.

Further, as expected, state prevention-focus was positively correlated with mastery goal orientation, performance-approach goal orientation, performance-avoid goal orientation, and negative affect. In contrast, exhibiting divergent validity, state prevention focus was unrelated to extraversion and intellect/imagination. However, contrary to expectations, state prevention focus was unrelated to neuroticism and conscientiousness, and was positively correlated with agreeableness and positive affect. Yet, overall the convergent and divergent validity of the SRFS was mainly supported, as 16 out of 20 between-person level correlations were in the expected directions.

Due to a lack of theoretical justification, we did not make predictions regarding correlations at the within-person level of analysis. Yet, we found that within-person level correlations generally reflected meta-analytic findings, although the magnitudes were less strong than meta-analytic estimates and were less extreme compared to between-person correlations (see the last two columns of Table 7). Specifically, promotion-focus was positively correlated with mastery goal orientation, performance-approach goal orientation, extraversion, agreeableness, conscientiousness, intellect/imagination, and positive affect, and negatively correlated with neuroticism and negative affect. In addition, promotion focus was unrelated to performance-avoid goal orientation. Prevention-focus was positively correlated with mastery goal orientation, performance-approach goal orientation, performance-avoid goal orientation, conscientiousness, neuroticism, and negative affect and was unrelated to extraversion, agreeableness, intellect/imagination, and positive affect. Thus, at the within-person level,

correlations were in the meta-analytically expected direction 20 out of 20 times, although the magnitude of the correlations were below meta-analytic estimates.

Discussion

On the whole, Study 2 provides validity evidence for the SRFS. First, the SRFS demonstrated measurement invariance across time, suggesting that observed variance on the SRFS can be attributed to true changes in the underlying construct, rather than changes in the way items are interpreted by participants across time. Second, the SRFS exhibited convergent and divergent validity. That is, at the between-person level, state regulatory foci were correlated with trait regulatory foci in the expected directions, and the correlations between regulatory foci and variables from the nomological network were in line with meta-analytic estimates.

In Study 2, we also presented within-person level correlations between regulatory foci and the variables from the nomological network. These correlations mirrored meta-analytic estimates, yet were smaller in magnitude compared to the between-person correlations. One possible reason for the relatively small magnitude of the within-person correlations may be that the correlations were attenuated by restriction in variance in within-person regulatory focus. For instance, the ICCs indicated that the majority of variance in regulatory focus resided at the between-person level (68% for promotion and 73% for prevention). Although this may represent true lack of variation in within-person regulatory foci, it may also be an artifact of our study design. Specifically, we sampled participants daily over the course of a single week, yet it is possible that we may have observed more within-person variance had we considered a longer time frame. For instance, a longer time frame may have allowed for greater variability in participants' environment, which may have translated into greater variability in state regulatory foci. Therefore, in Study 3 we spread measurements over two weeks.

Study 3

The purpose of Study 3 was to assess the predictive validity of the SRFS for work behaviors. Previous research has shown that trait promotion focus is positively related to organizational citizenship behaviors (OCBs), task performance, and innovation, and negatively related to counterproductive work behaviors (CWBs) and safety performance (Gorman et al., 2012; Lanaj et al., 2012). In contrast, trait prevention focus is positively related to CWBs and safety performance. We expected the SRFS to mirror these relationships at the between-person level of analysis (see Table 8 for summary of predictions). Furthermore, given that the aforementioned workplace behaviors vary at both the between- *and* within-person levels of analysis (Dalal, Bhave, & Fiset, 2014), we also examined the correlations between these variables and the SRFS at the within-person level of analysis. However, as in Study 2, we did not make specific predictions regarding the within-person level relationships due to lack of theory regarding differential relationships at the between- and within-person levels.

Method

Participants and procedure. We collected a sample of full-time employees from MTurk ($N = 300$; $N = 293$ retained, 46.6% male, $M_{age} = 37.13$, $SD_{age} = 10.42$, 78.72% White) who worked a standard business day schedule (Monday through Friday, 9am to 5pm). Similar to Study 2, a longitudinal design was used such that regulatory focus and work behaviors were measured multiple times over two consecutive work weeks. Yet in the current study we also separated the measurement of predictors (i.e., regulatory focus) and outcomes (i.e., work behaviors) within the same day. This was done to avoid artificial inflation of observed effects due to common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

On a Sunday (T1), participants were pre-screened for eligibility criteria, and qualifying

participants completed trait regulatory focus measures[1]. The subsequent measurement occasions

occurred on Monday (T2), Thursday (T3), Tuesday (T4), and Friday (T5) of the following two

weeks. At each measurement occasion, participants reported their state regulatory focus in the

morning (between 8am and 12pm), and daily work behaviors in the evenings (between 5pm and

9pm). To be eligible for the evening surveys, participants had to complete the morning survey

for that day. Response rates varied between 63.3% and 73.4% per survey. Participants received

$1.00 USD for T1, $0.20 USD for each morning survey, and $1.00 USD for each evening

survey, with an additional bonus of up to $4.00 USD for completing multiple surveys.

Measures. State regulatory focus was measured with the SRFS using the same stem and

response scales as in Studies 1 and 2. The remaining measures are reported in their entirety in

Appendix D. OCBs and CWBs were measured using eight items each from Dalal et al. (2009).

Task performance was measured using William and Anderson's (1991) seven-item scale. Safety

performance was assessed using four items from Neal, Griffin, and Hart (2000). Finally,

innovative performance was measured using Scott and Bruce's (1994) six-item scale.

Results

Means, standard deviations, reliabilities, intraclass correlations, and intercorrelations of

all Study 3 variables are reported in Table 9.

Measurement invariance. As was the case in Study 2, the SRFS demonstrated

configural invariance, metric invariance, scalar invariance, and equal factor variance. In this

sample, we also found that the SRFS exhibited equal factor means across time. These results are

summarized in Table 10.

