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Thinking About Thinking About Work:

A Meta-Analysis of Off-Job Positive and Negative Work-Related Thoughts

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### Abstract

Work is frequently on the minds of employees—even during evenings, weekends, and vacations. The present study is the first comprehensive meta-analysis of off-job work-related thoughts (WRTs; i.e., thoughts employees have about work when they are not at work). We were particularly interested in comparing off-job positive and negative work-related thoughts (PWRTs and NWRTs; i.e., thoughts about positive/negative work experiences or characteristics) to each other and other off-job WRT constructs, which we integrated into a typology. We coded 520 effect sizes from 171 independent samples ( $N = 58,682$ ) and conducted a random-effects, individual-correction meta-analysis. We found that PWRTs and NWRTs were unrelated, and psychological detachment was negatively related to NWRTs but unrelated to PWRTs. Furthermore, PWRTs and NWRTs exhibited significantly different relationships with various antecedents (e.g., age, negative affectivity) and outcomes (e.g., work engagement, burnout). Compared to PWRTs and NWRTs, psychological detachment and problem-solving pondering exhibited generally weaker relationships with outcomes. NWRTs contaminated with negative affective strains (i.e., negative work-related thoughts and feelings) exhibited generally stronger relationships with outcomes. Overall, our meta-analytic findings indicate that PWRTs and NWRTs are different and underscore the importance of empirically and conceptually separating PWRTs and NWRTs from each other and other off-job WRT constructs. The findings also complement the nascent literature on interventions that target promoting PWRTs and reducing NWRTs.

*Keywords:* work-related thoughts, work reflection, work rumination, psychological detachment, problem-solving pondering

### Thinking About Thinking About Work:

#### A Meta-Analysis of Off-Job Positive and Negative Work-Related Thoughts

In the United States, employees, on average, spend one third of their day working (Bureau of Labor Statistics, 2020). Much can happen in those eight hours. For example, an irate customer asks to speak to the manager, or a local-favorite café caters the monthly departmental meeting. In addition to hassles and uplifts, major events may also occur at work. An employee might learn that they are being considered for a promotion—or that their organization will be downsizing, and they are at risk of being laid off. These scenarios are examples of experiences an employee may continue to think about when they are away from work. Indeed, *Harvard Business Review* is filled with recent articles offering tips on how to forget about work after hours (e.g., Bright, 2017; Markman, 2017; Zucker, 2019). Additionally, 44% of U.S. professionals have even reported often losing sleep over work-related issues (Accountemps, 2018).

Given how frequently many employees are thinking about their work after work, during the weekend, or while on vacation, we decided to conduct the first comprehensive meta-analysis of off-job work-related thoughts (WRTs)—with a focus on positive work-related thoughts (PWRTs) and negative work-related thoughts (NWRTs). We broadly define off-job WRTs as thoughts employees have about work when they are not at work (e.g., after hours, during nonwork hours). These thoughts can be about past, current, or anticipated work experiences as well as positive or negative work experiences or characteristics. Although research on off-job PWRTs and NWRTs has been rapidly accumulating for over a decade, the literature contains many inconsistent findings regarding relationships between such thoughts and psychological detachment (e.g., the NWRTs–detachment relationship; cf. Guros, 2015; Weigelt et al., 2019),

the PWRTs–NWRTs relationship (cf. Fritz & Sonnentag, 2006; Weigelt, Gierer, & Syrek, 2019), antecedent–WRTs relationships (e.g., the relationship between negative affectivity and PWRTs; cf. Demsky, 2012; Meier, Cho, & Dumani, 2016), and WRTs–outcome relationships (e.g., the relationship between NWRTs and task performance; cf. Binnewies, Sonnentag, & Mojza, 2009; Fritz & Sonnentag, 2006). We sought to resolve these inconsistencies by meta-analytically examining PWRTs and NWRTs in relation to each other, psychological detachment, their antecedents (viz., age, gender, and negative affectivity), and their outcomes (viz., health complaints, work engagement, burnout, job satisfaction, and task performance).

Unfortunately, the WRT literature is messy and replete with several different conceptualizations and measures of PWRTs (e.g., positive work reflection; Fritz & Sonnentag, 2005; positive work rumination; Frone, 2015) and NWRTs (e.g., negative work reflection; Fritz & Sonnentag, 2006; negative work rumination; Frone, 2015). In addition, there are other WRT constructs that researchers have previously categorized as forms of PWRTs and NWRTs. For example, researchers have categorized problem-solving pondering and affective rumination from Cropley, Michalianou, Pravettoni, and Millward's (2012) Work-Related Rumination Questionnaire as PWRTs and NWRTs, respectively (e.g., Wendsche & Lohmann-Haislah, 2017). Yet, recent preliminary evidence suggests that such constructs are distinct from the PWRT and NWRT constructs with which they had been grouped (see Weigelt, Gierer, & Syrek, 2019). Thus, we decided to conduct a comprehensive literature search and, as another major contribution, delineate construct categories in an integrative typology of off-job WRT constructs to contextualize our meta-analysis focused on PWRTs and NWRTs.

### **A Typology of Off-Job WRT Constructs**

In this section, we present a comprehensive typology of off-job WRT constructs that we identified during our literature search. In Figure 1, we arranged WRT constructs according to their contamination with psychological detachment in the left column as the “purest” WRT construct; negative work-related thoughts and feelings (NWRTFs) in the right column as the most contaminated construct; and PWRTs, NWRTs, and problem-solving pondering (PSP; Cropley et al., 2012) in the middle column as constructs somewhat contaminated with valence and content. Although WRTs can occur any time, we exclusively focused on *off-job* WRTs and did not consider WRT constructs or measures that capture WRTs that solely occur while employees are at work. See Table 1 for specific off-job WRT measures and corresponding item examples.

**Psychological detachment and WRTs–detachment relationships.** Psychological detachment is a recovery experience that involves the “off-job experience of ‘switching off mentally [from work]” (Sonnentag & Bayer, 2005, p. 393). In other words, being unable to psychologically detach conceptually refers to having work-related thoughts of any kind—regardless of their content (e.g., WRTs’ focus/target, WRTs’ affective valence). Thus, we consider psychological detachment the purest of the off-job WRT constructs. Measures of psychological detachment used in our database’s studies include the psychological detachment scale of Fritz and Sonnentag’s (2007) Recovery Experience Questionnaire, the detachment scale of Cropley et al.’s (2012) Work-Related Rumination Questionnaire (WRRQ),<sup>1</sup> the cognitive detachment scale of de Jonge, Spoor, Sonnentag, Dormann, and van den Tooren’s (2012) DISQ-R, Sonnentag and Bayer’s (2005) activity-specific psychological detachment items, and the

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<sup>1</sup> In contrast with the other psychological detachment measures, Cropley et al.’s (2012) WRRQ includes two items capturing detachment specifically from work issues. See the online supplementary materials for moderator analyses comparing different measures of psychological detachment. Readers, however, should exercise caution when interpreting these comparisons due to the prevalence of subgroups comprising  $k = 1$  samples.

disturbed relaxation ability scale of Richter, Rudolf, and Schmidt's (1999) Faulty Attitudes and Behaviour Analysis questionnaire.

Today, workers have fewer opportunities to completely detach from work both in the short term (e.g., evenings, weekends) and long term (e.g., vacations). Conceptually, NWRTs imply the existence of job demands, preclude psychological detachment, and ultimately impair well-being (Sonnentag & Fritz, 2015; Sonnentag & Grant, 2012). There is preliminary empirical evidence suggesting that NWRTs are negatively and moderately-to-strongly associated with psychological detachment (e.g., Guros, 2015; Weigelt, Gierer, et al., 2019). Like NWRTs, PWRTs conceptually are indicative of a lack of psychological detachment—albeit from the positive aspects of one's work. Yet, compared to NWRTs, PWRTs may be beneficial for recovery (Sonnentag & Fritz, 2015). Unlike NWRTs, which are resource-draining cognitive-behavioral reactions to job stressors, PWRTs are a means for individuals to appraise their jobs in a positive light and replenish lost resources beneficial for employee well-being and job performance (Fritz & Sonnentag, 2005, 2006). In contrast to the aforementioned findings involving the NWRTs–detachment relationship, some studies suggest that PWRTs and psychological detachment are unrelated (e.g., Guros, 2015; Weigelt, Gierer, et al., 2019). Conceptually, however, psychological detachment is the antithesis of WRT, so psychological detachment is the absence of not only NWRTs, but also PWRTs. Thus, we hypothesized the following:

*Hypothesis 1:* PWRTs are negatively related to psychological detachment.

*Hypothesis 2:* NWRTs are negatively related to psychological detachment.

**PWRTs, NWRTs, and their relationship.** PWRTs and NWRTs are the focal WRT constructs of interest in the present meta-analysis. Unlike psychological detachment, these

constructs' measures specifically involve positive/negative thoughts about work characteristics or work experiences. Both PWRTs and NWRTs include work reflection and work rumination as subcategories. Whereas work reflection may involve a one-time process of reflecting on work experiences and characteristics, work rumination involves *repetitive* or *perseverative* WRTs (see the supplemental materials of Frone, 2015). Although it would be valuable to empirically compare these two subcategories, we identified many reflection–rumination comparisons involving subgroups comprising fewer than three samples (e.g., all relationships involving PWRTs, the relationship between NWRTs and job satisfaction). Thus, we decided for hypothesis-testing purposes to focus primarily on *overall* PWRTs and *overall* NWRTs, both of which combine work reflection and work rumination. Nevertheless, interested readers can refer to the online supplementary materials for such comparisons. Positive work reflection measures include Fritz and Sonnentag's (2005, 2006) positive work reflection measures; Flaxman, Stride, Söderberg, Lloyd, Guenole, & Bond's (2017) positive thinking about work measure; and Nolan's (2019) positive reflection items. Positive items from Frone's (2015) Negative and Positive Work Rumination Scale (NAPWRS) were the positive work rumination items used in our database's studies. Negative work reflection items derived from Fritz and Sonnentag's (2006) measure were the negative work reflection items used in our database's studies. Negative work rumination measures include negative items from Frone's (2015) NAPWRS; the cognitive irritation items from Mohr, Müller, Rigotti, Aycan, and Tschan's (2006) Irritation Scale; and Wiese, Heidemeier, Burk, and Freund's (2017) rumination items.

Although both PWRTs and NWRTs may preclude psychological detachment, they entail qualitatively different processes. Conceptually, engaging in PWRT is a resource-providing recovery experience, whereas engaging in NWRT is a resource-depleting experience that hinders

effective work recovery (Sonnentag & Fritz, 2006). Moreover, PWRTs and NWRs may be associated differently with the same variable of interest. For example, previous research suggests that NWRs may be positively and moderately associated with health complaints, whereas PWRTs may be negatively and weakly associated with health complaints (Clark, Smith, & Haynes, 2020; Demsky, 2012). In addition, PWRTs may be strongly and positively related to work engagement, whereas NWRs may be moderately and negatively related to work engagement (Daniel & Sonnentag, 2014; Weigelt, Gierer, et al., 2019). Thus, PWRTs and NWRs may exhibit different relationships (in terms of direction and strength) with psychological detachment and shared antecedents and outcomes. Another major goal of the present study is to formally analyze such differences. By doing so, we respond to recent calls for research on the quality or affective valence of such thoughts and the possible benefits of PWRTs (Fritz, Yankelevich, Zarubin, & Barger, 2010; Sonnentag, Binnewies, & Mojza, 2010; Sonnentag & Fritz, 2015).

