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Managing the Motivation of Others: Do Managers Recognize How to Manage Regulatory Focus in Subordinates?

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One of the challenges of effectively managing others is flexibly equipping them for tasks that may differ significantly in their motivational demands. Using a metamotivational approach (Scholer et al., 2018) in the domain of regulatory focus (Higgins, 1997), five studies (N = 932) examine people's metamotivational knowledge of how to actively manage the promotion- and prevention-focused motivations of others. Results revealed that, on average, managers have normatively accurate knowledge of how to create task-motivation fit in others by ensuring that others' motivational orientations fit with qualitatively different tasks (Studies 1–2). Managers also communicate to subordinates in ways that are known to induce normatively relevant motivational states in open-ended, consequential paradigms (Studies 3–4), and are perceived as more effective when they use strategies to create task-motivation fit in others (Study 5). We discuss the implications of these findings for (a) managing the motivation of others across a variety of domains and (b) managing the self versus others.

Keywords: metamotivation, regulatory focus, eagerness, vigilance, leadership

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Every day, people are faced with the challenge of motivating others in ways that bring out the best chance of success given changing situational and task demands. Coaches need to inspire players to aggressively play offense in one moment but then ensure they vigilantly defend in the next. Teachers need to motivate students to "think big" when brainstorming ideas for science fair projects, but also encourage them to focus on concrete details when conducting the relevant experiments. Similarly, in the workplace managers need to make sure employees are eager when considering new product designs, and vigilant when they reach the quality control stage. Although examples abound about the need to be able to flexibly manage not just the amount but the *type* of other people's motivation, little is known about what people believe about how best to accomplish this, and how these beliefs align (or misalign) with existing theory and evidence about the normative benefits of qualitatively distinct motivational states.

Specifically, we go beyond past work that has often highlighted the benefits or costs of one particular style of motivation management (e.g., encouraging others to adopt a single, beneficial motivational orientation; Mageau & Vallerand, 2003), and instead examine whether people have metamotivational knowledge of how to actively account for the motivation of others in response to changing situational demands (Scholer et al., 2018). We use the term manager to refer broadly to any individual who has authority over subordinates in some capacity and whose task involves the management of a subordinate's motivation, directly or indirectly. Although we see the issues of motivation-based management as broadly applicable across many contexts, we examine these questions in an organizational context by exploring what managers believe about managing the promotion- and prevention-focused motivations (Higgins, 1997) of others and the consequences of normatively accurate and inaccurate beliefs in this domain for perceptions of manager effectiveness.

Managing the Motivation of Others

Past work on the various ways in which people can manage the *quality* of others' motivation has often focused on the effects of increasing "beneficial" types of motivation over others. For example, motivating others by eliciting interest in a task is qualitatively

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different from motivating them with external incentives such as a cash reward—in the former, motivation comes from the inherent satisfaction of engaging in a task, and in the latter, motivation comes from the perceived value of task outcomes (i.e., intrinsic versus extrinsic motivation; Mageau & Vallerand, 2003; Ryan & Deci, 2000). Other research on the management of motivational quality emphasizes that the motivational fit between *people* is particularly important (Kark & Van Dijk, 2007; Sassenberg & Hamstra, 2017)—for example, when managers encourage subordinates (consciously or not) to match the manager's own motivational orientations through their management behaviors (e.g., Johnson et al., 2017).

These prior theoretical perspectives on motivation-based management highlight different ways that managers effectively regulate the motivation of others. One of the challenges people commonly face, however, is how to motivate the same person (or people) to respond to changing task demands that are best met by qualitatively distinct motivational states. For example, when a company is in the early stages of developing a new product, motivation concerned with ideals and achieving gains supports better performance (Friedman & Förster, 2001; cf. Baas et al., 2011), whereas in the latter stages of testing product safety and reliability, motivation concerned with responsibilities and avoiding losses may be more adaptive for performance (Wallace & Chen, 2006). These changing demands suggest that to be effective people must flexibly manage others by encouraging specific motivational states that fit the particular task at hand. However, this is an area that has received relatively little empirical attention, despite calls for its importance (e.g., Berson et al., 2015; Kark & Van Dijk, 2019). We adopt a metamotivational approach to highlight this understudied aspect of motivation management and explore the extent to which people's beliefs about motivation-based management align with normative understandings of motivational processes.

Metamotivation and the Management of the Self

Emerging research suggests that part of effective self-regulation involves actively monitoring and controlling motivation during goal pursuit—known as *metamotivation* (Miele et al., 2020; Miele & Scholer, 2018; Scholer et al., 2018; Scholer & Miele, 2016). A key assumption of this approach is that situations and tasks differ in their motivational affordances, such that qualitatively distinct motivations will result in optimal performance under different conditions; therefore, people's beliefs about these motivational trade-offs play a role in goal pursuit. Specifically, this approach proposes that part of successful self-regulation involves knowing what type of motivational state is likely to be most adaptive for performing a particular task, thereby creating *task-motivation fit* (Scholer et al., 2018; Scholer & Miele, 2016). Importantly, metamotivational knowledge can be tacit or implicit (Reber, 1989; Wagner, 1987; Wagner & Sternberg, 1985), meaning that individuals may be able to effectively regulate their motivation without being able to spontaneously or explicitly articulate the processes in which they are engaged.

Prior work on metamotivational knowledge has examined what people understand about managing one's own motivation (Hubley et al., 2022; Nguyen et al., 2019, 2022; Scholer & Miele, 2016). For instance, research in the context of regulatory focus theory (Higgins, 1997) examined the normative accuracy of people's knowledge about how to motivate themselves with respect to tasks and situations that require eager versus vigilant motivation (regulatory focus task-motivation fit; Nguyen et al., 2021; Scholer & Miele, 2016). Eager tasks are those that involve creativity, a focus on speed, and benefit from global perceptions (e.g., brainstorming new products). Vigilant tasks are those that involve accuracy, the possibility of costly losses, and benefit from careful attention to details (e.g., proofreading). Research on regulatory focus theory and regulatory fit theory (Higgins, 2000, 2005) provide evidence that eager versus vigilant tasks are optimally performed with promotion- versus prevention-focused motivations (e.g., Liberman et al., 2001; Molden & Higgins, 2004; Van Dijk & Kluger, 2011). The motivational demands of eager tasks are optimally performed in promotion-focused motivational states that prioritize ideals and advancement: divergent thinking, exploring new possibilities, and moving toward potential gains that facilitate goal pursuit (Friedman & Förster, 2002; Molden & Higgins, 2004; but also see Baas et al., 2011). In contrast, the motivational demands of vigilant tasks are optimally performed in prevention-focused motivational states that prioritize duties and responsibilities: convergent thinking, avoiding losses, and guarding against threats that inhibit goal pursuit (Liberman et al., 2001; Molden & Higgins, 2004).

Past work (Scholer & Miele, 2016) has shown that on average, people have normatively accurate knowledge of how to create regulatory focus task-motivation fit for themselves, such that they believe engaging in activities that induce a prevention-focused state (e.g., recalling duties and responsibilities) would lead them to perform better on subsequent vigilant tasks compared to eager tasks (e.g., proofreading vs. brainstorming). In addition, they tend to believe that engaging in activities that induce a promotion-focused state (e.g., recalling hopes and aspirations) would lead them to perform better on subsequent eagerness tasks. This effect holds across cultures (e.g., in Japan and the United States; Nguyen et al., 2021). Importantly, this work and metamotivation research in general finds substantial variability in the normative accuracy of people's metamotivational knowledge for motivating the self, revealing implications for consequential choices and performance (Hubley et al., 2022; Nguyen et al., 2019, 2022; Scholer & Miele, 2016).

Metamotivation and the Management of Others

Metamotivation research to date has only focused on what people believe about how to manage their *own* motivation. In the present work, we take metamotivation beyond the self and explore what people understand about managing the motivation of *others*. Existing research often examines factors such as chronic individual differences (e.g., extraversion; Judge et al., 2002) or specific leadership styles (e.g., transformational vs. transactional; Judge & Piccolo, 2004) that can influence management effectiveness. In contrast, the metamotivational approach highlights (a) the critical role that people's beliefs and knowledge about motivational trade-offs may have in how they manage others and (b) the need for flexible discernment of the motivational strategies that best fit different demands.