Predictive validity. As was done in Study 2, we disambiguated between- and within-

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[1] Trait regulatory foci were related to state promotion- and prevention-focus at the between-person level of analysis following the same pattern as in Study 2. These results are reported in Table 9 but are not discussed further.

person effects via within-person centering (Hofmann & Gavin, 1998). Intraclass correlations

(ICC1) indicated that 77% of the promotion-, and 71% of the prevention-focus variance was at

the between-person level. We used multilevel modelling to regress each of the dependent

variables (OCB, CWB, task performance, safety performance, and innovative performance) on

promotion- and prevention-focus at the between- and within-person levels of analysis. Consistent

with previous research, we included both regulatory foci in each of the analyses (Johnson et al.,

2017, Koopmann et al., 2016; Lin & Johnson, 2015; Wallace et al., 2009), because it allowed us

to test the unique effect of each regulatory foci over and above a general level of achievement

striving captured by the shared variance between the two regulatory foci. Furthermore, given that

we disambiguated between- and within-person variance, we could test the effects of regulatory

foci at both levels of analyses in one model. In Table 11 we present ΔR^2 values representing the

effect size of each regulatory foci's prediction above and beyond all other variables in the model.

As expected, at the between-person level of analysis, promotion focus positively

predicted OCBs, task performance, and innovative performance, and negatively predicted

CWBs. However, unexpectedly, promotion focus also positively predicted safety performance.

In contrast, prevention focus positively predicted safety performance and did not predict task

performance and innovative performance. However, unexpectedly, prevention focus positively

predicted OCBs and did not predict CWBs. Thus, in total, 7 out of the 10 between-person level

relationships were in the expected direction.

We did not make predictions regarding relationships at the within-person level of

analysis. However, we found that promotion focus positively predicted OCBs, task performance,

and innovative performance, negatively predicted CWBs, and was unrelated to safety

performance. In contrast, prevention focus positively precited safety performance, and did not

predict OCBs, CWBs, task performance, and innovative performance. Thus, 8 out of 10

relationships at the within-person level were in directions consistent with meta-analytic

estimates. However, examination of effect sizes (Table 11) revealed that relationships at the

within-person level were consistently smaller than at the between-person level of analysis.

Discussion

Study 3 provides additional evidence for the validity of the SRFS. Specifically, the SRFS

predicted various workplace behaviors. At the between-person level of analysis, the majority of

the observed relationships were in the expected directions based on meta-analytic estimates.

Furthermore, relationships at the within-person level mirrored those at the between-person level

of analysis. Nonetheless, within-person effects were smaller compared to those observed at the

between-person level. Recall that a similar pattern was observed in Study 2; specifically, within-

person relationships were smaller in magnitude relative to between-person relationships.

We speculated that in Study 2 these differences in effect sizes across levels of analysis

may have been driven by restricted within-person variance in the SRFS due to our use of a one-

week measurement period. Thus, in Study 3 we spread measurement occasions over two weeks.

Our logic for doing so was that increasing the length of time between measurement occasions

would allow for more variance in environmental stimuli which may translate into greater

variation in promotion- and prevention-focus. Yet contrary to our predictions, the percentage of

within-person variance in promotion-focus *decreased* from Study 2 to Study 3 (32% vs. 23%).

Likewise, although the percentage of within-person variance in prevention-focus increased from

Study 2 to Study 3, the magnitude of this change was quite small (27% vs. 29%). These results

prompted an anonymous reviewer to comment that a longer time frame between measurement

occasions may actually "smooth over" deviations away from individuals' trait-level regulatory

foci levels. That is, if environmental effects on state regulatory foci only last for a short duration, these fluctuations may be lost across spread-out measurement occasions. Presently, theory and research provide relatively little guidance regarding the amount of time that within-person deviations in regulatory foci are likely to persist. Thus, additional research is required to understand the emergence of within-person deviations in regulatory foci.

To this end, our final study was designed to address this issue more directly. Specifically, whereas Studies 2 and 3 we emphasized naturally occurring fluctuations in regulatory foci, Study 4 was designed to assess the ability of the SRFS to capture variance in state regulatory foci driven by a common regulatory focus manipulation. In doing so, Study 4 also provides evidence that promotion- and prevention-focused states can be purposely induced, and as such, may be used as a motivational lever in the workplace.

Study 4

A great deal of previous research on state-level regulatory focus has been experimental. Researchers have employed a variety of regulatory focus inductions, including journaling (Higgins et al., 1994), word sorting (Lockwood et al., 2001), gain or loss framing (Shah, Higgins, & Friedman, 1998), and maze tasks (Friedman & Förster, 2001). One common induction is to ask participants to write about how their hopes and aspirations (promotion), or duties and obligations (prevention) have changed from the past until now (e.g. Higgins et al., 1994). We sought to provide additional validity evidence for the SRFS by testing whether this journaling induction produces the expected effects on state regulatory focus.

Method

One hundred and ninety-five undergraduate students (no exclusions, 73.71% female, M_{age} = 19.33, SD_{age} = 4.83, 32.3% White, 29.4% South Asian) participated in a between-subjects

experimental lab study in exchange for course credit. Participants were assigned to one of three

conditions. In each condition, participants were asked to write 4-6 sentence essays. Specifically,

in the *Ideal* condition, participants read the following instructions:

> *For this task, we would like you to think about how your current <u>hopes</u> and <u>aspirations</u> are different now from what they were when you were growing up. In other words, what <u>accomplishments</u> would you <u>ideally</u> like to meet at this point in your life? What accomplishments did you ideally want to meet when you were a child? In the space below, please write a brief essay describing how your hopes and aspirations have changed from when you were a child to now.*

In the *Ought* condition, participants instead read the following instructions:

> *For this task, we would like you to think about how your current <u>duties</u> and <u>obligations</u> are different now from what they were when you were growing up. In other words, what <u>responsibilities</u> do you think you <u>ought</u> to meet at this point in your life? What responsibilities did you think you ought to meet when you were a child? In the space below, please write a brief essay describing how your duties and obligations have changed from when you were a child to now.*

Finally, in the *Control* condition, participants were provided the following instructions:

> *For this task, we would like you to think about how your current <u>musical preferences</u> are different now from what they were when you were growing up. In other words, what music do you enjoy at this point in your life? What music did you like when you were a child? In the space below, please write a brief essay describing how your musical preferences have changed from when you were a child to now.*

Following the essay, participants completed the SRFS. Item stems and response scales for the

SRFS were the same as in Study 1.

Results and Discussion

     We conducted an analysis of covariance (ANCOVA) comparing mean promotion focus

across conditions controlling for prevention focus. Likewise, we conducted an ANCOVA

comparing mean prevention focus across conditions, controlling for promotion focus. Similar to

Study 3, we were interested in the unique effects of each regulatory foci above and beyond

general achievement striving as indicated by the shared variance between the regulatory foci.