With regard to the PWRTs–NWRs relationship, the presence of negative thoughts does not equate to the absence of positive thoughts. Indeed, “all lives contain both good and bad events” (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001, p. 325). Employees can think about both the positive and negative aspects of their work, and the prevalence or absence of one set of thoughts may have no bearing on the other. Moreover, it is common for employees to experience ambivalence with regard to their organizations. For example, the more complexities and facets of an organization employees encounter throughout their tenure, the more likely they will hold both positive and negative views about the organization (Ashforth, Rogers, Pratt, & Pradies, 2014). But empirical studies involving the PWRTs–NWRs relationship exhibit conflicting findings. For example, in some studies, PWRTs and NWRs were positively and

weakly-to-moderately related (e.g., Fritz & Sonnentag, 2006; Frone, 2015; Meier et al., 2016)—suggesting that, in general, positive and negative thoughts about work co-occur. In contrast, other studies suggest that PWRTs and NWRTs are unrelated (e.g., Guros, 2015; Weigelt, Gierer, et al., 2019). Thus, we asked the following research question:

*Research Question 1: What is the relationship between PWRTs and NWRTs?*

**Problem-solving pondering (PSP).** Cropley et al.'s (2012) WRRQ includes a scale capturing problem-solving pondering (PSP), which refers to how “how individuals think, ponder and reflect about work-related issues when not at work” (p. 25). Although some researchers have conceptualized PSP as a form of positive work reflection (e.g., Krannitz, 2015; Wendsche & Lohmann-Haislah, 2017), there is preliminary evidence suggesting that PSP and positive work reflection are distinct constructs (e.g., Weigelt, Gierer, et al., 2019). Additionally, although PSP is “positive” in that it may result in solving work-related issues, such a process might involve thinking about both positive and negative work experiences and characteristics. Thus, in our typology, we conceptualize PSP as separate from PWRTs and NWRTs yet similarly contaminated as PSP pertains specifically to off-job thoughts about work-related issues.

**Negative work-related thoughts and feelings (NWRTFs).** While conducting our literature search, we found that some NWRT measures captured not only negative thoughts about work, but also negative affective strain experiences (e.g., annoyance, brooding, worry) associated with such thoughts. Thus, we included in our typology a category for negative work-related thoughts and feelings (NWRTFs), which capture both negative thoughts and negative affective strains. When comparing WRT constructs, we provide separate meta-analytic information for overall NWRTs (including NWRTFs), NWRTs without NWRTFs, and NWRTFs by themselves. NWRTF measures implemented in our database's studies include Flaxman,

Ménard, Bond, and Kinman (2012) Work-Related Worry and Rumination measure; the worrying scale of Van Veldhoven and Meijman's (1994) Questionnaire on the Experience and Evaluation of Work; McCullough, Bono, and Root's (2007) rumination items adapted to work experiences; and the affective rumination scale of Cropley et al.'s (2012) WRRQ.

Although throughout the rest of the introduction section we develop specific hypotheses for PWRTs and NWRRTs, which were the main focus of the present meta-analysis, we exploratorily asked the following broad research question:

*Research Question 2: Do psychological detachment, PWRTs, NWRRTs, PSP, and NWRRTFs differ from each other in their relationships with shared antecedents and outcomes?*

### **Individual Differences as Antecedents of PWRTs and NWRRTs**

**Age.** Socioemotional selectivity theory (SST) posits that individuals' perception of time changes as one ages (Carstensen, 2006). Younger individuals tend to have a more open-ended time perspective, attend more to negative information compared to positive information, and prioritize opportunities that can facilitate knowledge acquisition (e.g., novel experiences). In contrast, older individuals tend to perceive time as more constrained or finite and thus tend to prioritize optimizing psychological well-being (e.g., seeking more opportunities to experience positive affect). Consistent with SST, results from daily diary studies suggest that older and younger adults exhibit different biases in emotional recall. Specifically, compared to younger adults, older adults tended to overestimate how frequently they experienced positive affect (Ready, Weinberger, & Jones, 2007). The researchers referred to this bias older adults seemed to exhibit as the *positivity effect*. Older adults may think less frequently about previously encountered stressors because they have become more adept at emotion regulation (Charles &

Carstensen, 2014) and more focused on optimizing their well-being (Carstensen, 2006). Moreover, Ready et al. (2007) found that older adults, compared to younger adults, tended to underestimate how frequently they experienced negative affect—a *reduced negativity effect*.

*Hypothesis 3:* Age is positively related to PWRTs.

*Hypothesis 4:* Age is negatively related to NWRTs.

**Gender.** According to social role theory (SRT), gender roles and their corresponding behaviors are attributable to social scripts characterizing men as agentic and women as communal (Eagly & Wood, 2012). Consequently, women are seen as nurturing caregivers and homemakers who are more attuned to their own and others' emotions, whereas men are seen as stoic breadwinners. Empirical findings suggest that women indeed generally experience more positive affect (e.g., warmth, happiness) *and* negative affect (e.g., fear, sadness; Grossman & Wood, 1993). These gender differences in affective experience also parallel gender differences in past-focused thought. Specifically, women tend to think more about both positive and negative experiences (e.g., Bryant, Smart, & King, 2005; Tamres, Janicki, & Helgeson, 2002). Considering SRT, it may be that men think about the past less frequently because they view “dwelling on the past” as counterproductive to goal-directed behavior and thus incongruent with gender role expectations (Bryant et al., 2005). Because women are expected to fully experience their emotions, they may be more likely to revisit emotion-laden experiences—regardless of valence.

*Hypothesis 5:* Compared to men, women engage in more PWRTs.

*Hypothesis 6:* Compared to men, women engage in more NWRTs.

**Negative affectivity.** Negative affectivity (NA) is a personality trait that predisposes individuals to experience negative affective states (e.g., anxiety, anger, sadness; Watson & Clark,

1984); thus, we expect NA to be positively related to NWRTs.<sup>2</sup> Negative past experiences are more mentally accessible for individuals higher in NA, and such individuals are prone to frequently thinking about these experiences (Teasdale & Green, 2004). Employees effectively “take home negative experiences” and dwell on such experiences after leaving work (Sonnentag & Grant, 2012, p. 502), and employees high in NA may be especially vulnerable to doing so. Researchers have linked NA to job stressors and strains. For example, according to Spector, Zapf, and Frese (2000), employees high in NA may find themselves in more stressful jobs, have a tendency to perceive a high prevalence of stressors in their work environment, experience exaggerated strain responses to such stressors, and may even create more job stressors for themselves. Stressors and negative work experiences are expected to facilitate NWRTs (Sonntag & Grant, 2012). There is preliminary evidence suggesting that NA is positively and moderately-to-strongly associated with NWRTs (e.g., Clark et al., 2020; Mäder & Niessen, 2017).

Researchers have also linked NA to thoughts about past positive events. Those high in NA may be less inclined to reminisce about positive events (Bryant, 2003; Wood, Heimpel, & Michela, 2003). Additionally, organizational researchers have meta-analytically demonstrated that NA is moderately and negatively associated with job satisfaction (Thoresen, Kaplan, Barsky, Warren, & de Chermont, 2003). It may be that for high-NA individuals, who are generally less satisfied with their jobs, there are fewer positive aspects of the job to think about. Alternatively, positive work characteristics and events are still present, but they may be less mentally accessible for these individuals. There is preliminary evidence suggesting that NA is indeed

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<sup>2</sup> Compared to NA, positive affectivity, which is the tendency to experience positive affective states and moods (Watson, Clark, & Tellegen, 1988), may predispose individuals to engage in more off-job PWRTs; however, the paucity of studies that include both PA measures and WRT measures precludes us from meta-analytically examining such a relationship.

negatively and weakly-to-moderately related to PWRTs (e.g., Demsky, 2012; Meier et al., 2016). Taken together, we expect that the higher in NA an individual is, the less PWRT and more NWRT they engage in. Additionally, because NA predisposes individuals to be more sensitive to negative stimuli at work and given that it is less relevant to—yet still implicated in—reactions to positive work events (Brief, Butcher, & Roberson, 1995), we expect NA to be more strongly related to NWRTs than to PWRTs.

*Hypothesis 7:* NA is negatively related to PWRTs.

*Hypothesis 8:* NA is positively related to NWRTs.

*Hypothesis 9:* The NA–NWRTs relationship is stronger than the NA–PWRTs relationship.

### **Outcomes of PWRTs and NWRTs**

**Health complaints.** According to the *perseverative cognition hypothesis*, worry and rumination sustain the deleterious effects of stressors on health outcomes by continuously straining, even in the absence of the stressors in the immediate environment, physiological systems (e.g., cardiovascular, endocrinological, immunological); consequently, individuals enter a prolonged hypervigilant state (Brosschot, Gerin, & Thayer, 2006). The *stressor–detachment model* parallels the perseverative cognition hypothesis—but in the context of psychological detachment from work: “It is not primarily the acute stress reaction that is detrimental for an organism but rather the sustained activation, even when the stressor is no longer present” (Sonnentag & Fritz, 2015, p. S75). Many empirical studies suggest that constantly thinking about previously experienced negative events is detrimental to health (e.g., Clark et al., 2020; Fritz & Sonnentag, 2006; Thomsen et al., 2004; Watkins, 2008).

In contrast, thinking about past positive events is beneficial for physical functioning, and such thoughts may ameliorate pain and other physical symptoms (Lyubomirsky, Sousa, & Dickerhoof, 2006; Tarrant, 1996). This finding is consistent with *broaden-and-build theory*, which posits that positive emotional experiences broaden individuals' cognition and build their personal resources (Fredrickson, 2001). Mentally revisiting positive events may facilitate reexperiencing positive emotions, which help individuals recoup resources and ultimately function better. Preliminary evidence from intervention studies suggests that having employees reflect on previously experienced positive events facilitates resource (e.g., hope, optimism) generation for those with a high need for recovery and improves health outcomes, such as blood pressure, physical health, and reduced strain (Bono, Glomb, Shen, Kim, & Koch, 2013; Clauss, Hoppe, O'Shea, González Morales, Steidle, & Michel, 2018). Notwithstanding these promising findings, non-experimental research on WRTs and health exhibits mixed findings. For example, Lin (2009) found that the relationship between PWRTs and health complaints was negative and moderate at one time point, whereas Fritz and Sonnentag (2006) found no significant relationship.

*Hypothesis 10:* PWRTs are negatively related to health complaints.

*Hypothesis 11:* NWRTs are positively related to health complaints.