Further, although metamotivational research suggests that people, on average, display normative accuracy when it comes to creating regulatory focus task-motivation fit in themselves, there are a number of ways in which metamotivational knowledge of motivating others might differ. A long tradition of research suggests that

what we understand and recognize in ourselves versus others is not always the same (John & Robins, 1994; Kenny & DePaulo, 1993; Vazire & Carlson, 2011). In addition, managing motivation in others involves a broader and different array of strategies than what can be used to motivate the self. Managing motivation in others often involves managing more than one other person (e.g., workers at a construction site) rather than regulating the motivation of a single individual. This provides managers with the flexibility to assign specific tasks to others based on others' motivational orientations to create task-motivation fit (*task-assignment* knowledge); this type of strategy (assigning tasks with distinct motivational demands to different people) cannot be deployed for managing the motivation of the self. For instance, when hiring someone to run a new advertising campaign that involves highlighting new product features—a task that may be best performed with eager strategies (Friedman & Förster, 2001; Molden & Higgins, 2004)—a manager would do well to hire the individual who is promotion-focused instead of prevention-focused. Similarly, if trying to decide whether to give a safety task to an employee known for being creative or an employee known for being responsible, a manager would do well to recognize that the latter employee is more likely to be vigilant when engaging in the task and therefore perform better (Wallace & Chen, 2006).

Of course, people may be limited in creating task-motivation fit in others using this kind of strategic task assignment. Frequently, the same job involves multiple tasks that each call for a particular motivation (Kark & Van Dijk, 2019), thus also requiring managers to flexibly prepare others for specific tasks with distinct motivational affordances (*task-preparation* knowledge). For example, developing a new product requires employees to both reach new creative heights (eagerness; Friedman & Förster, 2001; Molden & Higgins, 2004) and ensure the product meets safety regulations (vigilance; Wallace & Chen, 2006). Thus, effective management also involves knowing how to spontaneously prepare people for changing situational task or situational demands, regardless of an individual's chronic or dispositional tendencies (Berson et al., 2015). In this case, creating task-motivation fit would involve normatively accurate knowledge of how to flexibly induce or sustain desired motivational orientations in others (e.g., a promotion focus when designing a new product and a prevention focus when ensuring it meets safety regulations). Here, too, the strategies that can be deployed to motivate others extend beyond those typically used to motivate the self, particularly the ways in which managers strategically communicate to subordinates to upregulate a desired motivational orientation.

The present research is the first to consider what people understand about how to manage the motivation of others to create task-motivation fit and whether people engage in strategic motivation-based management when managing others. We first examined whether people exhibit normatively accurate knowledge in creating task-motivation in others in hypothetical contexts via assigning tasks to others (Study 1) and inducing motivational states in others (Study 2). Next, we investigated whether people can spontaneously create task-motivation fit in others through communications in an open-ended, consequential context (Study 3) and for tasks that their own employees complete in their workplace (Study 4). Finally, we examined whether these communications have implications for perceived managerial effectiveness (Study 5). When managers create task-motivation fit for their subordinates, they may be perceived as more effective because they are setting the conditions for their subordinates to perform well. Thus, we predicted that when managers communicate in ways that create task-motivation fit (vs. nonfit), they will be perceived as more effective by third-party observers.

In addition to exploring these primary research questions, we also investigated the extent to which managerial experience and other individual differences were related to the normative accuracy of metamotivational knowledge. Previous research finds mixed evidence for the role of experience in effective management (Hoffman et al., 2011). We also measured a series of individual difference related to effective management (Big Five, Judge et al., 2002; emotional intelligence, Wong & Law, 2002; and self-monitoring, Hoffman et al., 2011). Because these individual differences did not show stable or consistent patterns of results, we report these correlations in the online supplemental materials. Finally, to establish that metamotivational knowledge of managing the self diverges from metamotivational knowledge of managing others, we also examined the association between normative self-accuracy and normative other-accuracy.

Participants and Sample Size

All studies were approved by a research ethics board at the University of Waterloo and used fully within-participant designs to increase statistical power. Studies 1–3 aimed to recruit 200 participants from Amazon's Mechanical Turk (MTurk) in exchange for US$3.00; using TurkPrime (Litman et al., 2017), only participants whose occupation entails supervision (a clear indication of management) were recruited. Study 4 used the same participation criteria and aimed to recruit 300 participants. Study 5 aimed to recruit a general sample of 200 adults from MTurk, using TurkPrime, in exchange for US$2.00; because this study involved evaluating managers' effectiveness, indicators of management roles were not required. In all studies, we restricted participation to American workers who completed a minimum of 100 studies on MTurk with an approval rating of 95% or higher. During and after data collection, MTurk was affected by "bots" or "survey farmers" who provided low quality data (Bai, 2018; TurkPrime, 2018). Thus, in all studies we excluded responses that contained repeating GPS coordinates and/or IP addresses. There were no other exclusion criteria.

As a result, sample size varies across studies even though all studies aimed to recruit at least 200 participants (see Table 1 for sample characteristics). A sensitivity analysis using G*Power (Faul et al., 2007) revealed that, given each study's respective sample size and assuming a correlation between repeated measures of .50 and a nonsphericity correction of 1 (Scholer & Miele, 2016), the minimum interaction effect size for a two-way between-participants analysis of variance (ANOVA) that can be detected at 80% power with alpha at .05 is $\eta_p^2 = .01$. Notably, we treated task type as a between-participants factor because G*Power does not currently support power calculations for within-participant interactions, presumably leading to relatively conservative power estimates.

Studies 1 and 2

Four initial studies were conducted to determine if managers exhibit normatively accurate metamotivational knowledge for both

Table 1
Sample Characteristics for All Studies

Study	*N*	% Female	% Male	Mdn_{age} (*SD*)	$M_{experience}$ (*SD*)	$M_{subordinates}$ (*SD*)
1	153	42.5	57.5	35 (10.30)	8.29 (7.68)	9.95 (15.31)
2	181	51	48	36 (10.24)	8.49 (9.28)	9.68 (11.18)
3	182	43	57	35 (9.60)	7.39 (6.41)	8.77 (15.88)
4	239	45	55	37 (10.4)	9.12 (7.52)	9.96 (13.2)
5	177	43.5	56.5	33 (11.02)	—	—

Note. $M_{experience}$ refers to self-reported mean years of managerial experience, and $M_{subordinates}$ refers to the self-reported mean number of subordinates participants have under their supervision. In Study 2, 1% of participants did not declare their gender.

task-assignment knowledge (assigning others to tasks that fit versus misfit others' motivational orientations; Study S1 and 1) and task-preparation knowledge (inducing motivational states in others based on task demands; Study S2 and 2). Study S1, a pilot study version of Study 1, and Study S2, a replication of Study 2 using a nonmanager sample, are reported in the online supplemental materials. The primary findings of these studies replicate the results of Studies 1 and 2 reported in the main text, as detailed in the online supplemental materials.

As in past metamotivational work, these studies employed hypothetical scenarios (e.g., Nguyen et al., 2019; Scholer & Miele, 2016). To examine potential correlates of normatively accurate metamotivational knowledge, we also assessed metamotivational knowledge of how to motivate the self, managerial experience, and a number of exploratory individual differences (reported in the online supplemental materials).

Method

Participants in both studies completed an assessment of their own metamotivational knowledge in the domain of regulatory focus (Scholer & Miele, 2016). Study 1 participants ($N = 153$) also completed an employee assignment task to determine if managers can create task-motivation fit in others by strategically assigning others to tasks in a way that aligns with others' motivational orientations—in other words, we assessed their *task-assignment knowledge*. In contrast, Study 2 participants completed an employee preparation task to determine if managers can create task-motivation fit in others by strategically inducing a motivational state based on task demands—in other words, we assessed their *task-preparation knowledge*—and counterbalanced the order of the self-knowledge and task-preparation knowledge assessments across Study 2 participants.[1] Study 2 participants also completed measures of individual differences associated with effective management, reported in the online supplemental materials. Last, in both studies participants provided demographic information related to their years of managerial experience, the extent of their managerial duties at work on a scale from 1 (*not at all*) to 7 (*very much*), number of subordinates, age, and income.