Results indicated that experimental condition predicted mean self-reported promotion focus above and beyond prevention focus ($F(2, 191) = 7.82$, $MSE = .74$, $p < .001$) and experimental condition predicted mean self-reported prevention focus above and beyond promotion focus ($F(2,191) = 3.89$, $MSE = 1.18$, $p < .001$). Least squared means by condition are presented in Table 12. Follow-up contrasts showed that promotion focus was higher in the Ideal condition versus the Ought and Control conditions ($t(191) = 3.86$, $SE = .13$, $p < .001$, $d = 0.59$), with no difference in promotion focus between the Ought and Control conditions ($t(191) = 1.01$, $SE = .15$, $p = .314$, $d = 0.18$). Similarly, prevention focus was higher in the Ought condition versus the Ideal and Control conditions ($t(191) = 2.78$, $SE = .16$, $p = .006$, $d = 0.42$), with no difference in prevention focus between the Ideal and Control conditions ($t(191) = .30$, $SE = .19$, $p = .765$, $d = 0.05$). Thus, in this study we showed that the SRFS captures state regulatory focus induced by a common experimental manipulation, thereby providing further evidence for the scale's validity. Furthermore, in contrast to previous research, this study also provides *direct* evidence for changes in regulatory foci at the within-person level in response to situational inductions.

General Discussion

To date, regulatory focus research has predominantly focused on between-person effects. Inattention to naturally occurring within-person fluctuations in regulatory focus may be due, in part, to a lack of a well-validated state regulatory focus scale. Thus, the purpose of the present study was to address this gap. We developed an eight-item regulatory focus scale specifically designed for within-person measurement. Across four studies, we validated our scale by demonstrating its factor structure, reliability, measurement invariance, and convergent, divergent, and predictive validity. Thus, the SRFS provides a useful tool for future research on state regulatory focus.

Our studies also provide initial evidence that regulatory foci vary naturally within-individuals, and that this variability is associated with variability in important individual differences (personality, goal orientations, and affect) and workplace behaviors (OCBs, CWBs, task performance, innovative performance, and safety performance). Yet, regulatory foci relationships were weaker at the within-person level compared to the between-person level of analyses. This was especially true for prevention focus.

Nonetheless, small within-person effects, cumulated over time, may still have a meaningful impact on workplace behaviors and outcomes. For instance, Ableson (1985) demonstrated that within-person correlations accumulate to produce large between-person effects over multiple performance episodes. Specifically, he showed that a baseball players' batting performance during any individual batting episode was only fractionally related to the players' level of skill. However, over many performance episodes, these marginal differences led to a strong effect of player skill on performance. In the same way, although within-person relationships between regulatory foci and the variables measured in our studies were small in comparison to the between-person relationships, these small differences may have considerable impact when accumulated over time. For instance, even a very small within-person relationship between prevention-focus and safety behavior may result in vastly different accident and injury rates when applied over many performance episodes. From this perspective, we view the within-person effects reported in this paper as promising leads for future research.

Furthermore, natural fluctuations are not the only way regulatory focus states may emerge in the workplace. Instead, various external cues may affect employee regulatory foci, including positive and negative workplace events (Koopmann et al., 2016), specific task requirements (Scholer & Miele, 2016), leader behaviors (Dong et al., 2015; Johnson et al., 2017;

Koopmann et al., 2016), and organizational climate (Wallace & Chen, 2006). Thus, future research may discover greater within-person variability in regulatory foci when greater external variability is observed in the workplace. Importantly, our findings highlight the need for future research on regulatory focus at the within-person level, because our knowledge regarding trait-level regulatory foci may not necessarily translate to the state-level (Chen, Bliese, & Mathieu, 2005).

Future Research

Previous research has clearly demonstrated that regulatory focus has important implications for a wide range of workplace outcomes (Gorman et al., 2012; Lanaj et al., 2012). More recently, research has begun to expand these findings, demonstrating that moment-by-moment fluctuations in regulatory focus may also have important behavioral consequences in the workplace (Dong et al., 2015; Johnson et al., 2017; Koopmann et al., 2016; Lin & Johnson, 2015). However, this work has been limited by a lack of a well-validated scale to measure state-level regulatory focus. To this end, the SRFS provides an important tool with which to study the many unanswered questions remaining regarding state regulatory focus.

In particular, new theory and research on metamotivation provides a potentially useful direction forward. *Metamotivation* describes one's awareness of and control over one's current motivational state (Scholer & Miele, 2016; Scholer et al., 2018). There is evidence that individuals are able to recognize the motivational demands of the task they are trying to complete and are able to choose appropriate strategies that would induce the corresponding regulatory foci. Specifically, Scholer and Miele found that participants voluntarily engage in tasks intended to induce either a promotion- or prevention-focused state, depending on whether the upcoming task is perceived to benefit more from eager strategies (e.g., brain storming) or

vigilant strategies (e.g., a proofreading task). For most jobs, performance is multidimensional, requiring a range of knowledge, skills, behaviors, and regulatory styles over the course of the day. Training employees to engage in metamotivation, and thereby adjust their current regulatory focus states to match the demands of the situation may provide an important means of managing employee behaviors in dynamic environments.

To this end, effectively regulating motivational states requires that individuals begin with quickly and accurately assessing their current level of prevention- and promotion-focus. The SRFS provides one such tool for doing so. Next, individuals must be able to accurately determine the level of promotion- and prevention-focus that may facilitate performance on any given task. For example, a task involving the monitoring of numerous gauges would likely benefit from the vigilant strategies associated with a strong prevention focus. If a discrepancy between one's current motivational state and the desired motivational state is detected, individuals may be able to actively induce the desired motivational state. For instance, an employee wishing to put him or herself in a strongly prevention-focused state may spend a few moments thinking about how his or her obligations and duties have changed over time (*a la* the induction used in Study 4). Finally, individuals may need to attend to external stimuli that threaten to disrupt their metamotivational efforts. For example, a pay-per-performance compensation structure which incentivizes production over safety may inadvertently reduce individuals' prevention focus. Future research is needed to understand the factors that facilitate and inhibit such metamotivational behaviors. Yet, this research cannot be conducted without a well-validated measure of momentary regulatory focus, such as the SRFS.