**Work engagement.** Work engagement is a motivational state characterized by experiencing vigor during, absorption in, and dedication to work-related activities (Bakker & Demerouti, 2017). Engagement emerges when employees harness their own personal resources (e.g., optimism, self-efficacy; Bakker & Demerouti, 2017). Drawing from broaden-and-build theory, the positive emotional experiences resulting from PWRTs may facilitate resource generation, which may improve engagement. Similarly, Fritz and Sonnentag (2006)

conceptualized engaging in PWRT as an experience that builds resources (e.g., improved well-being, sense of competence). In contrast, engaging in NWRT is indicative of job stressors in the work environment. Considering the stressor–detachment model, it may be that NWRTs sustain the deleterious impact of job stressors by precluding psychological detachment and, consequently, resource recovery. Thus, engaging in NWRT ultimately may reduce work engagement. There is preliminary empirical evidence suggesting that engagement is positively related to PWRTs (e.g., Daniel & Sonnentag, 2014) and negatively related to NWRTs (e.g., Weigelt, Gierer, et al., 2019).

*Hypothesis 12:* Work engagement is positively related to PWRTs.

*Hypothesis 13:* Work engagement is negatively related to NWRTs.

**Employee burnout.** Emotional exhaustion, disengagement from work (i.e., cynicism), and professional inefficacy characterize employee burnout, which is a syndrome of work-related strain that arises when an employee sustains prolonged intense job demands (Bakker & Demerouti, 2017). NWRTs imply the presence of detrimental work stressors and prevent detachment from the negative aspects of one’s job—further depleting resources and hindering successful recovery. Thus, in the context of the stressor–detachment model, NWRTs may ultimately lead to burnout (Sonnentag & Fritz, 2015). In contrast, in the context of broaden-and-build theory, engaging in PWRT may afford employees the opportunity to reappraise demanding aspects of their job and mobilize positive affective experiences into resources that may be beneficial for ameliorating strain experiences (Meier et al., 2016), such as burnout. There is also preliminary empirical evidence suggesting that WRTs impact burnout. For example, Fritz and Sonnentag (2005) found that PWRTs were negatively and weakly-to-moderately related to

exhaustion and disengagement, whereas Casper et al. (2019) found that NWRTs were positively and weakly-to-strongly related to exhaustion.

*Hypothesis 14:* Employee burnout is negatively related to PWRTs.

*Hypothesis 15:* Employee burnout is positively related to NWRTs.

**Job satisfaction.** According to *affective-events theory* (AET; Weiss & Cropanzano, 1996), work events elicit affective reactions, which, in turn, lead to the formation of job attitudes, such as job satisfaction. Positive and negative work experiences and characteristics may elicit different affective states and discrete emotions that may exhibit differing impacts on job satisfaction. Considering AET and broaden-and-build theory simultaneously, it is conceivable that PWRTs allow individuals to capitalize on previously experienced positive events and savor the positive mood and discrete positive emotions (e.g., gratitude, pride; see Hu & Kaplan, 2015) that accompany them—potentially leading to increased job satisfaction (e.g., Bowling, Eschleman, & Wang, 2010). From the combined perspective of AET and the stressor–detachment model, NWRTs mentally reactivate negative work events as well as associated negative affective states (e.g., anger, sadness; see Fredrickson, 2001) and may ultimately result in some degree of job dissatisfaction (e.g., Kaplan, Warren, Barsky, & Thoresen, 2009). There is preliminary evidence that suggests PWRTs are positively and moderately related to job satisfaction (e.g., Demsky, 2012), whereas NWRTs are negatively and moderately related to job satisfaction (e.g., Clark et al., 2020).

*Hypothesis 16:* Job satisfaction is positively related to PWRTs.

*Hypothesis 17:* Job satisfaction is negatively related to NWRTs.

**Task performance.** Task performance comprises core work-related behaviors that are formally required to perform a job (Campbell & Wiernik, 2015). Task performance is a function

of not only knowledge, but also motivation (Campbell, McCloy, Oppler, & Sager, 1993). It is possible that thinking about positive aspects of one's job might be motivating and beneficial, whereas thinking about the negative aspects of one's job might be burdensome and deleterious. On the one hand, when employees engage in PWRT, they are mentally considering positive work experiences or aspects of their job that they like. Although such thoughts theoretically preclude psychological detachment, broaden-and-build theory suggests that they may be resource-providing recovery experiences (Fritz & Sonnentag, 2006) that allow employees to positively reappraise a stressful work environment (Meier et al., 2016). PWRTs may also facilitate the experience of positive emotions and work engagement, which positively impact performance (Halbesleben, 2010; Shockley, Ispas, Rossi, & Levine, 2012). On the other hand, when employees are engaging in NWRT, they are mentally considering negative work experiences or job aspects they dislike. Considering the stressor–detachment model, NWRTs may preclude psychological detachment, precipitate burnout, and ultimately result in poorer performance (Swider & Zimmerman, 2010).

Yet, there are inconsistent preliminary empirical findings involving WRTs and task performance. For example, Binnewies et al. (2009) found that relationships between PWRTs and task performance were positive yet nonsignificant, whereas Fritz and Sonnentag (2005) found negative and weak-to-moderate relationships. Moreover, Fritz and Sonnentag (2006) found that NWRTs were negatively and weakly-to-moderately related to task performance, whereas Binnewies et al. (2009) found nonsignificant as well as negative and weak relationships. Notwithstanding these mixed findings, we hypothesized the following based on broaden-and-build theory and the stressor–detachment model:

*Hypothesis 18:* Task performance is positively related to PWRTs.

*Hypothesis 19:* Task performance is negatively related to NWRTs.

**Differences in relationship magnitude.** According to Baumeister et al. (2001), “Bad is stronger than good” (p. 323); that is, compared to positive events, negative events, generally, are more impactful across contexts (e.g., interpersonal relationships, learning). Additionally, previous studies suggest that not only are negative work experiences more salient than positive work experiences (Burton, Holtom, Sablinski, Mitchell, & Lee, 2010), but they also may be more impactful for specific consequences. For example, compared to positive work experiences, job stressors and negative work events are especially important predictors of burnout, health complaints, and job satisfaction (Bakker, Demerouti, & Sanz-Vergel, 2014; Crede, Chernyshenko, Stark, Dalal, & Bashshur, 2007). Further, there is a tendency for individuals to attempt to minimize the deleterious impact of negative events and the negative emotions that ensue (Taylor, 1991). Moreover, researchers have identified negative experiences, emotions, and rumination as especially resource demanding and detrimental to task performance (see Beal, Weiss, Barros, & MacDermid, 2005). Taken together, we expect NWRTs to be more impactful than PWRTs for health complaints, burnout, job satisfaction, and task performance.

*Hypothesis 20:* The relationships between NWRTs and (a) health complaints, (b) employee burnout, (c) job satisfaction, and (d) task performance are stronger than the relationships between PWRTs and these outcomes.

In contrast, drawing from broaden-and-build theory, we expect PWRTs to be more impactful for work engagement. The concept of engagement is intertwined with positive affect. According to Salanova, Schaufeli, Xanthopoulou, and Bakker (2010), work engagement is “a positive affective-motivational state,” and it is “the outcome of positive emotions” (p. 126). Furthermore, there is preliminary empirical evidence suggesting that positive affect is more

strongly related to engagement than is negative affect (Schaufeli, 2017). Perhaps thinking about positive work events and the positive emotions that ensue directly drive work engagement, whereas negative work events and the negative emotions that ensue are less impactful for work engagement.

*Hypothesis 21:* The PWRTs–engagement relationship is stronger than the NWRTs–engagement relationship.

## Method

### Literature Search and Inclusion Criteria

We searched for literature that included the keywords *ruminat*ion, *reflection*, *worry*, or *perseverative cognition* anywhere in the work paired with *worker* or *employee* in the abstract on ABI/INFORM, Business Source Complete, and PsycINFO. We also searched the programs of the annual conferences of the Society for Industrial and Organizational Psychology (2004–2020) and the Academy of Management (2004–2019) and contacted presenters for their conference papers. Additionally, we searched Google Scholar for studies that included the WRT scales created by Cromptley et al. (2012); Flaxman et al. (2012); Flaxman et al. (2017); Mohr et al. (2006; viz., cognitive irritation subscale); Wang, Liu, Liao, Gong, Kammeyer-Mueller, and Shi (2013); and Van Veldhoven and Meijman (1994; viz., worrying scale of the Questionnaire on the Experience and Evaluation of Work) and studies in which McCullough et al.'s (2007) rumination scale was adapted to the context of work. In addition to conducting the aforementioned literature searches, we incorporated literature previously retrieved by Bennett et al. (2018) and Wendsche and Lohmann-Haislah (2017) in their meta-analyses on psychological detachment. We also conducted our own literature search for the relationship between psychological detachment and job satisfaction as the aforementioned researchers did not meta-analyze this relationship.

To reiterate, as the present study was a meta-analysis of *off-job* WRTs, we excluded studies in which no timeframe (e.g., after work, during the weekend or a vacation) was specified. We also excluded studies in which Geurts, Taris, Kompier, Dijkers, Van Hoof, and Kinnunen's (2005) Survey Work-Home Interaction—NijmeGen or adaptations of Horowitz, Wilner, and Alvarez's (1979) Impact of Events Scale. See the online supplementary materials for an extended discussion as to why we excluded such studies. Our literature search yielded approximately 9,700 results. After removing duplicate studies and studies that failed to meet our inclusion criteria, our final database comprised 520 effect sizes from 171 independent samples ( $N = 58,682$ ).

### **Coding Procedures**

We coded correlations, sample sizes, and measurement reliabilities. If a correlation between an overall scale (e.g., employee burnout) and WRTs was not provided in a study, the WRTs—composite correlation and composite reliability were calculated (see Schmidt & Hunter, 2015) using available study information regarding composite components (e.g., emotional exhaustion, disengagement). For studies in which information regarding scale reliabilities were not readily available, mean reliabilities from the other studies in the database or reliability information from a previous meta-analysis were imputed (see the online supplementary materials for details).

### **Meta-Analytic Procedures**

We followed Schmidt and Hunter's (2015) procedures to quantitatively integrate the studies included in our database. Specifically, we conducted a random-effects, individual-correction meta-analysis and calculated mean correlations weighted by sample size ( $\bar{r}$ ) and correlations corrected for measurement error in predictor and outcome variables ( $\rho$ ). We also

corrected gender–WRT correlations as they were attenuated by artificial dichotomization and calculated  $\delta$  estimates for such relationships (presented in text below). We conducted our meta-analysis in R using the *psychmeta* package (Dahlke & Wiernik, 2019). To evaluate whether two measurement error-corrected correlations were significantly different from each other, we conducted a *Z* test following Raju and Brand’s (2003) procedures.

## Results

Tables 2 and 3 contain the meta-analytic results for PWRTs and NWRTs, respectively. Table 3 also contains the meta-analytic results for NWRTFs, which comprise NWRT measures contaminated with affective strain experiences. Tables 4 and 5 contain the meta-analytic results for PSP and psychological detachment, respectively. Table 6 contains rank-orderings of WRT constructs with regard to relationship strength (see “Summary of significant differences” column).