Self-Knowledge

In both studies, participants completed an assessment of their own metamotivational knowledge of regulatory focus using a paradigm developed by Scholer and Miele (2016; Study 3). Participants were given descriptions of two eager tasks (brainstorming and creative writing) and two vigilant tasks (proofreading and problem-solving tasks) in random order. Immediately following each task description was one of four recall activities, each presented individually and in random order. Two of these activities induce a promotion-focused state (e.g., writing about one's hopes and aspirations as a child) and two induce a prevention-focused state (e.g., writing about one's duties and obligations as a child). Participants were asked to predict how successful they expected to be at each of the four tasks after hypothetically engaging in each activity on a scale from 1 (*not at all*) to 7 (*extremely*; see Study S1), thereby making a total of 16 predictions. In both studies results replicated prior work by Scholer and Miele (2016), but because our primary reason for including this assessment was to examine correlations between knowledge of managing the motivation of the self versus others, we report those correlations here and the detailed results for this assessment in the online supplemental materials.

Task-Assignment Knowledge (Study 1)

Study 1 participants were told to imagine they were a project manager for an advertising agency. The agency had been approached by a client requesting a new advertising campaign, and participants were asked to predict how well the two employees fit with different aspects of the project (see Appendix S4).[2, 3] Participants were asked to predict how well one promotion-focused and one prevention-focused employee fit with an eager task (creating an advertising campaign by drafting various alternatives) and a vigilant task (editing the advertisements and making sure they are error-free), in random order, using a randomized five-item measure (e.g., "I believe that [employee name] would be suitable for the planning and design task") on a scale from 1 (*not at all*) to 7 (*definitely*). Participants thus provided four fit predictions for how well the promotion and prevention employee would each fit with the eager and vigilant tasks ($\alpha = .88$ to $.92$). We hypothesized that participants, on average, would display normatively accurate task-assignment knowledge by predicting greater fit between the promotion-focused employee and the eager task, and the prevention-focused employee and the vigilant task, evidenced by a significant task-by-employee interaction.

[1] No order effects were observed in Study 2, $F(1, 179) = 2.22$, $p = .138$, $\eta_p^2 = .01$.

[2] Employee profiles were tested in separate pilot study ($N = 98$) to ensure they were perceived as equally likeable and competent. See the online supplemental materials for a detailed description of this pilot study.

[3] Participants were randomly assigned to view either male or female employee profiles. When employee gender was entered as a between-participants factor, there were no significant gender interactions involving task type, $F(1, 151) = 0.12$, $p = .729$, $\eta_p^2 < .01$, employee type, $F(1, 151) = 0.02$, $p = .903$, $\eta_p^2 < .01$, or their interaction, $F(1, 151) = 0.03$, $p = .858$, $\eta_p^2 < .01$. Thus, we report results that collapse across gender.

Task-Preparation Knowledge (Study 2)

Study 2 participants were told that the study investigated "how leaders prepare followers for tasks." Participants received two eager (e.g., product development; "The product needs to be innovative and set new industry standards") and two vigilant (e.g., quality control; "They need to monitor the product for flaws, and ensure the product meets consumer expectations") task descriptions. Each task was paired with two promotion- and two prevention-inducing strategies, randomly selected out of a possible eight strategies, and participants were asked "How successful do you expect an employee to be at [task name] after . . ." with ellipses replaced by each strategy. For example, participants were asked to predict how successful an employee would be at an advertising task after participants motivated them by reminding them of their accomplishments within the company (inducing a promotion-focused state) and (separately) after reminding them to follow company rules and regulations (inducing a prevention-focused state). Employee success predictions were given on a scale from 1 (*not at all*) to 7 (*extremely*; see Appendix S5) for a total of 16 employee-success prediction ratings. We hypothesized that participants, on average, would display normatively accurate task-preparation knowledge by predicting greater employee success after participants used promotion-focused strategies to prepare employees for eager tasks compared to vigilant tasks, and after using prevention-focused strategies to prepare employees for vigilant tasks compared to eager tasks (i.e., a task-by-strategy interaction).

Results and Discussion

Repeated measures ANOVAs were conducted to determine if managers possessed normatively accurate task-assignment and task-preparation knowledge (see Table 2). For task-assignment knowledge (Study 1) a significant task-by-employee interaction revealed that managers recognized that the promotion-focused employee fit better with the eager task than the vigilant task, $d = 0.52$, and that the prevention-focused employee fit better with the vigilant task than the eager task, $d = 0.44$ (see Table 3). A similar pattern emerged for task-preparation knowledge in Study 2: a significant task-by-strategy interaction demonstrated that managers recognized that employees would perform better after mangers used promotion-inducing strategies to prepare them for eager tasks compared to vigilant tasks, $d = 0.27$, and after they used prevention-inducing strategies to prepare employees for vigilant tasks compared to eager tasks, $d = 0.41$. As expected, there was substantial variability in the normative accuracy of this knowledge (see Figure 1).

Normative accuracy indices were computed for each assessment to examine the association between normatively accurate metamotivational knowledge for managing the self and others (and individual differences, see the online supplemental materials). These indices were computed by combining prediction ratings; for example, task-assignment knowledge accuracy was calculated as follows: (promotion employee fit for the eager task—promotion employee fit for the vigilant task) + (prevention employee fit for the vigilant task—prevention employee fit for the eager task). Scores greater than zero on this index indicate that participants exhibit normatively accurate metamotivational knowledge (Scholer & Miele, 2016; this index is equivalent to the interaction effect for each individual). Calculating these indices revealed that participants demonstrated overall normative accuracy in their self-knowledge (Study 1 $M = 0.25$, $SD = 0.91$; Study 2 $M = 0.53$, $SD = 1.24$)[4], task-assignment knowledge ($M = 1.36$, $SD = 2.48$), and task-preparation knowledge ($M = 0.50$, $SD = 1.10$). Correlations revealed that self-knowledge accuracy was positively and modestly correlated with task-assignment and task-preparation knowledge accuracy, and that only task-assignment knowledge was modestly correlated with years of managerial experience (see Table 4).

Results of these studies demonstrate that managers, on average, recognize how to create task-motivation fit in others in two different ways. First, Study 1 reveals managers' *task-assignment knowledge*: managers recognize how to assign others to tasks based on other's motivational orientations and task demands. Study 2 reveals managers' *task-preparation knowledge*: managers recognize strategies for inducing motivational states (i.e., promotion vs. prevention) in others based on task demands. As with prior metamotivation research (see Miele et al., 2020), we observed substantial variability in the normative accuracy of this knowledge.

We also find that normatively accurate metamotivational knowledge of how to manage the motivation of the self is only moderately correlated with normatively accurate knowledge of how to manage others (both task-assignment and task-preparation). One might argue that this correlation is relatively small in Study 1 because of the divergence in methods across the two assessments. However, even in Study 2 (where the materials are nearly identical) the correlation is similarly modest. This suggests that knowledge of managing the self is not simply redundant with knowledge of managing others, a point we return to in General Discussion. We also did not observe consistent associations between managerial experience and normative accuracy, but as we note in the General Discussion, we believe it may still be important to examine if these variables might exert a stronger influence in day-to-day management.

These studies were confined to hypothetical management contexts and thus do not reveal whether people can spontaneously generate normatively accurate strategies in more consequential settings. Indeed, metamotivation research to date has not examined whether people can spontaneously generate strategies to induce motivational states based on task demands. Study 3 therefore examined how managers induce motivational states in others to create task-motivation fit using an open-ended and consequential paradigm.

Study 3

Study 3 departed from using close-ended, hypothetical scenarios and researcher-provided strategies/employee descriptions and instead adopted a consequential, spontaneous generation format assessing managerial communications. Specifically, Study 3 participants were told that they would be preparing future participants for various tasks. Participants were given descriptions of eager and vigilant tasks that another ostensible participant would complete in

[4] Results of the self-assessment in all studies replicated Scholer and Miele (2016), and are reported in the online supplemental materials.