Strengths and Limitations

The present study has several strengths. First, our research was based on a diverse sample

of participants, including students, adults, and employees, strengthening the generalizability of

our findings. In addition, across four studies we provided multiple angles of evidence to

triangulate the validity of the SRFS. Specifically, we demonstrated the factor structure and factor

invariance of the scale over time. We tested the convergent and divergent validity of the scale

across a wide range of the nomological network of regulatory focus, including various individual

differences and workplace behaviors. Finally, we provided experimental validity evidence by

showing that the SRFS can detect induced state regulatory foci. Thus, our study provides a more

rigorous and comprehensive evaluation of a state regulatory focus scale than previous attempts.

Yet, the present study also had limitations. First, we collected samples using online

platforms. Although this approach allowed us to reach a diverse sample of participants,

ultimately, we did not have control over the setting in which participants completed the

measures. It is possible some participants may have completed the measures in distracting

environments. To address this concern, we screened out participants who failed to respond

correctly to attention check items, and Study 4 was conducted in a laboratory setting. Second,

with the exception of the regulatory focus induction used in Study 4, this research relied

exclusively on self-report measures. This may be especially a concern in Study 3 wherein work

performance measures were included as criteria. However, meta-analytic evidence suggests that

although there tend to be mean differences in job performance ratings across sources (e.g., self

vs. other), the rank ordering of job performance is maintained across rating sources (Berry,

Carpenter, & Barratt, 2012; Carpenter, Berry, & Houston, 2014). In other words, the pattern of

relationships with job performance variables are not meaningfully affected by rating source,

lending support for our use of this methodology. Finally, there may also be concern that our

reliance on self-reported data in Study 3 may have inflated observed relationships between

regulatory foci and criteria due to common method variance. However, we attempted to address these concerns by separating the measurement of the SRFS and job performance variables in time (Podsakoff et al., 2003).

Conclusion

Extensive research on regulatory focus has demonstrated its importance for work-relevant behaviors and outcomes. Yet, a great deal of this research has been limited to the between-person level of analyses. Thus, a vast array of research questions regarding within-person level regulatory focus remains unexplored. This study demonstrates that within- and between-level regulatory foci relationships are similar, but not identical across levels of analysis. Thus, future research specifically at the within-level is needed in this literature. Over four studies we demonstrated that the SRFS is a valid and reliable tool for this purpose. Thus, we hope that the availability of this state regulatory focus scale will encourage future research and lead to an expansion of our knowledge of regulatory focus in general.

Acknowledgments

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Appendix A

Exploratory Factor Analysis with Original 16 State Regulatory Focus Items

Study 1a Exploratory Factor Analysis Factor Loadings and Communalities for all 16 Original

State Regulatory Focus Scale Items

Item	Factor 1: Promotion	Factor 2: Prevention	Communalities
At this moment, I am focused on…			
1 My ideals.	.52	.31	.52
2 My hopes.*	.82	.08	.75
3 My aspirations.	.82	.04	.71
4 Opportunities for growth.*	.63	.20	.57
5 My development.	.56	.31	.58
6 Attaining success.*	.75	-.06	.52
7 Maximizing my achievements.*	.73	.03	.55
8 Earning rewards.	.48	-.10	.19
9 My responsibilities.	-.03	.81	.64
10 My obligations.*	-.22	1.05	.93
11 My duties.	-.16	1.03	.93
12 My security.	.08	.50	.30
13 Avoiding failure.	.07	.29	.11
14 Preventing harm. *	.18	.48	.35
15 Minimizing losses.*	.17	.40	.26
16 Maintaining my safety.*	.19	.50	.39
% of variance	8.28	34.40	

Note. N = 164. Items indicted by asterisks (*) were included in the final 8-item State Regulatory

Focus Scale.

Appendix B

The State Regulatory Focus Scale

Stem: At this moment, I am focused on…
Response scale: 1 (strongly disagree) to 7 (strongly agree).

1. My hopes.
2. Opportunities for growth.
3. Attaining success.
4. Maximizing my achievements.
5. My obligations.
6. Preventing harm.
7. Minimizing losses.
8. Maintaining my safety.

Promotion = 1 – 4
Prevention = 5 – 8

Appendix C

Study 2 Scale Items

Time 1 Scale Items

Regulatory Focus Questionnaire (Higgins et al., 2001)

Stem: This set of questions asks you about specific events in your life. Please indicate your answer to each question.
Response scale: 1 (never or seldom) to 3 (sometimes) to 5 (very often)

1. Compared to most people, are you typically unable to get what you want out of life? (reverse)
2. Growing up, would you ever "cross the line" by doing things that your parents would not tolerate? (reverse)
3. How often have you accomplished things that got you "psyched" to work even harder?
4. Did you get on your parents' nerves often when you were growing up? (reverse)
5. How often did you obey rules and regulations that were established by your parents?
6. Growing up, did you ever act in ways that your parents thought were objectionable? (reverse)
7. Do you often do well at different things that you try?
8. Not being careful enough has gotten me into trouble at times. (reverse)
9. When it comes to achieving things that are important to me, I find that I don't perform as well as I ideally would like to do. (reverse)
10. I feel like I have made progress toward being successful in my life.
11. I have found very few hobbies or activities in my life that capture my interest or motivate me to put effort into them. (reverse)

Promotion = 1, 3, 7, 9, 10, 11
Prevention = 2, 4, 5, 6, 8

General Regulatory Focus Measure (Lockwood et al., 2002)

Stem: Using the scale below, please indicate the appropriate number in the space beside each item.
Response scale: 1(not at all true of me) to 9 (very true of me)

1. In general, I am focused on preventing negative events in my life.
2. I am anxious that I will fall short of my responsibilities and obligations.
3. I frequently imagine how I will achieve my hopes and aspirations.
4. I often think about the person I am afraid I might become in the future.
5. I often think about the person I would ideally like to be in the future.
6. I typically focus on the success I hope to achieve in the future.
7. I often worry that I will fail to accomplish my academic goals.
8. I often think about how I will achieve academic success.