### Psychological Detachment in Relation to PWRTs and NWRTs

The 95% confidence interval (CI) [-.049, .180] for the PWRTs–detachment relationship ( $\rho = .066$ ) included zero; therefore, the relationship was not significant, and we did not find support for Hypothesis 1. In contrast, and in support of Hypothesis 2, NWRTs were negatively and strongly related to psychological detachment ( $\rho = -.656$ , 95% CI [-.735, -.577]).

Additionally, the 95% CIs of the aforementioned WRTs–detachment relationships did not overlap, and the relationships were significantly different ( $Z = -15.887$ ,  $p < .001$ ); therefore, NWRTs were more strongly related to psychological detachment than were PWRTs.

### The PWRTs–NWRTs Relationship

We were interested in investigating the relationship between PWRTs and NWRs (Research Question 1). The 95% CI [-.024, .156] for the PWRTs–NWRs relationship ( $\rho = .066$ ) included zero; therefore, PWRTs and NWRs were unrelated.

### **Antecedents of PWRTs and NWRs**

Supporting Hypothesis 3, age was positively and weakly related to PWRTs ( $\rho = .064$ , 95% CI [.031, .097]). In contrast, the 95% CI [-.034, .022] for the age–NWRs relationship ( $\rho = -.006$ ) included zero; therefore, the relationship was not significant, and we did not find support for Hypothesis 4. Gender was positively and weakly related to PWRTs ( $\rho = .086$ , 95% CI [.028, .143];  $\delta = .172$ ) and unrelated to NWRs ( $\rho = .033$ , 95% CI [-.010, .075];  $\delta = .065$ ). In other words, compared to men, women tend to engage in more PWRT, but women and men do not differ with regard to NWRs. The NA–PWRTs relationship was negative and weak ( $\rho = -.153$ , 95% CI [-.200, -.106]). The NA–NWRs relationship was positive and moderate ( $\rho = .458$ , 95% CI [.418, .499]) with a 95% CI that did not overlap with that of the NA–PWRTs relationship; additionally, the NA–PWRTs relationship was weaker than the NA–NWRs relationship ( $Z = -14.692$ ,  $p < .001$ ). Taken together, we found support for Hypotheses 5 and 7–9 but not Hypothesis 6.

### **Outcomes of PWRTs and NWRs**

**Findings regarding hypothesized relationship directions.** The 95% CI [-.166, .023] for the relationship between PWRTs and health complaints ( $\rho = -.072$ ) included zero; therefore, the relationship was not significant, and we did not find support for Hypothesis 10. The relationship between NWRs and health complaints was positive and moderate ( $\rho = .483$ , 95% CI [.408, .559]). The PWRTs–engagement relationship was positive and moderate ( $\rho = .493$ , 95% CI [.407, .579]). The NWRs–engagement relationship was negative and moderate ( $\rho = -.310$ , 95%

CI [-.391, -.229]). The PWRTs–burnout relationship was negative and weak ( $\rho = -.175$ , 95% CI [-.240, -.109]). The NWRTs–burnout relationship was positive and strong ( $\rho = .631$ , 95% CI [.587, .675]). PWRTs were positively and moderately related to job satisfaction ( $\rho = .427$ , 95% CI [.406, .448]). NWRTs were unrelated to job satisfaction ( $\rho = -.156$ , 95% CI [-.332, .020]). Taken together, we found support for Hypotheses 11–16 but not Hypothesis 17. The 95% CI [-.037, .134] for the relationship between PWRTs and task performance ( $\rho = .049$ ) included zero; therefore, the relationship was not significant, and we did not find support for Hypothesis 18. In contrast, and in support of Hypothesis 19, the relationship between NWRTs and task performance was negative and weak ( $\rho = -.137$ , 95% CI [-.192, -.082]).

**Findings regarding hypothesized differences in relationship magnitude.** The 95% CIs of the relationships with health complaints did not overlap, and the relationships were significantly different ( $Z = -6.986$ ,  $p < .001$ ); thus, the effect of NWRTs on health complaints was stronger than that of PWRTs. The 95% CIs of the relationships with burnout did not overlap, and the relationships were significantly different ( $Z = -22.121$ ,  $p < .001$ ); thus, the NWRTs–burnout relationship was stronger than the PWRTs–burnout relationship. The 95% CIs of the relationships with job satisfaction did not overlap, and the relationships were significantly different ( $Z = 5.897$ ,  $p < .001$ )—with the PWRTs–satisfaction relationship being unexpectedly stronger than the NWRTs–satisfaction relationship. Taken together, we found support for Hypotheses 20a and 20b but not for Hypothesis 20c. Although, the 95% CIs of PWRTs’ and NWRTs’ relationships with task performance overlapped with regard to absolute values, the PWRTs–performance relationship included zero whereas the NWRTs–performance relationship did not; however, the two relationships were not significantly different. The 95% CIs of the PWRTs–engagement relationships did not overlap, and the relationships were significantly

different ( $Z = 7.130, p < .001$ ); therefore, the PWRTs–engagement relationship was stronger than the NWRTs–engagement relationship. Taken together, we did not find support for Hypotheses 20d, but we did find support for Hypothesis 21.

### **Comparisons Across Off-Job WRT Constructs**

*Z* scores for all pairwise comparisons can be found in the online supplementary materials.

**WRTs–detachment relationships.** The negative, strong overall NWRTs–detachment relationship ( $\rho = -.656, 95\% \text{ CI } [-.735, -.577]$ ) and NWRTFs-detachment relationship ( $\rho = -.666, 95\% \text{ CI } [-.752, -.580]$ ) were not significantly different from each other. Both relationships were stronger than the negative, strong PSP–detachment relationship ( $\rho = -.606, 95\% \text{ CI } [-.687, -.525]$ ;  $Z = -3.242, p < .01$  and  $Z = -3.872, p < .001$ , respectively), which, in turn, was stronger than the negative, moderate relationship between NWRTs without NWRTFs and psychological detachment ( $\rho = -.456, 95\% \text{ CI } [-.539, -.374]$ ;  $Z = 3.059, p < .01$ ). The weakest WRTs–detachment relationship was the null PWRTs–detachment relationship ( $\rho = .066, 95\% \text{ CI } [-.049, .180]$ ).

**The null PWRTs–NWRTs relationship.** Across the three subgroups we investigated (i.e., studies including PWRT and NWRT measures from Flaxman et al., 2012, 2017; studies involving positive and negative work reflection; studies involving positive and negative work rumination), PWRTs and NWRTs were unrelated. Regarding subgroup comparisons, however, the PWRTs–NWRTs relationship was significantly weaker for work reflection ( $\rho = .010, 95\% \text{ CI } [-.136, .157]$ ) than it was for work rumination ( $\rho = .105, 95\% \text{ CI } [-.010, .220]$ ;  $Z = -3.036, p < .01$ ).

**Age and WRTs.** The positive, weak age–PWRTs relationship ( $\rho = .064, 95\% \text{ CI } [.031, .097]$ ) was stronger than the null overall age–NWRTs relationship ( $\rho = -.006, 95\% \text{ CI } [-.034,$

.022];  $Z = 3.323, p < .001$ ), relationship between age and NWRTs without NWRTFs ( $\rho = .023$ , 95% CI [-.012, .058];  $Z = 2.129, p < .05$ ), and age–PSP relationship ( $\rho = .002$ , 95% CI [-.050, .054];  $Z = 2.433, p < .05$ )—the three of which were not significantly different from each other. The age–PWRTs relationship, however, was not significantly different from the negative, weak age–NWRTFs relationship ( $\rho = -.050$ , 95% CI [-.089, -.011])—notably, the only other significant age–WRTs relationship—which was stronger than the null overall age–NWRTs relationship ( $Z = 2.548, p < .05$ ). The null age–detachment relationship ( $\rho = -.032$ , 95% CI [-.065, .002]) was not significantly different from the other age–WRTs relationships.

**Gender and WRTs.** The only significant WRT–related gender difference was for PWRTs ( $\rho = .086$ , 95% CI [.028, .143];  $\delta = .172$ ), which exhibited a stronger relationship with gender than all other constructs except for PSP, which was unrelated to gender ( $\rho = .067$ , 95% CI [-.005, .139];  $\delta = .134$ ). In other words, compared to men, women tend to engage in more PWRTs, and there are no other significant gender differences in WRTs.

**NA and WRTs.** The positive, moderate overall NA–NWRTs relationship ( $\rho = .458$ , 95% CI [.418, .499]); relationship between NA and NWRTs without NWRTFs ( $\rho = .465$ , 95% CI [.431, .499]); and NA–NWRTFs relationship ( $\rho = .433$ , 95% CI [.327, .539]) were not significantly different from each other. These relationships were stronger than both the negative, weak NA–detachment relationship ( $\rho = -.264$ , 95% CI [-.358, -.169]) and the positive, weak NA–PSP relationship ( $\rho = .238$ , 95% CI [.165, .311]), which were not significantly different from each other. The weakest NA–WRTs relationship was the negative, weak NA–PWRTs relationship ( $\rho = -.153$ , 95% CI [-.200, -.106]).

**WRTs and health complaints.** NWRTFs exhibited the strongest relationship with health complaints ( $\rho = .563$ , 95% CI [.432, .695]). Although the positive, moderate relationships

between overall NWRTs and health complaints ( $\rho = .483$ , 95% CI [.408, .559]) and between NWRTs without NWRTFs and health complaints ( $\rho = .457$ , 95% CI [.370, .545]) were not significantly different from each other, they were stronger than the negative, weak relationship between psychological detachment and health complaints ( $\rho = -.240$ , 95% CI [-.286, -.195];  $Z = -10.512$ ,  $p < .001$  and  $Z = -8.548$ ,  $p < .001$ , respectively). The positive, weak relationship between PSP and health complaints ( $\rho = .131$ , 95% CI [.079, .183]) and the null relationship between PWRTs and health complaints ( $\rho = -.072$ , 95% CI [-.166, .023]) were not significantly different from each other, and they were the weakest relationships.

**WRTs and work engagement.** PWRTs exhibited the strongest relationship with engagement ( $\rho = .493$ , 95% CI [.407, .579]). In contrast, the null detachment–engagement relationship was the weakest ( $\rho = .035$ , 95% CI [-.033, .102]). The negative, moderate overall NWRTs–engagement relationship ( $\rho = -.310$ , 95% CI [-.391, -.229]) did not significantly differ from the negative, weak relationship between NWRTs without NWRTFs and engagement ( $\rho = -.280$ , 95% CI [-.391, -.170]); the negative, moderate NWRTFs–engagement relationship ( $\rho = -.369$ , 95% CI [-.387, -.351]); or the positive, moderate PSP–engagement relationship ( $\rho = .343$ , 95% CI [.280, .407]). Additionally, the NWRTFs–engagement and PSP–engagement relationships did not differ, and both were stronger than the relationship between NWRTs without NWRTFs and engagement ( $Z = 2.182$ ,  $p < .05$  and  $Z = -2.152$ ,  $p < .05$ , respectively).