Table 2
Results of Two-Way Repeated Measures ANOVAs in Studies 1 and 2

Assessment	Effect	*F*	*df*	*p*	η_p^2
Task-assignment (Study 1)	Task main effect	0.37	(1, 152)	.542	<.01
	Employee main effect	0.25	(1, 152)	.619	<.01
	Interaction	46.46	(1, 152)	<.001	.23
Task-preparation (Study 2)	Task main effect	8.38	(1, 180)	.004	.04
	Strategy main effect	58.52	(1, 180)	<.001	.25
	Interaction	36.87	(1, 180)	<.001	.17

Note. ANOVA = analysis of variance.

a future study. Using an open-ended format they were asked to prepare the other participant for each task and that their "responses [would] be used to help the other participant complete the tasks." (In reality, the future participant did not exist and responses were not shared.) In this paradigm, participants only have information about the tasks the ostensible future participant needs to complete. Thus, the strategies participants spontaneously generate provide a window into the nature of managers' metamotivational knowledge in ecologically valid management settings—in other words, providing evidence for normatively accurate metamotivational knowledge by showing that managers can (without first reflecting on strategies provided by the experimenter) motivationally prepare the same subordinate for different tasks via strategic communications. Additionally, Study 3 participants completed the same individual difference measures used in Study 1 to again investigate whether these individual differences were associated with the normative accuracy of strategies spontaneously generated by participants.[5] We predicted that participants would spontaneously generate more promotion-inducing strategies to prepare the other participant for eager versus vigilant tasks, and more prevention-inducing strategies to prepare them for vigilant versus eager tasks—that is, a task-by-strategy interaction.

Method

Participants (N = 182) completed a two-part study in counterbalanced order. One part of the study involved completing the same self-knowledge assessment as Studies 1 and 2 (Scholer & Miele, 2016), while in the other part of the study participants were told they were going to prepare a future participant to complete various tasks. Specifically, participants were asked to write a response that would be used to help the ostensible future participant complete the tasks in a different study. In random order, participants used an open-ended response to prepare another participant for two eager (product development and advertising) and two vigilant (financial management and quality control) tasks (see Appendix S6) in response to the question "What would you say to the other participant to motivate them for the [task name] task?" Each participant provided four open-ended responses, yielding a total of 364 responses to both eager and vigilant tasks (728 in total). Afterward, participants provided the same demographic information and managerial experience questions as previous studies.

Coding

Participants' open-ended responses were analyzed using Linguistic Inquiry Word Count software (LIWC; Pennebaker et al., 2015). LIWC determines the usage frequency for which specific words and word phrases that belong to predefined categories are used and includes built-in dictionaries and the ability for users to create and upload their own custom dictionaries. We created a custom dictionary of regulatory focus words (see Appendix S7) based on a dictionary created by Gamache et al. (2015). Our custom dictionary includes and expands upon the original dictionary created by Gamache et al. (2015). Specifically, our regulatory focus dictionary contains 71 promotion-focused words and word stems (e.g., "*achiev**") and 72 prevention-focused words and word stems (e.g., "*responsib**"; note that none of the words in the dictionary were present in task prompts.) The frequencies for participants' use of promotion- versus prevention-focused words were uncorrelated, $r(180) = -.07$, $p = .321$.

Two potential limitations of using LIWC to analyze open-ended responses were addressed through additional coding by trained human coders. First, because our LIWC dictionary is new, comparative analyses through existing methods can provide convergent evidence to validate results and the dictionary itself. Second, because LIWC only counts the frequency with which particular words or word phrases are used (Pennebaker et al., 2015), responses with greater complexity become more difficult to analyze (e.g., negating particular phrases). Thus, responses were coded for their regulatory focus content by three trained, independent research assistants who were blind to hypotheses. For each response and on a scale from 1 (*not at all*) to 5 (*a great deal*), promotion was coded on four dimensions: abstract (ICC[6] = .70), speed (ICC = .71), gains (ICC = .73), and ideals (ICC = .69). Similarly, prevention focus was also coded on four dimensions: concrete (ICC = .70), accuracy (ICC = .89), losses (ICC = .89), and oughts (ICC = .69; see Appendix S8 for detailed coding scheme). Each dimension was averaged across coders and then, for each regulatory focus, we averaged the relevant dimensions to create composite scores. LIWC and human-coded promotion scores were positively correlated, as well as LIWC and human-coded prevention scores (see Table 5).

[5] Replicating Study 1, these measures were largely unrelated to the accuracy of metamotivational knowledge and are therefore not discussed in detail in the main text. Interested readers can consult the online supplemental materials for the full correlation table.

[6] ICCs were calculated using a two-way mixed, consistency, average-measures method (Hallgren, 2012).

Table 3
Simple Effects of Task Type in Studies 1 and 2

Assessment	Employee/strategy type	Eager tasks *M* (*SD*)	Vigilant tasks *M* (*SD*)	*t*	*df*	*p*
Task-assignment (Study 1)	Promotion employee	5.52 (1.04)	4.80 (1.32)	6.37	152	<.001
	Prevention employee	4.78 (1.30)	5.44 (1.00)	−5.40	152	<.001
Task-preparation (Study 2)	Promotion strategies	5.76 (0.86)	5.61 (0.92)	3.57	180	<.001
	Prevention strategies	5.06 (1.18)	5.41 (1.02)	−5.53	180	<.001

Results and Discussion

On average, participants wrote approximately 40 total words per response (M = 40.03, Mdn = 36.50, SD = 20.92). Total word count did not significantly differ across the four tasks, $F(2.79, 505.10) = 0.30$, $p = .809$, $\eta_p^2 < .01$.

Repeated measures ANOVAs were conducted to determine if managers spontaneously created normatively accurate task-motivation fit in others (see Table 6). Results for both the newly created LIWC dictionary and human coders revealed significant main effects of task, such that participants used more regulatory focus words to motivate others for vigilant tasks than eager tasks overall. There were also significant main effects of regulatory focus category: participants used more prevention-focused words than promotion-focused words overall—this is in contrast to some prior findings (e.g., Study 2; Scholer & Miele, 2016) that found a bias toward promotion-focus. These main effects were qualified by significant task-by-regulatory-focus-category interactions.[7] Participants used significantly more promotion-focused strategies to motivate others for eager tasks than vigilant tasks, LIWC d = 0.53, human-coded d = 1.86. Participants also used significantly more prevention-focused words to motivate others for vigilant tasks than eager tasks, LIWC d = 0.82, human-coded d = 2.11 (see Table 7). Finally, as with the hypothetical contexts used in Studies 1 and 2, there was substantial variability in the normative accuracy of mangers' spontaneously generated strategies (see Figure 2).

We also computed accuracy indices in the same manner as Studies 1 and 2, revealing that participants exhibited overall normative accuracy for both LIWC-scored, M = 4.37, SD = 4.62, and human-coded data, M = 1.96, SD = 0.85. Further, these accuracy indices were positively correlated with each other, and managerial experience was again not associated with either form of accuracy in managing the motivation of others (see Table 8). The correlation between accuracy in the self-knowledge assessment and accuracy as assessed by both LIWC and human coders was not significant, respectively, $r(180) = .11$, $p = .148$, and $r(180) = .12$, $p = .108$.

This paradigm provides initial evidence that managers beliefs about how to manage the motivation of others extends to spontaneously generated strategies that induce qualitatively different motivational orientations in the same person depending on task demands. This pattern was observed despite participants only having access to brief descriptions of each task, and was unaffected by study order (i.e., participants who completed the self-knowledge assessment first did not differ in their strategy generation from those who completed it second). Thus, it is not simply that managers can recognize the appropriate strategy when provided with possible options, but also that they can generate their own communications—in a normatively accurate fashion—that are likely to upregulate desired motivational orientations in others. Study 3 is the first to demonstrate that people's metamotivational knowledge extends to the spontaneous generation of normatively accurate strategies based on task demands (but also see MacGregor et al., 2017). At the same time, as in earlier studies, there was significant variability in the extent to which participants accurately engaged in this kind of communication based on task-motivation fit.