9. I often imagine myself experiencing bad things that I fear might happen to me.
10. I frequently think about how I can prevent failures in my life.
11. I am more oriented toward preventing losses than I am toward achieving gains.
12. My major goal at work right now is to achieve my ambitions.
13. My major goal at work right now is to avoid becoming a failure.
14. I see myself as someone who is primarily striving to reach my "ideal self"—to fulfill my hopes, wishes, and aspirations.
15. I see myself as someone who is primarily striving to become the self I "ought" to be—to fulfill my duties, responsibilities, and obligations.
16. In general, I am focused on achieving positive outcomes in my life.
17. I often imagine myself experiencing good things that I hope will happen to me.
18. Overall, I am more oriented toward achieving success than preventing failure.

Promotion = 3, 5, 6, 8, 12, 14, 16, 17, 18
Prevention = 1, 2, 4, 7, 9, 10, 11, 13, 15

Regulatory Focus at Work Scale (Wallace & Chen, 2006; Wallace et al., 2009)

Stem: Rate how often you focus on these thoughts and activities when you are working…
Response scale: 1 (never) to 5 (constantly)

1. Accomplishing a lot of work
2. Getting my work done no matter what
3. Getting a lot of work finished in a short amount of time
4. Work activities that allow me to get ahead
5. My work accomplishments
6. How many job tasks I can complete
7. Following rules and regulations
8. Completing work tasks correctly
9. Doing my duty at work
10. My work responsibilities
11. Fulfilling my work obligations
12. On the details of my work

Promotion = 1 – 6
Prevention = 7 – 12

Work Regulatory Focus Scale (Neubert et al., 2008)

Stem: Rate your agreement with the following statements
Response scale: 1 (strongly disagree) to 5 (strongly agree)

1. I concentrate on completing my work tasks correctly to increase my job security.
2. At work I focus my attention on completing my assigned responsibilities.
3. Fulfilling my work duties is very important to me.
4. At work, I strive to live up to the responsibilities and duties given to me by others.

5. At work, I am often focused on accomplishing tasks that will support my need for security.
6. I do everything I can to avoid loss at work.
7. Job security is an important factor for me in any job search.
8. I focus my attention on avoiding failure at work.
9. I am very careful to avoid exposing myself to potential losses at work.
10. I take chances at work to maximize my goals for advancement.
11. I tend to take risks at work in order to achieve success.
12. If I had an opportunity to participate on a high-risk, high-reward project I would definitely take it.
13. If my job did not allow for advancement, I would likely find a new one.
14. A chance to grow is an important factor for me when looking for a job.
15. I focus on accomplishing job tasks that will further my advancement.
16. I spend a great deal of time envisioning how to fulfill my aspirations.
17. My work priorities are impacted by a clear picture of what I aspire to be.
18. At work, I am motivated by my hopes and aspirations.

Promotion = 12 – 18
Prevention = 1 – 11

Time 2 – 6 Scale Items

Goal Orientations (short form; Yeo et al., 2009)

Stem: Think about the most recent work task you completed…
Response scale: 1 (strongly disagree to 7 (strongly agree)

1. I tried to hide from others that they are better than me at the task.
2. I aimed to avoid discovering that others are better than me at the task.
3. It was important to me to perform better at the task than others.
4. I wanted others to recognize that I was one of the best at the task.
5. The opportunity to extend the range of my abilities during the task was important to me.
6. The opportunity to learn new things during the task was important to me.

Performance avoid = 1, 2
Performance approach = 3, 4
Mastery = 5, 6

Mini-IPIP (Donnellan et al., 2006)

Stem: During the last half-hour, I….
Response scale: 1 (does not describe me) to 5 (describes me extremely well)

1. Was the "life of the party".
2. Sympathized with others' feelings
3. Got chores done right away.

4. Had frequent mood swings.
5. Entertained my vivid imagination.
6. Didn't talk a lot. (reverse)
7. Was not interested in other people's problems. (reverse)
8. Forgot to put things back in their proper place. (reverse)
9. Was relaxed. (reverse)
10. Was not interested in abstract ideas. (reverse)
11. Talked to a lot of different people.
12. Felt others' emotions.
13. Was orderly.
14. Got upset easily.
15. Had difficulty understanding abstract ideas. (reverse)
16. Kept in the background. (reverse)
17. Was not really interested in others. (reverse)
18. Made a mess of things. (reverse)
19. Did not feel blue. (reverse)
20. Did not have a good imagination. (reverse)

Extraversion = 1, 6, 11, 16
Agreeableness = 2, 7, 12, 17
Conscientiousness =3, 8, 13, 18
Neuroticism =4, 9, 14, 19
Intellect/Imagination = 5, 10, 15, 20

Positive and Negative Affect Schedule (short form; Watson et al., 1988)

Stem: At this moment I feel…
Response scale: 1 (very slightly or not at all) to 5 (extremely)

1. Interested
2. Distressed
3. Excited
4. Upset
5. Strong
6. Guilty
7. Scared
8. Hostile
9. Enthusiastic
10. Proud
11. Irritable
12. Alert
13. Ashamed
14. Inspired
15. Nervous
16. Determined
17. Attentive

18. Jittery
19. Active
20. Afraid

Positive affect = 1, 3, 5, 9, 10, 12 14, 16, 17. 19
Negative affect = 2, 4, 6, 7, 8, 11, 13, 15, 18, 20

Appendix D

Study 3 Evening Measures

Organizational Citizenship Behaviors (OCB) and Counterproductive Work Behaviors CWB (Dalal et al., 2009)

Stem: During work today, I…
Response scale: 1 (no) or 2 (yes)

1. Went out of my way to be a good employee.
2. Was respectful of other people's needs.
3. Displayed loyalty to my organization.
4. Praised or encouraged someone.
5. Volunteered to do something that was not required.
6. Showed genuine concern for others.
7. Tried to uphold the values of my organization.
8. Tried to be considerate to others.
9. Spent time on tasks unrelated to work.
10. Gossiped about people at my organization
11. Did not work to the best of my ability.
12. Said or did something that was unpleasant.
13. Did not fully comply with a supervisor's instructions.
14. Behaved in an unfriendly manner.
15. Spoke poorly about my organization to others
16. Talked badly about people behind their backs.