**WRTs and employee burnout.** Because all WRTs–burnout relationships were significantly different from each other, they all could be rank-ordered with regard to strength. The positive, strong NWRTFs–burnout relationship was the strongest ( $\rho = .672$ , 95% CI [.621, .724])—followed by the positive, strong overall NWRTs–burnout relationship ( $\rho = .631$ , 95% CI [.587, .675]); the positive, strong relationship between NWRTs without NWRTFs and burnout ( $\rho$

= .565, 95% CI [.503, .627]); the negative, moderate detachment–burnout relationship ( $\rho = -.368$ , 95% CI [-.445, -.292]); the negative, weak PWRTs–burnout relationship ( $\rho = -.175$ , 95% CI [-.240, -.109]); and the null PSP–burnout relationship ( $\rho = .079$ , 95% CI [-.032, .189]).

**WRTs and job satisfaction.** The positive, moderate relationship between PWRTs and job satisfaction ( $\rho = .427$ , 95% CI [.406, .448]) was stronger than all other WRTs–satisfaction relationships except for the negative, moderate NWRTFs–satisfaction relationship ( $\rho = -.378$ , 95% CI [-.600, -.157]) from which it was not significantly different. In addition, the NWRTFs–satisfaction relationship was stronger than the null relationship between NWRTs without NWRTFs and job satisfaction ( $\rho = -.143$ , 95% CI [-.335, .049];  $Z = 2.011$ ,  $p < .05$ ) and PSP–satisfaction relationship ( $\rho = .032$ , 95% CI [-.231, .296];  $Z = 1.970$ ,  $p < .05$ ). It is important to note, however, that the meta-analytic estimate for the NWRTFs–satisfaction relationship was based on a single study. Additionally, psychological detachment was positively and weakly related to job satisfaction ( $\rho = .179$ , 95% CI [.095, .263]), but it did not significantly differ from the null PSP–satisfaction relationship, overall NWRTs–satisfaction relationship ( $\rho = -.156$ , 95% CI [-.332, .020]), or relationship between NWRTs without NWRTFs and job satisfaction (all of which were not significantly different from each other).

**WRTs and task performance.** Psychological detachment was positively and weakly related to task performance ( $\rho = .131$ , 95% CI [.088, .175]), and this relationship was not significantly different from the other WRTs–performance relationships. PWRTs were unrelated to task performance ( $\rho = .049$ , 95% CI [-.037, .134]), and this relationship was significantly weaker than the negative, weak NWRTFs–performance relationship ( $\rho = -.221$ , 95% CI [-.242, -.199];  $Z = -2.047$ ,  $p < .05$ ). The negative, weak NWRTFs–performance relationship; overall NWRTs–performance relationship ( $\rho = -.137$ , 95% CI [-.192, -.082]); and relationship between

NWRTs without NWRTFs and task performance ( $\rho = -.120$ , 95% CI [-.181, -.059]) were not significantly different from each other. Because we were unable to find any studies reporting information on the PSP–performance relationship, we were unable to compare this relationship with other WRTs–performance relationships.

### Discussion

The present study is the first comprehensive meta-analysis of off-job WRTs. We were primarily interested in resolving inconsistent findings in the literature on PWRTs and NWRTs and comparing these two groups of WRTs. To that end, we developed a typology that consolidated disparate off-job WRT measures of varying conceptual contamination/purity and meta-analytically investigated how WRT constructs differed in their relationships with each other and shared antecedents and outcomes. Broadly, we found that PWRTs, NWRTs, NWRTFs, psychological detachment, and PSP are distinguishable constructs that are differentially related to shared antecedents and outcomes. Below, we provide a detailed discussion of our findings.

### Theoretical Implications

**Differentiating among PWRTs, NWRTs, and psychological detachment.** We found that psychological detachment was negatively related to NWRTs but unrelated to PWRTs. Indeed, work is commonly perceived as a main source of stressors (Moos & Swindle, 1990). Perhaps when individuals detach, it is more about detaching from negative rather than positive work experiences. Specifically, when responding to items from psychological detachment measures, individuals may be focusing solely on the degree to which they detach from negative work experiences—as suppressing thoughts about positive work experiences makes little sense to them. Indeed, positive work experiences and actively thinking about them confers benefits (e.g., Clauss et al., 2018). By examining PWRTs and NWRTs as constructs distinct from

psychological detachment, this study contributes to a more sophisticated understanding of how non-detachment from work is related to employee outcomes.

Another major contribution of the present meta-analysis was a formal investigation into differences between PWRTs and NWRTs and their associations with other employee-relevant variables. Our findings suggest that PWRTs and NWRTs are unrelated. Moreover, they exhibit highly different relationships with other variables in terms of both direction and magnitude. These findings underscore the importance of conceptualizing and examining these two WRT constructs as qualitatively distinct processes rather than the opposite sides of the same phenomenon. Given the greater salience of negative events in general (Baumeister et al., 2001) and our finding that PWRTs are more strongly associated with engagement and job satisfaction than are NWRTs, it is possible that NWRTs are more event driven in nature, whereas PWRTs may be more of a reflection of individuals' general positive affectivity at work. Although the current findings support the qualitative distinction between these two types of WRTs, it is important to note that most individuals experience both off work (Casper et al., 2019), and thus it is unsurprising that the two constructs are unrelated across people and studies. In addition to incorporating quantitative methods, future research should incorporate qualitative methods—such as open-ended questions, structured interviews, focus groups (for an example that blends qualitative and quantitative methods, see Colquitt, Long, Rodell, & Halvorsen-Ganepola, 2015)—to further explore the differences between PWRTs and NWRTs. Qualitative research may be particularly useful for answering questions such as what are main causes of these two types of off-job WRTs, how do individuals experience these WRTs, under what circumstances

do individuals engage in PWRTs versus NWRTs, and how do these WRTs impact future work experiences?<sup>3</sup>

Furthermore, compared to positive events and experiences, negative events and experiences often tend to be more salient and impactful for individuals. Consistent with this notion, the current study revealed that NWRTs are more strongly related to psychological detachment, health complaints, and burnout than are PWRTs. Interestingly, even researchers seemed to be prone to this negative-information sensitivity given that in our literature search we uncovered more than three times more samples involving NWRTs ( $k = 82$ ) than those involving PWRTs ( $k = 25$ ). The present findings, however, also suggest that PWRTs can be more influential for certain important outcomes, such as work engagement and, unexpectedly, job satisfaction. Our finding that PWRTs are more impactful for job satisfaction is consistent with a previous meta-analysis revealing that the relationship between positive affect and job satisfaction was stronger than that between negative affect and job satisfaction (Bowling et al., 2010). Our meta-analysis sheds light on the different ways NWRTs and PWRTs impact employees and highlights the need for more research on PWRTs—a call that is aligned with the positive organizational psychology movement (e.g., Gruman & Saks, 2019).

**Mixed support for WRT-relevant theories.** The present findings are largely consistent with WRT-relevant theories; however, there were a couple exceptions. Although the finding that older adults and women are somewhat more likely to engage in PWRT is consistent with socioemotional selectivity theory and social role theory, age and gender were unrelated to NWRTs (although age was negatively, weakly related to NWRTFs). It is possible that older workers encounter more negative experiences in their jobs (e.g., ageism in the workplace;

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<sup>3</sup> We thank an anonymous reviewer for suggesting multiple ideas discussed here.

Posthuma & Campion, 2009). Yet, their proclivity for thinking less about negative experiences in general may bring their NWRT frequency to a level comparable to that of younger workers.

Additionally, although, compared to men, women tend to have more ruminative thoughts about distressing experiences in general (Johnson & Whisman, 2013), such is not the case for NWRTs. Perhaps expectations for women to focus on family responsibilities may lessen opportunities for women to have negative ruminative thoughts about work while at home and account for the observed lack of gender differences in off-job NWRTs. We encourage interested researchers to ponder these unexpected null results and consider potential boundary conditions in future efforts to empirically reconcile these findings with the aforementioned theories.

With regard to WRTs' outcomes, PWRTs' and NWRTs' significant associations with employee well-being, motivational, and attitudinal outcomes as well as NWRTs' significant relationship with psychological detachment and task performance are consistent with the perseverative cognition hypothesis, the stressor–detachment model, and broaden-and-build theory. These findings point to the critical role of PWRTs and NWRTs in sustaining the beneficial and deleterious effects, respectively, of workplace events and experiences on important employee outcomes. Compared with the immediate impact of different aspects of work on employees during working hours, the influence of continued cognitive and emotional activation resulting from WRTs might be more beneficial and harmful—depending on thought valence—for employees' well-being, motivation, job attitudes, and performance in the long run.

**Comparisons involving other constructs in the typology.** Guided by our typology, we investigated whether the WRT constructs were differentially related to shared antecedents and outcomes. An important caveat, however, is the prevalence of relatively small independent samples (*ks*) for some subgroups; consequently, the pairwise comparisons in the present study

may suffer from second-order sampling error that may lead to less reliable results. Therefore, readers should exercise caution when interpreting specific comparison results; however, across all the comparisons, some consistent patterns do seem to emerge. Psychological detachment and PSP seemed to exhibit generally weaker relationships when compared to PWRTs and NWRTs. A possible explanation for this finding is that neither psychological detachment nor PSP specifies valence. The effects of the positive forms of lack of detachment (e.g., PWRTs) and PSP (successfully solving work problems when engaging in PSP) and the negative forms of lack of detachment (e.g., NWRTs) and PSP (failing to find solutions when engaging in PSP) may cancel each other out and result in generally weaker relationships with other variables. Additionally, compared with other forms of WRT, NWRTs appeared to be most strongly associated with some outcome variables. This finding is not surprising given that the affective strain experiences associated with negative work-related thoughts might be particularly detrimental to individuals' workplace well-being and behavior. The current study represents an initial attempt to meta-analytically explore differences among off-job WRT constructs. Despite the relatively small numbers of independent studies for some pairwise comparisons, the patterns of the current findings suggest that these WRT constructs are indeed different. Our findings also underscore the importance of differentiating WRT constructs for both theory development and empirical testing and measurement.

### **Practical Implications**

It would be helpful for workers high in NA to be cognizant of their vulnerability to engaging in more NWRT and less PWRT while away from their jobs. This awareness may aid such workers in improving their own off-job recovery experiences. Additionally, women and older workers can capitalize on their tendency to engage in more off-job PWRT. In contrast, men

and younger workers can learn about the benefits of engaging in such thoughts and consider reflecting more on the favorable aspects of their jobs when work enters their mind after hours. More research, however, is needed to identify the most optimal strategies to help different groups of workers better manage their off-job WRTs. To that end, researchers should investigate demographic and personality moderator variables when conducting intervention studies. We encourage counselors and coaches to consider these findings and tailor their services to their clients' specific strengths and needs.