Study 4

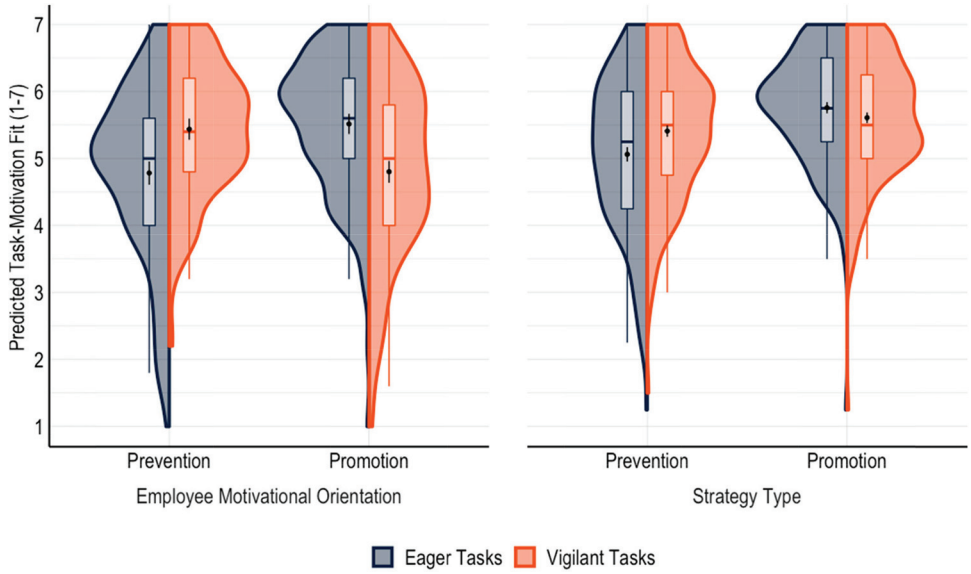
Study 3 provided initial evidence that managers can spontaneously motivate others in a consequential context in ways reflecting knowledge of regulatory focus task-motivation fit. A disadvantage of the Study 3 paradigm, however, is that managers were asked to motivate an unknown other for a task we developed; thus, it is unclear if the same patterns would be observed if managers were attempting to motivate their own subordinates for tasks relevant to their own workplace. An even stronger test of managers' metamotivational knowledge, then, considers ecologically valid contexts directly related to managers and their subordinates.

To create a particularly rigorous test of metamotivational knowledge, we conducted a two-part study. At Time 1, managers were given definitions of eager and vigilant tasks, and were then asked to identify and describe eager and vigilant tasks their own subordinates complete in their workplace. Doing so allowed us to identify tasks relevant to participants' own subordinates in their own workplaces, thus providing ecologically valid materials that consider management contexts directly related to participants' everyday management experiences. At Time 2 participants were shown only the names of an eager and vigilant task they listed at Time 1 and were asked what they would say to their own subordinates to motivate them for each task using the same open-ended response format as Study 3. Thus, at the time that managers constructed their message to subordinates, there were no direct signals of task eagerness or vigilance (as in Study 3). Rather, managers were only presented with task names (e.g., "submitting new designs," "manually testing applications"). This allowed us to examine if we could replicate and extend the findings from the Study 3 consequential paradigm using materials that are directly relevant to participants. As with Study 3, we predicted that participants would spontaneously generate more promotion-inducing strategies to prepare their own subordinates for eager tasks compared to vigilant ones, and, conversely, more prevention-inducing

[7] This pattern was not further moderated by study order (i.e., if participants completed the self-knowledge assessment vs. task-preparation assessment first) for both LIWC, $F(1, 180) = 0.83$, $p = .376$, $\eta_p^2 = .005$, and human-coded data, $F(1, 180) = 2.27$, $p = .133$, $\eta_p^2 = .01$.

Figure 1

Predicted Task-Motivation Fit by Employee/Strategy Type and Task Type in Studies 1 and 2



Note. Graphs represent split violin plots with density distributions of predicted task-motivation fit scores for each condition (blue and orange curves) with boxplots, descriptive means (black dots), and 95% confidence intervals (black error bars). See the online article for the color version of this figure.

strategies to prepare them for vigilant tasks compared to eager ones.

In Study 4, participants also completed three regulatory focus task-motivation fit metamotivational knowledge assessments at Time 1: (a) managing the self, (b) managing others via task assignment (assessment used in Study 1), and (c) managing others via task preparation (assessment used in Study 2). Thus, an additional advantage of the present design is that it allowed us to examine correlations among all of these measures—something that we were not able to assess in earlier studies. At Time 2, participants also completed three self-report managerial outcome measures (job satisfaction, burnout, team performance). Across the three measures—as detailed in the online supplemental materials—we consistently observed a significant three-way interaction (but no lower-order effects) between self-knowledge accuracy, task-assignment knowledge accuracy, and task-preparation knowledge accuracy. However, the three-way interaction was not easily interpretable based on existing theory, we did not have specific a priori predictions that such a three-way interaction would emerge, and we were relatively underpowered to detect it (Cohen et al., 2003). Therefore, we are hesitant to extrapolate too much from these results. We report the results in full—and discuss potential interpretations and limitations of these analyses and measures—in the online supplemental materials.

Additional measures related to managerial experience, individual differences known to be associated with managerial effectiveness (e.g., extraversion), and organizational characteristics (e.g., level of job autonomy) were also completed. Other measures not germane to the current paper (e.g., psychological safety; Edmondson, 1999) were also completed. A full list of all measures is available on OSF (osf.io/6gu7v/). All analyses involving these measures are reported in full in the online supplemental materials. We preregistered our analysis plan (osf.io/6gu7v/) after the data were collected but prior to any analyses.

Table 4

Correlations Between Metamotivational Knowledge Accuracy and Managerial Experience in Studies 1 and 2

Variable	1	2	3	4	5	6	7	8
1. Self-knowledge accuracy	—	—	.22**	−.06	.04	.07	.02	−.10
2. Task-assignment knowledge accuracy	.29***	—	—	—	—	—	—	—
3. Task-preparation knowledge accuracy	—	—	—	−.06	−.08	.02	.01	−.06
4. Years of experience	.03	.23**	—	—	.20**	.06	.37***	.31***
5. Extent of managerial duties	.06	.19*	—	.24**	—	.39***	.14†	.22***
6. Number of subordinates	.11	−.03	—	.004	.18*	—	.05	.23***
7. Age	.07	.16*	—	.54***	.07	.05	—	.23***
8. Income	.10	.20*	—	.11	.17*	−.02	.10	—

Note. Correlations below the diagonal represent Study 1 ($N = 153$), and those above the diagonal represent Study 2 ($N = 181$).
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Method

Participants were recruited for a two-part study investigating "motivation and management experiences." To alleviate potential attrition, we recruited 300 participants for Part I in exchange for US$8.00 and received 305 complete responses. Two days after completing Part I, participants were invited to complete Part II in exchange for US$8.00. To further alleviate attrition, participants who completed both parts were entered into a random draw to receive an additional US$50 bonus (odds of winning 1:50) for a possible total of US$66. We received complete Part II responses from 245 participants; after the exclusions detailed above, our final sample included 239 participants (see Table 1 for sample characteristics).

Time 1

First, in counterbalanced order, participants completed the same assessment of their own metamotivational knowledge as in prior studies (from Scholer & Miele, 2016), the task-assignment knowledge assessment from Study 1, and the task-preparation knowledge assessment from Study 2. Next, participants were given definitions of eager tasks ("... require enthusiastically approaching opportunities, looking for gains and advancement, and embracing possibilities.") and vigilant tasks ("... require carefully avoiding losses and danger, looking for what's safe and secure, and paying attention to what's necessary."). After reviewing these definitions, participants were asked to name up to four eager and four vigilant tasks performed by their own subordinates and were then asked to provide a brief description of each task.[8] Finally, participants were asked to provide information about their management experience (e.g., years of experience, hierarchical position) and demographics (e.g., ethnicity, education level).