OCB = 1 – 8
CWB = 9 – 16

Task Performance (Williams & Anderson, 1991)

Stem: Today, I…
Response scale: 1 (completely disagree) to 7(completely agree)

1. I adequately completed assigned duties.
2. I fulfilled the responsibilities specified in my job description.
3. I performed the tasks that are expected of me.
4. I met formal performance requirements for my job.
5. I engaged in activities that will directly affect my performance evaluation.
6. I neglected aspects of my job I am obligated to perform. (reverse)
7. I failed to perform essential duties. (reverse)

Safety Performance (Neal et al., 2000)

Stem: Today at work…

Response scale: 1 (strongly disagree) to 5 (strongly agree)

1. I used correct safety procedures for carrying out my job.
2. I ensured the highest levels of safety when I carried out my job.
3. I voluntarily carried out tasks or activities that help to improve workplace safety.
4. I helped my coworkers when they were working under risky or hazardous conditions.

Innovative Behavior (Scott & Bruce, 1994)

Stem: Today...
Response scale: 1 (not at all) to 5 (to an exceptional degree)

1. I searched out new technologies, processes, techniques, and/or product ideas.
2. I generated creative ideas.
3. I promoted and championed ideas to others.
4. I investigated and secured funds needed to implement new ideas.
5. I developed adequate plans and schedules for the implementation of new ideas.
6. I was innovative

Table 1

Study 1a Factor Loadings and Communalities based on Exploratory Factor Analysis of the

Reduced 8-item State Regulatory Focus Scale

Item	Factor 1: Promotion	Factor 2: Prevention	Communalities
At this moment, I am focused on…			
1 My hopes.	**.74**	.07	.60
2 Opportunities for growth.	**.64**	.15	.52
3 Attaining success.	**.85**	-.11	.64
4 Maximizing my achievements.	**.81**	-.01	.64
5 My obligations.	.10	**.51**	.32
6 Preventing harm.	-.05	**.91**	.80
7 Minimizing losses.	-.06	**.85**	.68
8 Maintaining my safety.	.05	**.79**	.67
Cronbach's α	.85	.85	
% of variance	3.65	10.99	

Note. $N = 164$. Boldfaced numbers indicate the items loading onto each factor.

Table 2

Study 1b Model Fit Statistic for Competing Confirmatory Models of the State Regulatory Focus

Scale

Model	χ^2	df	$\Delta\chi^2 (\Delta df)$	RMSEA	CFI	TLI	SRMR
Model 1: 2-factor	17.818	19	---	<.001	1.000	1.000	.031
Model 2: 1-factor	308.011	20	290.193 (1) ***	.286	.575	.405	.188

Note. $N = 176$. *** $p < .001$, df = degrees of freedom, CFI = comparative fit index, TLI =

Tucker-Lewis index, RMSEA = root mean squared error of approximation, SRMR =

standardized root mean residual.

Table 3

Predicted Direction of Relationships between Regulatory Foci and Dependent Variables at the

Between-person Level of Analysis in Study 2

	Promotion Focus	**Prevention Focus**
Goal Orientation		
Mastery	+	+ [a]
Performance-approach	+ [a]	+
Performance-avoid	0	+
Personality		
Extraversion	+	0 [a]
Agreeableness	+	0
Conscientiousness	+	+
Intellect/Imagination	+	0
Neuroticism	−	+
Affect		
Positive Affect	+	0
Negative Affect	− [a]	+

Note. Expected relationships are based on meta-analytic estimates from Lanaj et al. (2012). a =

meta-analytic estimates between Lanaj et al.'s and Gorman et al.'s meta-analysis (2012) differ.

Table 4

Means, Standard Deviations, Reliabilities, Intraclass Correlations, and Intercorrelations for Study 2 Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 Higgins et al. (2001) Prom																				
2 Higgins et al. (2001) Prev	.20 ***																			
3 Lockwood et al. (2002) Prom	.47 ***	.04																		
4 Lockwood et al. (2002) Prev	-.45 ***	-.21 ***	-.07																	
5 Wallace et al. (2009) Prom	.31 ***	.02	.54 ***	.09 *																
6 Wallace et al. (2009) Prev	.28 ***	.20 ***	.35 ***	.03	.55 ***															
7 Neubert et al., (2008) Prom	.32 ***	-.08	.64 ***	.48 ***	.22 ***															
8 Neubert et al., (2008) Prev	.14 **	.17 ***	.27 ***	.30 ***	.43 ***	.57 ***	.21 ***													
9 State Prom	.40 ***	.08	.64 ***	-.05	.54 ***	.30 ***	.57 ***	.26 ***		.11 ***	.24 ***	.15 ***	-.03	.11 ***	.10 ***	.14 ***	.20 ***	-.21 ***	.37 ***	-.20 ***
10 State Prev	.01	-.01	.17 ***	.39 ***	.32 ***	.26 ***	.08	.45 ***	.30 ***		.08 ***	.06 **	.05 *	-.00	.03	.05 *	.00	.07 **	-.02	.05 *
11 Mastery GO	.33 ***	.04	.53 ***	-.01	.46 ***	.37 ***	.51 ***	.30 ***	.63 ***	.29 ***		.29 ***	.04 *	.11 ***	.14 ***	.13 ***	.16 ***	-.11 ***	.24 ***	-.13 ***
12 Performance-approach GO	.08	-.04	.21 ***	.21 ***	.33 ***	.18 ***	.31 ***	.19 ***	.33 ***	.22 ***	.46 ***		.25 ***	.07 **	.05 *	.05 *	.05 *	.00	.10 ***	-.02
13 Performance-avoid GO	-.26 ***	-.10 *	-.05	.41 ***	.09	-.14 **	.06	.05	.06	.20 ***	.14 **	.39 ***		-.00	-.04	-.05 *	-.04	.08 ***	-.07 **	.10 ***
14 Extraversion	.27 ***	.01	.23 ***	-.20 ***	.22 ***	.08	.29 ***	.04	.31 ***	.06	.32 ***	.26 ***	.02		.48 ***	.13 ***	.23 ***	-.13 ***	.31 ***	-.09 ***
15 Agreeableness	.24 ***	.25 ***	.23 ***	-.12 **	.21 ***	.18 ***	.13 **	.19 ***	.29 ***	.23 ***	.33 ***	.14 **	-.07	.52 ***		.21 ***	.24 ***	-.15 ***	.29 ***	-.12 ***
16 Conscientiousness	.45 ***	.29 ***	.30 ***	-.24 ***	.32 ***	.43 ***	.16 ***	.32 ***	.29 ***	.08	.29 ***	.10 *	-.34 ***	.17 ***	.34 ***		.17 ***	-.29 ***	.33 ***	-.22 ***
17 Intellect/Imagination	.28 ***	.14 **	.22 ***	-.18 ***	.07	.10 *	.22 ***	.06	.34 ***	.03	.25 ***	.08	-.21 ***	.27 ***	.36 ***	.36 ***		-.20 ***	.28 ***	-.21 ***
18 Neuroticism	-.45 ***	-.27 ***	-.24 ***	.43 ***	-.13 **	-.24 ***	-.13 **	-.07	-.28 ***	.04	-.15 ***	.04	.39 ***	-.13 **	-.48 ***	-.29 ***	-.20 ***		-.37 ***	.46 ***
19 Positive Affect	.47 ***	.13 **	.52 ***	-.16 ***	.49 ***	.34 ***	.42 ***	.26 ***	.61 ***	.28 ***	.55 ***	.33 ***	.02	.44 ***	.40 ***	.40 ***	.25 ***	-.41 ***		-.25 ***
20 Negative Affect	-.31 ***	-.24 ***	-.16 ***	.41 ***	-.06	-.15 **	-.07	-.06	-.16 ***	.09 *	-.07	.09	.43 ***	-.07	-.13 **	-.46 ***	-.33 ***	.64 ***	-.11 *	
N	472	472	472	472	472	472	472	472	2081	2081	2081	2081	2081	2081	2081	2081	2081	2081	2081	2081
M	3.59	3.34	6.88	5.46	3.73	4.25	3.61	4.27	5.31	4.91	5.02	4.14	2.44	2.46	3.38	3.90	3.77	2.17	3.12	1.47
SD	.67	.91	1.46	1.63	.76	.61	.79	.57	1.33	1.35	1.55	1.71	1.48	.95	.99	.78	.75	.85	.98	.64
α	.69	.85	.93	.87	.85	.86	.87	.85	.89-.93	.80-.85	.86-.92	.80-.88	.80-.88	.71-.76	.75-.81	.63-.68	.66-.68	.52-.61	.93-.94	.83-.92
ICC1									.68	.73	.62	.72	.62	.50	.57	.63	.62	.53	.76	.61