Practitioners can capitalize on beneficial PWRTs–outcome relationships by offering interventions that encourage employees to consider the positive aspects of their work. For example, recent studies have documented the effectiveness of positive thought interventions in benefiting employees' well-being and reducing strain (e.g., Bono et al., 2013). Such interventions can be easily implemented through mobile device applications (e.g., Clauss et al., 2018). Furthermore, Ilies, Keeney, and Scott (2011) found that work–family interpersonal capitalization (i.e., discussing positive work events and experiences with a family member, such as a significant other) led to higher levels of job satisfaction. Leaders and managers can actively encourage such behaviors and also facilitate interpersonal capitalization among coworkers to promote PWRTs and prolong the beneficial effects of positive work events and experiences for employees. Additionally, as gratitude involves positive experiences, leaders and managers may consider cultivating a culture of gratitude in the workplace. For instance, organizational leaders could implement more interdependent work practices, which may promote collective gratitude, and managers could also recognize workgroups for demonstrating perseverance toward completing valued organizational goals (Fehr, Fulmer, Awtrey, & Miller, 2017). Researchers

should investigate whether experiencing and being the recipient of gratitude in relation to one's job indeed facilitate the experience of off-job PWRTs.

Given the significant associations between off-job NWRTs and health complaints, employee burnout, work engagement, and task performance, it may be prudent of organizations to actively implement interventions that can help employees reduce off-job NWRTs. For instance, mindfulness training (e.g., Querstret, Cropley, & Fife-Schaw, 2017) and unguided recovery training (e.g., Ebert et al., 2015) are cost-effective and easily implemented interventions for reducing work-related rumination and worry. Managers may find it difficult—or perhaps impossible—to prevent negative work events from occurring. But managers can lend their ears and help process what has happened in order to minimize the lasting effects of such incidents. Moreover, given that we found a negative, strong relationship between NWRTs and psychological detachment and evidence that psychological detachment is beneficial for employee outcomes, we would advise managers and leaders to earnestly encourage their direct reports to disconnect from work when not working (e.g., be unavailable to respond to work-related emails or phone calls; Fritz, Yankelevich, et al., 2010) and model such behavior. Doing so will facilitate more optimal recovery experiences and enable employees to succeed when returning to work.

### **Limitations and Future Directions**

We acknowledge several limitations and potential areas for future research. First, as most studies included in the meta-analysis were cross-sectional, we were unable to make strong inferences regarding the causal direction of the examined relationships (e.g., work engagement → WRTs or WRTs → work engagement). Nevertheless, our hypotheses are based on strong theoretical grounds (e.g., broaden-and-build theory, stressor–detachment model), and our findings are largely consistent with our theory-based predictions. Yet, reciprocal relationships

between WRTs and their purported outcomes may exist. For instance, Kinnunen, Feldt, & de Bloom (2019) found that high vigor leads to low affective rumination—suggesting that reversed temporal relationships are possible. Relatedly, Newton, LePine, Kim, Wellman, and Bush (2020) found that engagement in one task carries over to engagement in a subsequent task. Perhaps positive affective states, such as engagement, experienced at work may even spill over into non-work settings and facilitate off-job PWRTs. Future studies with panel designs (or even experimental designs if possible) are needed to address the causal direction, as well as temporal nature, of the relationships between work experiences and off-job WRTs.<sup>4</sup>

Second, compared to other areas of organizational research, off-job WRTs is still relatively young (e.g., Sonnentag & Fritz, 2015). Consequently, some meta-analytic estimates were based on a small number of studies. Yet, we are not aware of any firm guidelines concerning a minimum number of studies needed for conducting a meta-analysis; however, meta-analytic estimates based on relatively few studies may suffer from second-order sampling error (Schmidt & Hunter, 2015). Thus, readers should exercise caution when interpreting some of our findings. Nevertheless, even with a small number of observations, meta-analysis is a valuable method for integrating empirical findings across studies. Additionally, meta-analytic findings are more reliable than findings based on individual studies or narrative (i.e., qualitative) reviews (Schmidt, Hunter, Pearlman, & Hirsh, 1985). Additionally, given how young the literature is, it would be prudent of researchers to examine other aspects of WRTs. For example, although our meta-analysis focused on PWRTs and NWRTs, we were unable to investigate relationships involving off-job *neutral* WRTs. To our knowledge, studies involving such thoughts do not exist. Indeed, individuals have not only positive and negative thoughts, but also

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<sup>4</sup> We thank an anonymous reviewer for underscoring the importance of accounting for temporal dynamics in future WRT research.

neutral thoughts (Kiken & Shook, 2014). In some instances, focusing on neutral thoughts may also be beneficial for emotion regulation (Krohne, Pieper, Knoll, & Breimer, 2002). Thus, we encourage scholars to examine off-job neutral WRTs and fill this gap in the literature.

Thoughtful assessment of off-job neutral WRTs in particular would be critical as general survey questions asking participants to consider all aspects of their jobs might not be tapping solely “neutral” constructs given the greater salience/accessibility of negative events and experiences (Baumeister et al., 2001).<sup>5</sup> Although we were not able to investigate off-job neutral WRTs in our analysis, we examined PSP, which likely entails substantial neutral WRTs. When individuals ponder about how to solve work problems, their thought processes may involve positive, negative, and neutral events and characteristics (work tasks, goals, procedures, etc.). Future research disentangling the relationship between PSP and neutral WRTs would be informative. Doing so would contribute to an even more sophisticated understanding of different types of off-job WRTs. Another direction for future studies is research on venting about negative work events (e.g., Brown, Westbrook, & Challagalla, 2005) and engaging in interpersonal capitalization (e.g., Ilies et al., 2011). Both phenomena involve not only engaging in WRT, but also actively discussing such thoughts with others. Once a critical mass of empirical studies accumulates, other organizational researchers may consider meta-analyzing these two phenomena and comparing their findings with our meta-analytic findings.

Third, our meta-analysis indicates that there is a large amount of unexplained variance in some relationships that is not attributable to sampling error or other statistical artifacts (e.g., more than 60% of unexplained variance in the WRTs–burnout relationships)—suggesting the existence of other potential moderators. We encourage researchers to further explore the

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<sup>5</sup> We thank an anonymous reviewer for this insightful point.

boundary conditions of the relationships between WRTs and their correlates, antecedents, and outcomes. Identifying moderators will shed more light on the nature of WRTs and aid the development of effective interventions WRT interventions.

### **Conclusion**

Through conducting the first comprehensive meta-analysis on off-job WRTs, we sought to address inconsistencies in the literature and disentangle PWRTs and NWRTs from not only each other, but also psychological detachment and other WRT constructs. Overall, PWRTs and NWRTs exhibit different relationships with psychological detachment and various antecedents and outcomes. Our typology incorporating other groups of off-job WRT constructs provided more context for such findings. Given that workers spend much of their day working and that many find it difficult to “turn off” work-related thoughts while they are recovering during breaks, evenings, weekends, and vacations, we encourage organizational researchers to continue studying off-job WRTs in the hope of improving well-being and job performance.

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Table 1

*Measures Capturing Off-Job Work-Related Thoughts*

Construct and measure	Item examples
<b>Psychological detachment</b>	
Recovery Experience Questionnaire (Sonnentag & Fritz, 2007)	<ul style="list-style-type: none"> <li>• I forget about work.</li> <li>• I don't think about work at all.</li> </ul>
Work-Related Rumination Questionnaire: detachment (Cropley et al., 2012) <sup>a</sup>	<ul style="list-style-type: none"> <li>• Do you feel unable to switch off from work?</li> <li>• I am able to stop thinking about work-related issues in my free time.</li> </ul>
DISQ-R: cognitive detachment (de Jonge et al., 2012)	<ul style="list-style-type: none"> <li>• After work, I mentally distance myself from work.</li> <li>• After work, I put all my thoughts of work aside.</li> </ul>
Sonnentag and Bayer's (2005) activity-specific psychological detachment from work items	<ul style="list-style-type: none"> <li>• While performing this activity, I forgot completely about my working day.</li> <li>• While performing this activity, I could "switch off" completely.</li> </ul>
Faulty Attitudes and Behaviour Analysis questionnaire: disturbed relaxation ability (Richter et al., 1999)	<ul style="list-style-type: none"> <li>• I find it difficult to switch off after work.</li> </ul>
<b>PWRTs: positive work reflection</b>	
Positive work reflection (Fritz & Sonnentag, 2005, 2006)	<ul style="list-style-type: none"> <li>• During vacation, I realized what I like about my job.</li> <li>• During vacation, I thought about the positive points of my job.</li> </ul>
Positive thinking about work (Flaxman et al., 2017)	<ul style="list-style-type: none"> <li>• I thought positively about my work performance.</li> <li>• I had constructive thoughts about a work project.</li> </ul>

(continued)

(continued)

Construct and measure	Item examples
Positive reflection (Nolan, 2019)	<ul style="list-style-type: none"> <li>• I considered how my work positively impacts society.</li> <li>• I thought about how my work aligns with my values and beliefs.</li> </ul>
PWRTs: positive work rumination	
Negative and Positive Work Rumination Scale: positive work rumination (Frone, 2015)	<ul style="list-style-type: none"> <li>• Find yourself preoccupied with positive aspects of your work even after you leave work?</li> <li>• Think back to the good things that happened at work even when</li> </ul>
NWRTs: negative work reflection	
Negative work reflection (Fritz & Sonnentag, 2006)	<ul style="list-style-type: none"> <li>• During vacation, I realized what I did not like about my job.</li> <li>• During vacation, I considered the negative aspects of my job.</li> </ul>
NWRTs: negative work rumination	
Negative and Positive Work Rumination Scale: negative work rumination (Frone, 2015)	<ul style="list-style-type: none"> <li>• Replay negative work events in your mind even after you leave work?</li> <li>• Find yourself preoccupied with the negative aspects of your job</li> </ul>
Irritation Scale: cognitive irritation (Mohr et al., 2006)	<ul style="list-style-type: none"> <li>• Even at home I often think of my problems at work.</li> <li>• Even on my vacations I think about my problems at work.</li> </ul>
Rumination about difficult client interaction (Wiese et al., 2017)	<ul style="list-style-type: none"> <li>• During the evening, today's difficult client interaction came to my mind for several times.</li> <li>• While at home, I involuntarily was thinking back on today's client interaction.</li> </ul>

(continued)

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Construct and measure	Item examples
Problem-solving pondering	
Work-Related Rumination Questionnaire: problem-solving pondering (Cropley et al., 2012)	<ul style="list-style-type: none"> <li>• After work I tend to think of how I can improve my work-related performance.</li> <li>• I find solutions to work-related problems in my free time.</li> </ul>
NWRTs: negative work-related thoughts and feelings	
Work-Related Worry and Rumination (Flaxman et al., 2012)	<ul style="list-style-type: none"> <li>• I worried about things to do with work.</li> <li>• I repeatedly thought about a situation that had upset me at work.</li> </ul>
Questionnaire on the Experience and Evaluation of Work: worrying (Van Veldhoven & Meijman, 1994) Rumination (McCullough et al., 2007)	<ul style="list-style-type: none"> <li>• When I leave work, I continue to worry about work problems.</li> <li>• During my free time, I often worry about work.</li> <li>• Strong feelings about what this person did to me kept bubbling up.</li> <li>• I brooded about how he/she hurt me.</li> </ul>
Work-Related Rumination Questionnaire: affective rumination (Cropley et al., 2012)	<ul style="list-style-type: none"> <li>• Are you annoyed by thinking about work-related issues when not at work?</li> <li>• Are you irritated by work issues when not at work?</li> </ul>

*Note.* PWRTs = positive work-related thoughts; NWRTs = negative work-related thoughts.

