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Positive work reflection during the evening and next-day work engagement: Testing mediating mechanisms and cyclical processes

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Studies have shown that positive work reflection during evening leisure time is related to short-term affective benefits at bedtime and in the next morning. This study examines whether the favourable outcomes of positive work reflection persist into the next workday and tests mediating processes between evening positive work reflection and next-day work engagement. Based on daily survey data from 152 employees (total of 687 days), we found that positive work reflection predicted next morning perceived work meaningfulness, next morning psychological availability, and next-day co-worker support. Perceived work meaningfulness and co-worker support, but not psychological availability, in turn, predicted afternoon work engagement. Work engagement predicted subsequent positive work reflection. This study demonstrates that positively thinking about work-related issues during leisure time is associated with positive outcomes during the next workday, which prompt subsequent positive work reflection.

Practitioner points

- Employees should be encouraged to reflect positively about their day at work during after-work hours; instead of striving for full mental disengagement from work, employees could develop habits of positively reflecting about their workday during evening hours.
- Being fully engaged during the day at work may support positive work reflection during the evening; accordingly, employees may focus on work experiences characterized by high vigour, dedication, and absorption.
- Being aware of one's work meaningfulness and receiving co-worker support is helpful for translating positive work reflection into work engagement; accordingly, mental exercises that emphasize meaningfulness and acts that facilitate co-worker support might be effective tools for increasing work engagement.

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Many employees do not leave work at work. They stay mentally connected to their jobs, often by thinking about enjoyable and satisfying work events or well-accomplished tasks (Jiang & Johnson, 2018; Meier, Cho, & Dumani, 2016). Empirical evidence suggests that a positive reflection about one's work has affective benefits such as an increase in positive affect. For instance, Sonnentag and Grant (2012) reported that on evenings when firefighters and rescue workers positively reflected about positive work experiences, they experienced high levels of positive affect at bedtime. Meier et al. (2016) found that the more employees reflected positively about work during evening hours, the higher their positive affective states and the lower were their negative affective states at bedtime and (to a lesser extent) the next morning.

Although these studies provide promising evidence about the potential affective benefits of positive work reflection on a day-to-day basis, the time frames covered in these studies were relatively short, spanning the evening hours (Sonnentag & Grant, 2012) or the time until start of work in the next morning (Meier et al., 2016). These findings might imply that the beneficial consequences of positive work reflection are rather short-lived, do not reach into the next workday, and may therefore not matter for on-the-job processes during the next day (Flaxman et al., 2018). Admittedly, between-person studies point to benefits of positive work reflection as well (Daniel & Sonnentag, 2014; Fritz & Sonnentag, 2005). These studies, however, cannot provide any answer to the question of whether within-person fluctuations in positive work reflection translate into processes unfolding at work the next day because between-person studies assess a person's general level of positive work reflection, missing the dynamic processes occurring in daily work lives. Moreover, past research did not examine the mediating processes by which positive work reflection may exert its positive impact on on-the-job experiences during the next workday.

To gain more insight into the role of evening positive work reflection for the next day at work, we use a daily survey design and examine day-specific work engagement as a potential next-day consequence of positive work reflection. Work engagement is a 'positive, fulfilling, work-related state of mind (. . .) characterized by vigour, dedication, and absorption' (Schaufeli & Bakker, 2004, p. 295). It is positively related to desirable job-related outcomes such as in-role (Parke, Weinhardt, Brodsky, Tangirala, & DeVoe, 2018) and extra-role performance (e.g. proactive work behaviour; Sonnentag, 2003). Extending Kahn's (1990) work on engagement, we examine perceived work meaningfulness, psychological availability, and co-worker social support as mediating pathways that link evening positive work reflection to next-day work engagement.

In addition to our focus on next-day consequences of positive work reflection during the evening, we add to previous research on the predictors of positive work reflection (Jiang & Johnson, 2018; Sonnentag & Grant, 2012). Specifically, we examine work engagement during the afternoon as a rather immediate precursor of evening positive work reflection, and perceived work meaningfulness, psychological availability, and co-worker social support as more distal predictors. This approach enables us to look at cyclical processes of positive work reflection and work engagement over the course of the day.