Note. Prom = promotion focus, Prev = prevention focus, GO = Goal Orientations, *M* = mean, *SD* = standard deviation, ICC1 = intraclass correlation, α = Cronbach's alpha. Between-person level correlations appear below the diagonal and are based on *N*s = 461-487. Within-person level correlation appear above the diagonal and are based on *N* = 2081. * *p* < .05, ** *p* < .01, *** *p* < .001 (two-tailed).

Table 5

Study 2 Model Fit and Model Comparison Statistics for Measurement Invariance Models

Model No.	Model Name	χ^2	df	CFI	TLI	RMSEA	SRMR	Comparison to model no.	ΔCFI	$\Delta\chi^2$	Δdf	p
1	Configural Invariance	1133.291***	615	.967	.958	.042	.062	---	---	---	---	---
2	Metric Invariance	1178.380***	639	.966	.958	.042	.064	1	.001	45.089	24	.006
3	Scalar Invariance	1233.229***	671	.964	.958	.041	.065	2	.002	54.849	32	.007
4	Equal Factor Variances	1278.201***	679	.962	.956	.043	.078	3	.002	44.972	8	< .001
5	Equal Factor Means	1208.569***	663	.965	.959	.041	.065	4	.003	69.632	16	< .001

Note. $N = 487$. *** $p < .001$, CFI = comparative fit index, TLI = Tucker-Lewis index, RMSEA =

root mean squared error of approximation, SRMR = standardized root mean residual.

Table 6

Correlations between Mean State Regulatory Focus and Trait Regulatory Focus in Study 2

	Between-person Regulatory Focus	
	Promotion	Prevention
Higgins et al. (2001)		
Promotion	.40 ***	.01
Prevention	.08	-.01
Lockwood et al. (2002)		
Promotion	.64 ***	.17 ***
Prevention	-.05	.39 ***
Wallace et al. (2009)		
Promotion	.54 ***	.32 ***
Prevention	.30 ***	.26 ***
Neubert et al. (2008)		
Promotion	.57 ***	.08
Prevention	.26 ***	.45 ***

Note. $N = 461$, representing participants who completed Time 1 measures and at least one of

Time 2 through Time 6. measures. *** $p < .001$ (two-tailed).

Table 7

Relationships between the State Regulatory Focus Scale and the Regulatory Focus Nomological Network at the Between- and Within-person Levels of Analysis in Study 2

Dependent Variables	Between-person Regulatory Focus		Dependent Variables	Within-person Regulatory Focus	
	Promotion	Prevention		Promotion	Prevention
Between-person Goal Orientation			**Within-person Goal Orientation**		
Mastery	.63 ***	.29 ***	Mastery	.24 ***	.08 ***
Performance-approach	.33 ***	.22 ***	Performance-approach	.15 ***	.01 **
Performance-avoid	.06	.20 ***	Performance-avoid	-.03	.05 *
Between-person Personality			**Within-person Personality**		
Extraversion	.31 ***	.06	Extraversion	.11 ***	-.00
Agreeableness	.29 ***	.23 ***	Agreeableness	.10 ***	.03
Conscientiousness	.29 ***	.08	Conscientiousness	.14 ***	.05 *
Intellect/Imagination	.34 ***	.03	Intellect/Imagination	.20 ***	.00
Neuroticism	-.28 ***	.04	Neuroticism	-.21 ***	.07 **
Between-person Affect			**Within-person Affect**		
Positive Affect	.61 ***	.28 ***	Positive Affect	.37 ***	-.02
Negative Affect	-.16 ***	.09 *	Negative Affect	-.20 ***	.05 *

Note. $N = 2081$ observations nested within $N = 487$ people. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Table 8

Predicted Direction of Relationships between Regulatory Foci and Dependent Variables at the

Between-person Level of Analysis in Study 3

	Promotion Focus	Prevention Focus
OCB	**+**	0
CWB	-	+
Task Performance	+	0
Safety Performance	-	+
Innovative Performance	+	0

Note. Expected relationships are based on meta-analytic estimates from Lanaj et al. (2012).