<sup>a</sup> Compared to the other measures of psychological detachment, two detachment items from Cropley et al.'s (2012) Work-Related

Rumination Questionnaire are specific to detachment from work-related issues.

Table 2

*Meta-Analytic Results: Positive Work-Related Thoughts (PWRTs)*

Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	<i>SD<sub>p</sub></i>	%Var	95% CI		80% CrI	
							Lower	Upper	Lower	Upper
Psychological detachment	7	951	.057	.066	.120	39.46	-.049	.180	-.088	.220
Age	13	5,214	.060	.064	.030	76.34	.031	.097	.026	.102
Positive work reflection	12	2,383	.024	.026	.000	100.00	-.016	.067	.026	.026
Positive work rumination	1	2,831	.090	.097	.000		.058	.137	.097	.097
Gender <sup>a</sup>	11	4,689	.080	.086	.082	28.52	.028	.143	-.019	.191
Positive work reflection	10	1,858	.030	.032	.111	32.98	-.052	.117	-.111	.175
Positive work rumination	1	2,831	.113	.122	.000		.083	.161	.122	.122
NA	11	4,507	-.131	-.153	.055	51.89	-.200	-.106	-.224	-.082
Positive work reflection	10	1,676	-.082	-.093	.054	73.44	-.158	-.028	-.163	-.023
Positive work rumination	1	2,831	-.160	-.189	.000		-.232	-.147	-.189	-.189
Health complaints	4	453	-.062	-.072	.000	100.00	-.166	.023	-.072	-.072
Work engagement	11	2,779	.450	.493	.134	14.55	.407	.579	.321	.665
Positive work reflection	10	2,509	.441	.482	.136	14.41	.390	.573	.307	.656
Positive work rumination	1	270	.531	.610	.000		.512	.709	.610	.610

(continued)

(continued)

Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	$SD_{\rho}$	%Var	95% CI		80% CR	
							Lower	Upper	Lower	Upper
Employee burnout	15	3,286	-.156	-.175	.107	32.28	-.240	-.109	-.312	-.038
Positive work reflection	14	3,016	-.169	-.189	.101	34.85	-.255	-.124	-.319	-.060
Positive work rumination	1	270	-.010	-.011	.000		-.144	.122	-.011	-.011
Job satisfaction	4	746	.375	.427	.000	100.00	.406	.448	.427	.427
Task performance	3	666	.040	.049	.000	100.00	-.037	.134	.049	.049

*Note.* NA = negative affectivity; NWRTs = negative work-related thoughts; *k* = number of independent studies; *N* = sample size;

$\bar{r}$  = mean sample size-weighted correlation;  $\rho$  = measurement error-corrected correlation;  $SD_{\rho}$  = standard deviation of

measurement error-corrected correlation; %Var = percentage of variance attributable to artifacts; 95% CI = 95% confidence

interval around  $\rho$ ; 80% CrI = 80% credibility interval around  $\rho$ . All relationships without subgroups comprised studies in which all

researchers used a measure of positive work reflection.

<sup>a</sup> Studies were coded such that a positive effect =  $PWRT_{S_{men}} < PWRT_{S_{women}}$ , whereas a negative effect =  $PWRT_{S_{men}} >$

$PWRT_{S_{women}}$ .

Table 3

*Meta-Analytic Results: Negative Work-Related Thoughts (NWRs)*

Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	<i>SD<sub>p</sub></i>	%Var	95% CI		80% CrI	
							Lower	Upper	Lower	Upper
Psychological detachment	22	8,006	-.580	-.656	.184	4.35	-.735	-.577	-.892	-.420
NWRs	18	7,607	-.589	-.666	.183	3.68	-.752	-.580	-.901	-.431
Negative work reflection	4	399	-.400	-.456	.000	100.00	-.539	-.374	-.456	-.456
Age	38	13,042	-.006	-.006	.068	42.22	-.034	.022	-.093	.080
NWRs	21	5,299	-.047	-.050	.062	54.47	-.089	-.011	-.129	.029
Negative work reflection	5	984	-.072	-.076	.000	100.00	-.121	-.032	-.076	-.076
Negative work rumination	12	6,759	.036	.038	.047	47.91	.001	.075	-.022	.098
Gender <sup>a</sup>	36	13,919	.029	.033	.119	17.17	-.010	.075	-.120	.185
NWRs	21	5,615	.023	.026	.170	12.98	-.052	.104	-.192	.244
Negative work reflection	2	328	-.031	-.032	.000	100.00	-.066	.001	-.032	-.032
Negative work rumination	13	7,976	.036	.040	.068	28.45	-.004	.083	-.047	.126
NA	22	7,117	.399	.458	.081	30.56	.418	.499	.354	.562
NWRs	10	1,563	.376	.433	.152	21.28	.327	.539	.238	.628
Negative work reflection	4	772	.350	.405	.000	100.00	.345	.465	.405	.405
Negative work rumination	8	4,782	.415	.475	.037	51.82	.437	.512	.427	.523

(continued)

(continued)

Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	<i>SD<sub>ρ</sub></i>	%Var	95% CI		80% CrI	
							Lower	Upper	Lower	Upper
Health complaints	13	2,983	.412	.483	.123	21.34	.408	.559	.326	.641
NWRTEs	6	734	.479	.563	.143	24.67	.432	.695	.380	.746
Negative work reflection	2	328	.326	.385	.000	100.00	.281	.489	.385	.385
Negative work rumination	5	1,921	.401	.469	.109	17.27	.364	.574	.329	.609
Work engagement	11	2,727	-.282	-.310	.121	22.13	-.391	-.229	-.465	-.155
NWRTEs	3	932	-.333	-.369	.000	100.00	-.387	-.351	-.369	-.369
Negative work reflection	6	1,375	-.308	-.335	.117	23.73	-.442	-.227	-.485	-.184
Negative work rumination	2	420	-.084	-.094	.018	94.81	-.203	.014	-.117	-.072
Employee burnout	28	9,393	.567	.631	.111	12.13	.587	.675	.488	.773
NWRTEs	14	5,701	.608	.672	.092	12.31	.621	.724	.554	.790
Negative work reflection	6	1,329	.453	.502	.124	18.74	.391	.612	.342	.661
Negative work rumination	8	2,363	.531	.601	.072	30.33	.542	.661	.510	.693

(continued)

(continued)

Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	<i>SD<sub>ρ</sub></i>	%Var	95% CI		80% CrI	
							Lower	Upper	Lower	Upper
Job satisfaction	6	1,733	-.124	-.156	.208	10.45	-.332	.020	-.422	.110
NWRTFs	1	92	-.316	-.378	.000		-.600	-.157	-.378	-.378
Negative work reflection	1	107	-.502	-.614	.000		-.788	-.440	-.614	-.614
Negative work rumination	4	1,534	-.086	-.110	.176	11.10	-.293	.072	-.335	.115
Task performance	7	1,447	-.119	-.137	.000	100.00	-.192	-.082	-.137	-.137
NWRTFs	2	205	-.212	-.221	.000	100.00	-.242	-.199	-.221	-.221
Negative work reflection	2	579	-.139	-.169	.029	85.30	-.275	-.063	-.206	-.131
Negative work rumination	3	663	-.073	-.083	.000	100.00	-.120	-.047	-.083	-.083

*Note.* NA = negative affectivity; NWRTFs = negative work-related thoughts and feelings; *k* = number of independent studies;

*N* = sample size;  $\bar{r}$  = mean sample size-weighted correlation;  $\rho$  = measurement error-corrected correlation;

*SD<sub>ρ</sub>* = standard deviation of measurement error-corrected correlation; %Var = percentage of variance attributable to artifacts;

95% CI = 95% confidence interval around  $\rho$ ; 80% CrI = 80% credibility interval around  $\rho$ .

<sup>a</sup> Studies were coded such that a positive effect =  $NWRT_{s_{men}} < NWRT_{s_{women}}$  whereas a negative effect =  $NWRT_{s_{men}} >$

$NWRT_{s_{women}}$ .

Table 4

*Meta-Analytic Results: Problem-Solving Pondering (PSP)*

Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	<i>SD</i> <sub><math>\rho</math></sub>	%Var	95% CI		80% CrI	
							Lower	Upper	Lower	Upper
Psychological detachment	17	5,500	-.490	-.606	.162	9.25	-.687	-.525	-.814	-.398
Age	11	2,889	.002	.002	.053	63.10	-.050	.054	-.066	.070
Gender <sup>a</sup>	11	3,162	.060	.067	.103	29.32	-.005	.139	-.065	.198
NA	4	1,358	.204	.238	.042	67.89	.165	.311	.184	.292
Health complaints	9	2,731	.107	.131	.039	76.27	.079	.183	.081	.181
Work engagement	9	4,176	.293	.343	.083	26.21	.280	.407	.237	.450
Employee burnout	13	4,067	.067	.079	.192	10.62	-.032	.189	-.168	.325
Job satisfaction	1	92	.025	.032	.000		-.231	.296	.032	.032

*Note.* NA = negative affectivity; *k* = number of independent studies; *N* = sample size;  $\bar{r}$  = mean sample size-weighted correlation;

$\rho$  = measurement error-corrected correlation; *SD* <sub>$\rho$</sub>  = standard deviation of measurement error-corrected correlation; %Var =

percentage of variance attributable to artifacts; 95% CI = 95% confidence interval around  $\rho$ ; 80% CrI = 80% credibility interval

around  $\rho$ .

<sup>a</sup> Studies were coded such that a positive effect =  $PSP_{men} < PSP_{women}$  whereas a negative effect =  $PSP_{men} > PSP_{women}$ .

Table 5

*Meta-Analytic Results: Psychological Detachment*

Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	<i>SD<sub>ρ</sub></i>	%Var	95% CI		80% CrI	
							Lower	Upper	Lower	Upper
Age <sup>a</sup>	35	10,660	-.030	-.032	.080	36.85	-.065	.002	-.135	.071
Gender <sup>a, b</sup>	33	10,686	.038	.040	.136	16.00	-.010	.091	-.134	.214
NA <sup>a</sup>	9	1,623	-.220	-.264	.117	34.75	-.358	-.169	-.414	-.114
Health complaints <sup>a</sup>	13	5,989	-.208	-.240	.067	37.44	-.286	-.195	-.326	-.155
Work engagement <sup>a, c</sup>	13	7,047	.031	.035	.114	15.28	-.033	.102	-.111	.180
Employee burnout <sup>a, c</sup>	22	6,187	-.325	-.368	.172	11.18	-.445	-.292	-.588	-.149
Job satisfaction	20	9,467	.152	.179	.183	7.79	.095	.263	-.056	.414
Task performance <sup>a</sup>	5	3,870	.104	.131	.022	80.09	.088	.175	.103	.160

*Note.* NA = negative affectivity; *k* = number of independent studies; *N* = sample size;  $\bar{r}$  = mean sample size-weighted correlation;

$\rho$  = measurement error-corrected correlation; *SD<sub>ρ</sub>* = standard deviation of measurement error-corrected correlation; %Var =

percentage of variance attributable to artifacts; 95% CI = 95% confidence interval around  $\rho$ ; 80% CrI = 80% credibility interval

around  $\rho$ .