Time 2

Subordinate Task Preparation. Participants were first shown the name only of the first eager and first vigilant task they listed in Part I. In counterbalanced order, they were asked how they would prepare their subordinates for each task using the same open-ended format as Study 3. Responses were scored in two ways: (a) using the custom regulatory focus LIWC dictionary from Study 3 and (b) using the same regulatory focus coding scheme as Study 3 with two trained, independent research assistants who were blind to hypotheses and study purpose (*ICC*s = .47 – .81). Correlations between the Time 1 knowledge assessments and normative accuracy of message production are listed in Table 9.

Table 5
Correlations Between LIWC and Human-Coded Regulatory Focus Scores in Study 3

Variable	1	2	3
1. LIWC promotion	—		
2. LIWC prevention	−.07	—	
3. Human-coded promotion	.37**	−.01	—
4. Human-coded prevention	−.13†	.17*	−.03

Note. $N = 182$.
† $p < .10$. * $p < .05$. ** $p < .001$.

Table 6
Results of Two-Way Repeated Measures ANOVAs in Study 3

Method	Effect	*F*	*df*	*p*	η_p^2
LIWC	Task main effect	14.11	(1, 181)	<.001	.07
	Category main effect	14.42	(1, 181)	<.001	.07
	Interaction	162.63	(1, 181)	<.001	.47
Human coders	Task main effect	109.02	(1, 181)	<.001	.38
	Category main effect	11.07	(1, 181)	.001	.06
	Interaction	964.48	(1, 181)	<.001	.84

Note. ANOVA = analysis of variance.

Additional Measures. Second, participants completed a series of measures in random order. These included individual differences associated with effective management in past research (e.g., the Big Five; John & Srivastava, 1999), organizational characteristics (e.g., degree of job autonomy), managerial experience (e.g., years of experience), and managerial outcomes (e.g., burnout). Full details of these measures are available in the online supplemental materials.

Results and Discussion

Part I Metamotivational Knowledge Assessments

Detailed results for the Part I knowledge assessments are reported in full in the online supplemental materials. In summary, results of these knowledge assessments replicated prior studies. For each assessment, significant task-by-strategy interactions (p's $< .001$) revealed that, on average, participants held normatively accurate metamotivational knowledge of how to create task-motivation fit in themselves and others. At the same time, as in earlier studies, there was significant variability in this normative accuracy. Normative accuracy indices were computed for each of the three assessments in the same manner as prior studies.

Part II Subordinate task Preparation

On average, participants wrote approximately 42 total words per response ($M = 42.49$, $Mdn = 36.00$, $SD = 26.84$). Total word count did not significantly differ between tasks, $t(239) = 1.89$, $p = .059$, 95% CI [−5.82, 0.11], $d = 0.12$, though participants did write non-significantly more words for vigilant tasks ($M = 43.91$, $SD = 28.88$) than eager tasks ($M = 41.06$, $SD = 24.61$). LIWC-scored promotion and prevention scores were positively correlated with respective human-coded scores (see Table 10).

Analyses with both the LIWC dictionary and human-coded composites revealed significant task-by-language category interactions, replicating the pattern from the consequential paradigm used in Study 3 (see Table 11). These interactions revealed that participants used significantly more prevention-focused language to motivate their own subordinates for vigilant tasks than eager tasks, LIWC $d = 0.37$ and human-coded $d = 0.59$, and significantly more promotion-focused language to motivate their own subordinates for eager tasks than vigilant tasks, LIWC $d = 0.27$ and human-coded $d = 0.32$ (see Table 12). As with Study 3, we observed

[8] To ensure that analyses did not include responses from participants who copied other parts of the survey (e.g., listed eager tasks from the self-knowledge assessment), a trained research assistant reviewed participant task lists to identify any tasks that were directly copied from study materials. Only one instance of this was identified.

Table 7
Descriptive Statistics and Simple Effects Tests by Scoring Method in Study 3

		Eager tasks			Vigilant tasks					
Method	Language category	*M* (*SD*)	Skew	Kurtosis	*M* (*SD*)	Skew	Kurtosis	*t*	*df*	*p*
LIWC	Promotion	3.19 (2.55)	1.02	1.11	1.61 (1.75)	1.39	2.84	7.24	181	<.001
	Prevention	1.75 (2.01)	1.59	2.84	4.54 (3.08)	1.31	4.57	−11.04	181	<.001
Human coders	Promotion	2.50 (0.47)	−0.05	−0.14	1.72 (0.33)	0.52	−0.58	25.14	181	<.001
	Prevention	1.67 (0.36)	0.50	−0.29	2.84 (0.68)	−0.24	−0.07	−28.46	181	<.001

Note. Data can be assumed to be normally distributed when |skew| < 3 and |kurtosis| < 10 (Kline, 1998).

substantial variation in the normative accuracy of these strategies (see Figure 3).

Study 4 extended our prior studies by examining whether managers exhibit normatively accurate (vs. inaccurate) behaviors in how they manage the motivation of their own subordinates in more realistic management contexts. We replicated the findings from Studies 1–3, finding that managers exhibited normatively accurately metamotivational knowledge for managing the self and others, on average, on the standard metamotivational assessment scales. More importantly, we also observed that managers exhibited normatively accurate methods of creating task-motivation fit for their own subordinates using ecologically valid tasks from their own workplace. That is, managers generated messages to their own subordinates that emphasized eager versus vigilant strategies depending on the task demands, thereby extending Study 3 into contexts directly related to everyday management settings. Moreover, on average, participants displayed flexibility in how they prepared their own subordinates for tasks despite only having access to the name of each task and despite the time delay between Part I and Part II. At the same time, as in Study 3, we observed substantial variability in the normative accuracy of participants' messages. Interestingly, there was little evidence of an association between normative accuracy in the metamotivational knowledge assessments from Part I and normative accuracy in message generation at Part II. Because these assessments were designed to capture group differences, and not for assessing individual differences, these associations should be interpreted with caution. On the other hand, the lack of association may also point to challenges of implementing metamotivational knowledge—as measured by the Part I assessments—in real-world settings (see General Discussion).

This study also began to explore the consequences of normative accuracy for managerial outcomes in the form of subjective team performance ratings, job satisfaction, and burnout (as detailed in

Figure 2
LIWC-Scored Frequency of Regulatory Focus Word Use and Human-Coded Strategy Use by Task Type in Study 3

Note. Graphs represent split violin plots with density distributions of predicted task-motivation fit scores for each condition (blue and orange curves) with boxplots, descriptive means (black dots), and 95% confidence intervals (black error bars). See the online article for the color version of this figure.

Table 8
Correlations Between Metamotivational Knowledge and Managerial Experience in Study 3

Variable	1	2	3	4	5	6	7
1. Self-knowledge accuracy	—						
2. LIWC accuracy	.11	—					
3. Human-coded accuracy	.12	.24**	—				
4. Years of experience	−.12	.04	.08	—			
5. Extent of managerial duties	−.10	−.07	.08	.27***	—		
6. Number of subordinates	−.17*	−.00	.07	.07	.22**	—	
7. Income	−.00	.12	.08	.01	.07	.10	—
8. Age	−.00	−.08	.06	.71***	.12	−.04	−.02

Note. $N = 182$.
$^{\dagger} p < .10$. $^{*} p < .05$. $^{**} p < .01$. $^{***} p < .001$.

the online supplemental materials). While these analyses did not reveal easily interpretable results, they represent an important first step into examinations of how normatively accurate versus inaccurate knowledge of managing the motivation of others impacts real-world managerial outcomes. For instance, the absence of a one-to-one association between our assessments of metamotivational knowledge and multidetermined outcomes, such as burnout, may point to important but unmeasured moderators that influence when metamotivational knowledge will have stronger or weaker effects on such distal outcomes.