Table 9

Means, Standard Deviations, Reliabilities, Intraclass Correlations, and Intercorrelations for Study 3 Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Higgins et al. (2001) Prom															
2 Higgins et al. (2001) Prev	.20 ***														
3 Lockwood et al. (2002) Prom	.55 ***	-.03													
4 Lockwood et al. (2002) Prev	-.53 ***	-.19 ***	-.17 **												
5 Wallace et al. (2009) Prom	.33 ***	-.08	.48 ***	.06											
6 Wallace et al. (2009) Prev	.31 ***	.12 *	.35 ***	.05	.59 ***										
7 Neubert et al., (2008) Prom	.39 ***	-.07	.67 ***	-.18 **	.50 ***	.26 ***									
8 Neubert et al., (2008) Prev	.19 **	.09	.33 ***	.30 ***	.47 ***	.55 ***	.24 ***								
9 State Prom	.45 ***	-.01	.68 ***	-.08	.49 ***	.30 ***	.62 ***	.30 ***		.06	.12 ***	-.16 ***	.16 ***	.05	.10 **
10 State Prev	-.08	.03	.09	.48 ***	.26 ***	.33 ***	.02	.46 ***	.29 ***		.07	-.02	.03	.09 *	.02
11 OCBs	.27 ***	.04	.32 ***	-.03	.31 ***	.26 ***	.33 ***	.32 ***	.45 ***	.25 ***		-.17 ***	.13 ***	.11 **	.24 ***
12 CWBs	-.27 ***	-.16 *	-.19 **	.25 ***	-.17 **	-.26 ***	-.22 ***	-.16 *	-.19 **	-.09	-.21 ***		-.21 ***	-.03	-.11 **
13 Task Performance	.40 ***	.07	.40 ***	-.25 ***	.31 ***	.34 ***	.30 ***	.36 ***	.35 ***	.06	.43 ***	-.28 ***		.08 *	.12 ***
14 Safety Performance	.22 ***	-.02	.29 ***	-.03	.35 ***	.37 ***	.25 ***	.22 ***	.35 ***	.33 ***	.44 ***	-.32 ***	.33 ***		.17 ***
15 Innovative Performance	.21 ***	-.04	.29 ***	-.04	.37 ***	.22 ***	.37 ***	.05	.46 ***	.17 **	.32 ***	-.16 **	.10	.45 ***	
N	296	296	296	296	296	296	296	296	828	828	764	764	764	764	764
M	3.65	3.49	6.91	5.27	3.69	4.31	3.59	4.28	5.12	4.88	1.83	1.13	6.10	3.79	2.28
SD	.69	.91	1.45	1.71	.80	.64	.85	.59	1.44	1.28	.20	.17	.79	.82	1.07
α	.74	.87	.94	.88	.86	.89	.88	.85	.93-.94	.75-.81	.65-.78	.59-.73	.82-.87	.73-.77	.92-.93
ICC1									.77	.70	.55	.46	.49	.57	.73

Note. Prom = promotion focus, Prev = prevention focus, OCB = Organizational Citizenship Behaviors, CWB = Counterproductive Work Behaviors, *M* = mean, *SD* = standard deviation, ICC1 = intraclass correlation, α = Cronbach's alpha. Between-person level correlations appear below the diagonal and are based on *N*s = 244-236. Within-person level correlation appear above the diagonal and are based on *N*s= 762-828. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Table 10

Study 3 Model Fit and Model Comparison Statistics for Measurement Invariance Models

Model Name	χ^2	*df*	CFI	TLI	RMSEA	SRMR	Comparison to model no.	ΔCFI	$\Delta\chi^2$	Δdf	*p*
Configural Invariance	709.509 ***	388	.950	.936	.057	.079	---	---	---	---	---
Metric Invariance	731.623 ***	406	.949	.938	.056	.080	1	.001	22.114	18	.227
Scalar Invariance	744.177 ***	430	.951	.944	.054	.080	2	.002	12.554	24	.973
Equal Factor Variances	746.509 ***	436	.952	.945	.053	.080	3	.001	2.332	6	.887
Equal Factor Means	743.146 ***	424	.950	.942	.055	.080	4	.002	3.363	12	.992

Note. $N = 253$. *** $p < .001$, CFI = comparative fit index, TLI = Tucker-Lewis index, RMSEA =

root mean squared error of approximation, SRMR = standardized root mean residual.

Table 11

Relationships between the State Regulatory Focus Scale and Work Behaviors in Study 3

Dependent Variables	γ	SE	p	ΔR^2
OCB				
Between-person Promotion	.05	.01	<.001	.24
Between-person Prevention	.02	.01	.021	.03
Within-person Promotion	.02	.01	.007	.01
Within-person Prevention	.01	.01	.215	<.01
CWB				
Between-person Promotion	-.02	.01	.008	.04
Between-person Prevention	-.01	.01	.428	<.01
Within-person Promotion	-.03	.01	.000	.03
Within-person Prevention	-.00	.01	.921	<.01
Task Performance				
Between-person Promotion	.18	.03	<.001	.18
Between-person Prevention	-.02	.04	.517	<.01
Within-person Promotion	.13	.04	<.001	.03
Within-person Prevention	.02	.04	.652	<.01
Safety Performance				
Between-person Promotion	.14	.03	<.001	.10
Between-person Prevention	.16	.04	<.001	.10
Within-person Promotion	.03	.03	.361	<.01
Within-person Prevention	.06	.03	.050	.01
Innovative Performance				
Between-person Promotion	.33	.04	<.001	.22
Between-person Prevention	.04	.05	.422	<.01
Within-person Promotion	.08	.04	.022	.01
Within-person Prevention	.01	.03	.832	<.01

Note. $N = 762$ observations nested within $N = 253$ people.

Table 12

Residual Means of Self-Reported Regulatory Focus based on Experimental Condition in Study 4

Dependent Variable	Condition					
	Ideal ($N = 64$)		Ought ($N = 66$)		Control ($N = 65$)	
	M	*SE*	*M*	*SE*	*M*	*SE*
State Promotion Focus	6.21	.11	5.78	.11	5.63	.11
State Prevention Focus	5.01	.14	5.44	.13	4.95	.14

Note. N = 195.