<sup>a</sup> Includes samples originally identified and meta-analyzed by Wendsche and Lohmann-Haislah (2017). <sup>b</sup> Studies were coded such that

a positive effect = Detachment<sub>men</sub> < Detachment<sub>women</sub> whereas a negative effect = Detachment<sub>men</sub> > Detachment<sub>women</sub>. <sup>c</sup> Includes

samples originally identified and meta-analyzed by Bennett et al. (2018).

Table 6

*Comparisons of Relationships Across Off-Job Work-Related Thought (WRT) Constructs*

Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	<i>SD<sub>ρ</sub></i>	%Var	95% CI		Summary of significant differences
							Lower	Upper	
Psychological detachment									
PWRTs	7	951	.057	.066	.120	39.46	-.049	.180	NWRTFs = NWRTs > PSP > NWRTs w/o NWRTFs > PWRTs
NWRTs	22	8,006	-.580	-.656	.184	4.35	-.735	-.577	
NWRTs w/o NWRTFs	4	399	-.400	-.456	.000	100.00	-.539	-.374	
NWRTFs	18	7,607	-.589	-.666	.183	3.68	-.752	-.580	
Problem-solving pondering	17	5,500	-.490	-.606	.162	9.25	-.687	-.525	
PWRTs–NWRTs relationship	13	5,545	.062	.066	.156	10.53	-.024	.156	Work rumination > Work reflection
Flaxman et al.’s (2012, 2017) WRT measures	2	266	.098	.115	.000	100.00	-.007	.238	
Positive work reflection and negative work reflection	9	2,178	.015	.010	.213	9.54	-.136	.157	
Positive work rumination and negative work rumination	2	3,101	.093	.105	.078	11.82	-.010	.220	

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Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	<i>SD<sub>ρ</sub></i>	%Var	95% CI		Summary of significant differences
							Lower	Upper	
<b>Age</b>									
Psychological detachment <sup>a</sup>	35	10,660	-.030	-.032	.080	36.85	-.065	.002	PWRTs > NWRTs = NWRTs w/o NWRTFs = PSP; PWRTs = NWRTFs > NWRTs
PWRTs	13	5,214	.060	.064	.030	76.34	.031	.097	
NWRTs	38	13,042	-.006	-.006	.068	42.22	-.034	.022	
NWRTs w/o NWRTFs	17	7,443	.022	.023	.054	45.88	-.012	.058	
NWRTFs	21	5,299	-.047	-.050	.062	54.47	-.089	-.011	
Problem-solving pondering	11	2,889	.002	.002	.053	63.10	-.050	.054	
<b>Gender <sup>b</sup></b>									
Psychological detachment <sup>a</sup>	33	10,686	.038	.040	.136	16.00	-.010	.091	PWRTs > PD = NWRTs = NWRTs w/o NWRTFs = NWRTFs
PWRTs	11	4,689	.080	.086	.082	28.52	.028	.143	
NWRTs	36	13,919	.029	.033	.119	17.17	-.010	.075	
NWRTs w/o NWRTFs	15	8,304	.034	.037	.066	31.72	-.004	.077	
NWRTFs	21	5,615	.023	.026	.170	12.98	-.052	.104	
Problem-solving pondering	11	3,162	.060	.067	.103	29.32	-.005	.139	

(continued)

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Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	<i>SD<math>\rho</math></i>	%Var	95% CI		Summary of significant differences
							Lower	Upper	
NA									
Psychological detachment <sup>a</sup>	9	1,623	-.220	-.264	.117	34.75	-.358	-.169	NWRTs = NWRTs w/o NWRTFs = NWRTFs > PD = PSP > PWRTs
PWRTs	11	4,507	-.131	-.153	.055	51.89	-.200	-.106	
NWRTs	22	7,117	.399	.458	.081	30.56	.418	.499	
NWRTs w/o NWRTFs	12	5,554	.406	.465	.040	55.19	.431	.499	
NWRTFs	10	1,563	.376	.433	.152	21.28	.327	.539	
Problem-solving pondering	4	1,358	.204	.238	.042	67.89	.165	.311	
Health complaints									
Psychological detachment <sup>a</sup>	13	5,989	-.208	-.240	.067	37.44	-.286	-.195	NWRTFs > NWRTs = NWRTs w/o NWRTFs > PD > PSP = PWRTs
PWRTs	4	453	-.062	-.072	.000	100.00	-.166	.023	
NWRTs	13	2,983	.412	.483	.123	21.34	.408	.559	
NWRTs w/o NWRTFs	7	2,249	.390	.457	.105	21.83	.370	.545	
NWRTFs	6	734	.479	.563	.143	24.67	.432	.695	
Problem-solving pondering	9	2,731	.107	.131	.039	76.27	.079	.183	

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Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	$SD_{\rho}$	%Var	95% CI		Summary of significant differences
							Lower	Upper	
Work engagement									
Psychological detachment <sup>a, c</sup>	13	7,047	.031	.035	.114	15.28	-.033	.102	PWRTs > NWRTs = NWRTFs = PSP > PD; PWRTs > NWRTFs = PSP > NWRTs w/o NWRTFs > PD; PWRTs > NWRTs = NWRTs w/o NWRTFs > PD
PWRTs	11	2,779	.450	.493	.134	14.55	.407	.579	
NWRTs	11	2,727	-.282	-.310	.121	22.13	-.391	-.229	
NWRTs w/o NWRTFs	8	1,795	-.255	-.280	.144	18.44	-.391	-.170	
NWRTFs	3	932	-.333	-.369	.000	100.00	-.387	-.351	
Problem-solving pondering	9	4,176	.293	.343	.083	26.21	.280	.407	
Employee burnout									
Psychological detachment <sup>a, c</sup>	22	6,187	-.325	-.368	.172	11.18	-.445	-.292	NWRTFs > NWRTs > NWRTs w/o NWRTFs > PD > PWRTs > PSP
PWRTs	15	3,286	-.156	-.175	.107	32.28	-.240	-.109	
NWRTs	28	9,393	.567	.631	.111	12.13	.587	.675	
NWRTs w/o NWRTFs	14	3,692	.503	.565	.106	19.26	.503	.627	
NWRTFs	14	5,701	.608	.672	.092	12.31	.621	.724	
Problem-solving pondering	13	4,067	.067	.079	.192	10.62	-.032	.189	

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Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	$SD_{\rho}$	%Var	95% CI		Summary of significant differences
							Lower	Upper	
Job satisfaction									
Psychological detachment	20	9,467	.152	.179	.183	7.79	.095	.263	PWRTs > PD = NWRTs = NWRTs w/o NWRTFs = PSP; PWRTs = NWRTFs > NWRTs w/o NWRTFs = PSP
PWRTs	4	746	.375	.427	.000	100.00	.406	.448	
NWRTs	6	1,733	-.124	-.156	.208	10.45	-.332	.020	
NWRTs w/o NWRTFs	5	1,641	-.113	-.143	.208	9.30	-.335	.049	
NWRTFs	1	92	-.316	-.378	.000		-.600	-.157	
Problem-solving pondering	1	92	.025	.032	.000		-.231	.296	

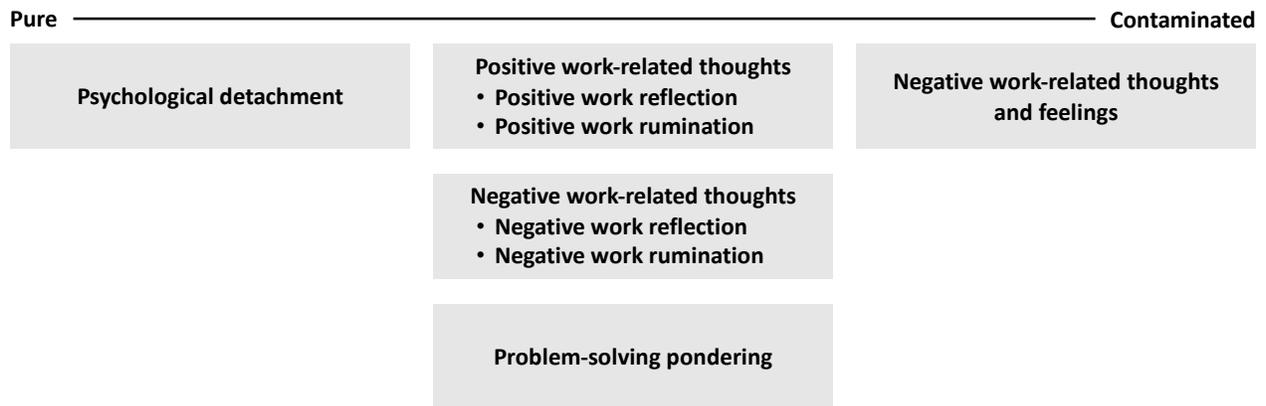
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Meta-analysis	<i>k</i>	<i>N</i>	$\bar{r}$	$\rho$	$SD_{\rho}$	%Var	95% CI		Summary of significant differences
							Lower	Upper	
Task performance									
Psychological detachment <sup>a</sup>	5	3,870	.104	.131	.022	80.09	.088	.175	NWRTFs > PWRTs
PWRTs	3	666	.040	.049	.000	100.00	-.037	.134	
NWRTs	7	1,447	-.119	-.137	.000	100.00	-.192	-.082	
NWRTs w/o NWRTFs	5	1,242	-.104	-.120	.000	100.00	-.181	-.059	
NWRTFs	2	205	-.212	-.221	.000	100.00	-.242	-.199	

*Note.* NA = negative affectivity; PD = psychological detachment; PSP = problem-solving pondering; PWRTs = positive work-related thoughts; NWRTs = negative work-related thoughts; NWRTFs = negative work-related thoughts and feelings; *k* = number of independent studies; *N* = sample size;  $\bar{r}$  = mean sample size-weighted correlation;  $\rho$  = measurement error-corrected correlation;  $SD_{\rho}$  = standard deviation of measurement error-corrected correlation; %Var = percentage of variance attributable to artifacts; 95% CI = 95% confidence interval around  $\rho$ ; “Summary of significant differences” contains WRT constructs rank ordered with regard to relationship strength (in terms of absolute value); constructs not listed did not significantly differ from others in relationship strength.

<sup>a</sup> Includes samples originally identified and meta-analyzed by Wendsche and Lohmann-Haislah (2017). <sup>b</sup> Studies were coded such that a positive effect =  $WRT_{smen} < WRT_{swomen}$  whereas a negative effect =  $WRT_{smen} > WRT_{swomen}$ . <sup>c</sup> Includes samples originally identified and meta-analyzed by Bennett et al. (2018).



*Figure 1.* A typology of off-job work-related thought constructs. Constructs are arranged according to conceptual “purity”/“contamination” with psychological detachment as the purest; positive and negative work-related thoughts (as well as their reflection and rumination subcategories) and problem-solving pondering as constructs contaminated with thought valence and content; and negative work-related thoughts and feelings as the most contaminated combining negative work-related thoughts and affective strains.