Study 5

Studies 1–4 investigated what managers understand about how to create regulatory focus task-motivation fit in others, demonstrating that while on average managers exhibit normatively accurate metamotivational knowledge, there was also significant variability in this knowledge. We propose that one important implication for managers who exhibit normatively accurate task-motivation fit in their communications to subordinates is that they will be seen as more effective. Specifically, managers who strategically communicate to subordinates in ways that create task-motivation fit (vs. not) will be seen as more effective because they will be viewed as best positioning their subordinates to perform well. Thus, Study 5 investigated whether managers who display normatively accurate task-preparation knowledge (e.g., inducing promotion focus for an eager task) are perceived to be more effective managers than those with normatively inaccurate task-preparation knowledge (e.g., inducing prevention focus for an eager task) using objective, third-party ratings. To that end, we used the open-ended strategy responses provided by actual managers in Study 3 as more naturalistic stimuli with which to test our predictions regarding manager effectiveness. We predicted that managers who displayed normatively accurate (vs. inaccurate) metamotivational knowledge would be perceived as more effective: managers who used promotion-focused strategies to prepare others for eager versus vigilant tasks, and prevention-focused strategies for vigilant versus eager tasks, would be seen as more effective than managers who did not. Because this study concerns perceptions of managers, we recruited a general sample of American adults through MTurk using TurkPrime. Notably, we also conducted a similar study (S3) to investigate perceptions of managers with normatively accurate (vs. inaccurate) task-assignment knowledge, the results of which parallel these and are reported in the online supplemental materials.

Table 9
Correlations Between Metamotivational Knowledge Assessments in Study 4

Variable	1	2	3	4
1. Self-knowledge	—			
2. Task-assignment knowledge	.22***	—		
3. Task-preparation	.52***	.51***	—	
4. LIWC accuracy	−.09	.04	−.01	—
5. Human-coded accuracy	.11	.09	.12†	.27***

$^{\dagger} p < .10$. $^{***} p < .001$.

Method

Participants ($N = 177$) were told that the purpose of the study was to evaluate workplace scenarios. Specifically, participants were asked to evaluate supervisors based on how they prepared employees for various tasks. In each scenario, participants read a description of a task an employee needed to perform, accompanied by a quote from a supervisor preparing employees for each task. Each quote was based on 16 of the open-ended strategy responses (eight promotion-inducing and eight-prevention inducing) provided by managers in Study 3. These 16 were selected because they were the responses that received the most extreme promotion or prevention scores on the human-coded ratings; if needed, they were slightly modified for length and clarity (e.g., to clarify the task referred to in the response). Each of these quotes/strategies were matched with the two eager (product development, advertising) and two vigilant (financial management, quality control) tasks such that each task had two strategies that created task-motivation fit and two that did not. For example, participants were given a description of a product development task that an employee needed to complete. This task was individually presented with two promotion-focused (e.g., "... you could be a pathfinder for the

Table 10
Correlations Between Subordinate Task Preparation Message Scoring Methods in Study 4

Variable	1	2	3
1. LIWC promotion	—		
2. LIWC prevention	.03	—	
3. Human-coded promotion	.37**	−.03	—
4. Human-coded prevention	−.13*	.16*	−.28**

$^{*} p < .05$. $^{**} p < .001$.

Table 11
Results of Two-Way Repeated Measures ANOVAs in Study 4

Method	Effect	*F*	*df*	*p*	η_p^2
LIWC	Task main effect	2.35	(1, 238)	.127	.01
	Category main effect	0.004	(1, 238)	.953	<.01
	Interaction	36.47	(1, 238)	<.001	.13
Human coders	Task main effect	22.75	(1, 238)	<.001	.09
	Category main effect	3.87	(1, 238)	.050	.02
	Interaction	75.39	(1, 238)	<.001	.24

Note. ANOVA = analysis of variance.

entire industry . . .") and two prevention-focused (e.g., "It's all about detail and being a sort of product detective . . .") strategies used by the employee's supervisor to prepare them for the task. Participants viewed all scenarios individually and in random order and were then asked to rate the perceived effectiveness of the supervisor using a five-item scale (e.g., "The supervisor motivated the employee in just the right way"; see Appendix S9) on a scale from 1 (*not at all*) to 7 (*definitely*, $\alpha = .71$ to $\alpha = .92$).

Results and Discussion

A repeated measures ANOVA revealed a significant employee-task-by-supervisor strategy interaction (see Table 13). Participants perceived the supervisor as more effective when they used promotion-focused strategies to motivate employees for eager tasks compared to vigilant tasks, $d = 0.58$, and when they used prevention-focused strategies to motivate employees for vigilant tasks compared to eager tasks, $d = 0.30$ (see Table 14). These results complement Study 3 by demonstrating that managers who create task-motivation fit for others in a normatively accurate fashion are perceived as more effective than managers who do not, thereby demonstrating that managers are also perceived as more effective when they actively work to induce motivational states that benefit performance on particular tasks. Additionally, these findings further suggest that people recognize the creation of task-motivation fit, specifically by demonstrating that people recognize when managers have induced appropriate motivational states in others prior to completing tasks.

General Discussion

Across five studies conducted in the domain of regulatory focus, we examined what people understand about how to create task-motivation fit in others, the normative accuracy of their metamotivational knowledge, and whether this manifests in how managers prepare subordinates for tasks. Studies 1 and 2 provided evidence that managers, on average, understand how to create normatively accurate task-motivation fit by assigning employees to tasks based on differences in employee motivational orientations and task demands (Study 1) and by inducing a relevant motivational state in others for an assigned task by selecting a provided strategy (Study 2). Studies 3 and 4 go beyond this by demonstrating that managers can also create normatively accurate task-motivation fit by spontaneously generating their own strategies (Study 3) and in preparing their own subordinates for workplace relevant tasks (Study 4). Finally, Study 5 showed that managers who create normative task-motivation fit for others are perceived as more effective. Taken together, these studies demonstrate that (a) on average, managers recognize how to actively manage the promotion- and prevention-focused motivations of others to create task-motivation fit, (b) the normative accuracy of these beliefs are variable, (c) these beliefs extend to the generation of communications to subordinates, including in more realistic management contexts, and (d) have implications for perceived managerial effectiveness.

How Is Metamotivational Knowledge Developed?

While the primary goal of the current work was to investigate the extent to which managers' beliefs about how to create regulatory focus task-motivation fit in others were normatively accurate, these studies also afforded the opportunity to begin to explore potential correlates of accurate knowledge. Understanding what is—and is not—associated with normative accuracy in managing the motivations of others has important implications both for appreciating the nature of such knowledge and how it develops over time, as well as for creating interventions to improve it. Interestingly, knowledge of how to manage the motivations of the self (with respect to regulatory focus task-motivation fit) was positively but only modestly correlated with knowledge of how to manage the motivations of others across studies, with the exception of Study 3. Even in Studies 2 and 4, in which the materials for assessing knowledge of the self and others were especially

Table 12
Descriptive Statistics and Simple Effects Tests for Subordinate Task Preparation Messages by Scoring Method in Study 4

		Eager tasks			Vigilant tasks					
Method	Language category	*M* (*SD*)	Skew	Kurtosis	*M* (*SD*)	Skew	Kurtosis	*t*	*df*	*p*
LIWC	Promotion	3.29 (3.94)	1.99	6.01	2.05 (2.66)	1.47	2.16	4.15	238	<.001
	Prevention	1.77 (2.80)	2.28	6.78	3.55 (4.26)	2.36	10.16	−5.75	238	<.001
Human coders	Promotion	1.98 (0.56)	0.70	<0.01	1.78 (0.52)	1.00	1.16	4.97	238	<.001
	Prevention	1.57 (0.47)	0.92	0.68	2.00 (0.78)	0.71	−0.27	−9.14	238	<.001

Note. Data can be assumed to be normally distributed when |skew| < 3 and |kurtosis| < 10 (Kline, 1998).

Figure 3

LIWC-Scored Frequency of Regulatory Focus Word Use and Human-Coded Strategy Use by Task Type in Study 4

Note. Graphs represent split violin plots with density distributions of predicted task-motivation fit scores for each condition (blue and orange curves) with boxplots, descriptive means (black dots), and 95% confidence intervals (black error bars). See the online article for the color version of this figure.

similar (and thus had high shared method variance), the correlations were only moderate. This implies that knowledge of how to manage the motivations of others is not simply redundant with knowledge of how to manage one's own motivations. At one level, this is not particularly surprising; a long tradition of work has consistently illustrated that individuals often have distinct insights into the behaviors of themselves versus others (Vazire & Carlson, 2010), sometimes having privileged knowledge about the self (Vazire, 2010) and sometimes being prone to personal blind spots (Kruger & Dunning, 1999). At the same time, one might expect that in the current arena of investigation, such knowledge might be more aligned.

Greater alignment might be predicted in this domain because of the components of task-motivation fit knowledge (Miele et al., 2020; Miele & Scholer, 2018; Scholer et al., 2018). To recognize task-motivation fit, an individual must have, at a minimum, task knowledge (What are the motivational affordances of this task? Would performance be facilitated by being eager versus vigilant?) and strategy knowledge (How can the desired motivational state be obtained/upregulated?). It is not clear why the recognition of task signals would be directly affected by the target in question (self versus other), and thus one could conclude that task knowledge for the self versus others should be highly related. However, it is possible that the development of *strategy* knowledge follows distinct trajectories when it comes to regulating one's own motivation versus managing the motivation of others. This may partly be due to the different repertoires of strategies that are available for managing the self versus others. Managers can match individuals to tasks (e.g., Study 1) based on chronic or current predispositions (e.g., Eduardo will excel at task A, while Emily will excel at task B) in a way that is not possible to do with the self.

Yet even beyond this more mundane observation, it is likely that individuals develop theories and beliefs about strategies based on their experience. For instance, when individuals are considering what strategy might be most effective for the self, they may be focused on what the experience of implementing the strategy itself will be. Focusing on one's potential weaknesses as a way to upregulate vigilance (Scholer et al., 2014) can be effective, but can be an aversive experience. Yet when considering what strategies might be most effective for others, individuals may be relatively more focused on outcomes rather than the feasibility or experience

Table 13

Results of Two-Way Repeated Measures ANOVA in Study 5

Effect	*F*	*df*	*p*	η_p^2
Task main effect	40.88	(1, 176)	<.001	.19
Strategy main effect	0.28	(1, 176)	.600	<.01
Interaction	39.30	(1, 176)	<.001	.18

Note. ANOVA = analysis of variance.

Table 14

Simple Effects of Task Type in Study 5

Strategy type	Eager tasks *M* (*SD*)	Vigilant tasks *M* (*SD*)	*t*	*df*	*p*
Promotion strategies	5.14 (0.90)	4.29 (1.31)	7.66	176	<.001
Prevention strategies	4.55 (1.02)	4.95 (0.95)	−3.97	176	<.001

of different means (Wiesenfeld et al., 2017). A manager who directs employees to pay attention to company regulations and safety policies can understand that this increases vigilance without having to attend in the same way to what it will feel like to *be* vigilant. This shift in perspective may lead to differences in the strategies deployed for self versus other.

If knowledge of how to manage the motivation of self is not a primary source of knowledge of how to manage the motivations of others, one might reasonably expect that managerial experience should exert a significant influence. Yet our studies do not provide strong support for this conjecture. Experience—as assessed by years of experience, number of subordinates, or more indirect proxies such as age—was not consistently or strongly associated with the accuracy of metamotivational knowledge. This may be a limitation of our experience measures, all of which were self-report and subjective. We recognize that individuals may have interpreted years of experience in different ways (depending on how liberal their definition of manager was) or inflated the number of subordinates that they supervise, even unconsciously, in order to see themselves as effective managers. This suggests the need to ask much more nuanced questions about the types of experiences that are needed for the development of metamotivational knowledge. Indeed, past research has found mixed evidence for the role of experience in manager effectiveness. A meta-analysis by Hoffman and colleagues (2011) revealed that managerial experience was, in general, weakly associated with effective management, but emerged as a stronger predictor of effectiveness for low-level managers and in particular industries (e.g., government/military; Bettin & Kennedy, 1990). This suggests that certain types of experience may matter more for developing managerial effectiveness, or that experience plays a role in some situations but not others. Within the context of developing metamotivational knowledge of regulatory focus task-motivation fit, it is possible that experience with contexts in which both promotion- and prevention-focus are clear and distinct assets to organizational performance matters more than years on the job or number of subordinates. For instance, lower-level managers are often more directly involved in oversight of employees and task delegation; this type of feedback loop could be critical for learning what types of motivational management work best in different situations. Thus, an important direction for future work will be to explore what types of experience are associated with the development of metamotivational knowledge.

The Implementation of Metamotivational Knowledge

The goal of the current work was to examine what type of knowledge people had about creating regulatory focus task-motivation fit in others. Understanding whether or not individuals have this knowledge is a foundational and critical question for implementing it (see also Nguyen et al., 2019); but of course, knowledge is necessary but not sufficient for implementation (i.e., actual management of others). Thus, while the current studies represent an important first step in addressing this question, they do not tell us about what managers do in the real world—such questions represent an important direction for future research. Study 3 provides some initial evidence that managers can spontaneously implement strategies that create task-motivation fit in a consequential context in which they believe their behavior will affect others. Additionally, in Study 4, we found that managers were normatively accurate in preparing their own subordinate for tasks in their workplace. However, the lack of a direct association between normative accuracy in Part I and message generation in Part II again suggests that knowledge is a necessary, but not sufficient, condition for implementation. In addition, we recognize the need to go beyond this to look more closely at the dynamics of implementing metamotivational knowledge in real-world and consequential contexts (e.g., over the course of a workday).

The current studies suggest that, on average, people have normatively accurate metamotivational knowledge of creating regulatory focus task-motivation fit in others; at the same time, there was significant variability in this knowledge (especially notable in the large standard deviations on the accuracy indices across studies). Yet we suspect that even among those who have normatively accurate knowledge, there are may be other critical factors that influence whether that knowledge will be successfully implemented. For example, in Studies 2, 3, and 4 we assessed individual differences—extraversion, conscientiousness, openness to experience, neuroticism emotional intelligence, self-monitoring, and perceived personal power—that have been associated with managerial effectiveness in prior work. Although these constructs show no direct association with the normative accuracy of metamotivational knowledge, it is possible that such factors are important for the successful implementation of such knowledge. For instance, managers also face the challenge of getting subordinates "on board" through cultivating a shared vision and goodwill. Managers high in extraversion may be better able to sell their employees on a new way of looking at things (Bono & Judge, 2004) and thus be more effective in creating a particular motivational state. People who are high in openness to experience may have more ease in reappraising situations in multiple ways (Weber et al., 2014) that may help in creatively instilling a desired motivational state. These examples are both speculative and not at all comprehensive, but they suggest the importance of examining and testing moderators for effectively implementing metamotivational knowledge.

Cultural Considerations and Generalizability

The current studies employed samples of American adults in all studies, with the exception of Study S3 in the online supplemental materials which used a sample of undergraduate students at a large Canadian university. Thus, conclusions drawn in the present work are prone to the long-standing concerns over the use of Western, industrialized, rich, and democratic samples in psychology (Henrich et al., 2010) and thereby constrain the cross-cultural generalizability of our findings. Initial work on metamotivation in cross-cultural contexts—namely, Japan and the United States—finds evidence of consistency in metamotivational knowledge of regulatory focus across cultures (with some exceptions; Nguyen et al., 2021). Thus, it is possible that in the context of managing others, metamotivational knowledge in collectivistic cultures is relatively similar to that of the individualistic cultures we drew our samples from in the current work. On the other hand, cross-cultural research in regulatory focus theory (Higgins, 2008; Kung et al., 2016; Kurman & Hui, 2012) finds that people in collectivistic cultures (e.g., Hong Kong, Japan) tend to display more prevention motivation than individualistic cultures (e.g., Canada, United States). This suggests that effectively managing motivation may involve sensitivity to the broader cultural

context in which one is situated (e.g., how normative it is to consider one's duties and obligations in the group). In sum, to obtain a greater understanding of how people manage others' motivation, cross-cultural metamotivation research is another important direction for future research.

Conclusion

In sum, this research integrates prior research on management and metamotivation to explore what people know about creating task-motivation fit in others in the domain of regulatory focus theory. These studies are the first to apply the metamotivational approach (Scholer & Miele, 2016) to the regulation of others' motivations, representing a new perspective for understanding interpersonal phenomena such as effective leadership, mentoring, coaching and teaching. The metamotivational approach highlights not only the value of examining people's beliefs about how to manage the motivations of others, but also offers new insights into how people can develop skills and knowledge to be more effective in working with others.

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