Our study makes several contributions to the literature. First, our research substantially extends the emerging literature on positive work reflection (Meier et al., 2016; Sonnentag & Grant, 2012) by demonstrating that positive work reflection has not only immediate effects on affective well-being on the same day, but that positive work reflection unfolds its positive consequences during the next day at work. In more detail, by examining the day-specific link between positive work reflection and work

engagement—that Kahn (1990, p. 694) defined as 'harnessing of organization members' selves into their work roles'—we demonstrate that maintaining a positive connection to one's work during evening hours helps employees to 'bring in . . . their personal selves' (p. 694) when they are back at work on the next day. Thereby, our research theoretically extends Kahn's model and contributes to a better understanding of the role of positively toned cognitions (Bono, Glomb, Shen, Kim, & Koch, 2013) and behaviours (Ilies, Keeney, & Scott, 2011; Tremmel, Sonnentag, & Casper, 2019) occurring off the job for processes happening on the job.

Second, by testing three mediators between positive work reflection and work engagement, our study provides insights into the mechanisms that link positive work reflection to work engagement. By addressing these mechanisms our study helps to develop a deeper understanding of why positive work reflection translates into work engagement on a day-to-day basis. At the same time, the three mediators point to day-specific benefits that may result from positive work reflection, in both psychological (perceived work meaningfulness, psychological availability) and interpersonal (co-worker social support) terms. These benefits illustrate that positive work reflection can be a powerful process for organizationally relevant experiences and behaviours—beyond its immediate affective impact.

Third, our study contributes to the literature on day-specific predictors of work engagement (Bakker, 2014). Past research has examined morning energetic and affective states (Kühnel, Sonnentag, & Bledow, 2012; Venz, Pundt, & Sonnentag, 2018) and has often focused on job resources being present on the same day as predictors of day-specific work engagement (Breevaart et al., 2014; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Our study extends the timeframe and tests if work-related thoughts during the previous evening can play a positive role for work engagement as well by fostering perceived work meaningfulness and other experiences that are essential for work engagement.

Moreover, our study makes a case for cyclical processes happening at the interface between work and the non-work domains, with positive work reflection not only predicting next-day work engagement, but with work engagement facilitating positive thought processes in the non-work domain as well. This dynamic perspective that captures processes happening within a relatively short time frame (i.e. within a day) requires a within-person study approach. Thus, it is not only the question of whether relationships between variables found in between-person studies are mirrored at the within-person level (McCormick, Reeves, Downes, Li, & Ilies, 2020). Examining temporally dynamic patterns between variables—as we do with respect to positive work reflection and work engagement in the current study—needs multiple measurement points, as implemented in a within-person study. With its extended time perspective and its focus on cyclical processes, our study demonstrates the close interconnection between processes happening at work and outside of work.

Positive work reflection

Fritz and Sonnentag (2005) described positive work reflection as a process occurring during non-work time characterized by positive thoughts about one's job. It implies consideration of the positive features of one's job and remembrance of positive job-related events (Sonnentag & Grant, 2012). Episodes of positive work reflection may be relatively short, encompassing cognitions about one's work such as memories or re-appraisals

(Sonnentag & Grant, 2012), and even anticipatory thoughts (Bryant, 2003). Positive work reflection may be seen as a specific form of savouring (Bryant, 1989), focusing on positive thoughts about one's work. Some authors use the term 'positive work rumination' to capture similar positively toned thought processes related to one's job (Frone, 2015).

Research focusing on between-person differences has shown that people who positively reflected about work during the weekend experienced a decrease in exhaustion and disengagement over the weekend (Fritz & Sonnentag, 2005). In addition, people who reflected positively about work during non-work time reported an increase in proactive work behaviour, organizational citizenship behaviour, and creativity over a six-month period (Binnewies, Sonnentag, & Mojza, 2009). Moreover, positive work reflection is associated with affective commitment (Jiang & Johnson, 2018) and work-life enrichment (Daniel & Sonnentag, 2014), whereas the lack of it was found to be positively related to alcohol consumption (Frone, 2015). Current research addressing within-person fluctuation of positive work reflection demonstrated the affective benefits of positive work reflection at the day level with short timeframes. Specifically, positive work reflection during evening hours has been found to relate to favourable affective states (high positive affect and low negative affect) at bedtime (Meier et al., 2016; Sonnentag & Grant, 2012) and the next morning (Meier et al., 2016). Positive work reflection, however, may not only have rather immediate affective benefits. The activation of positive thoughts about work will be associated with other advantages unfolding during the next workday as well.

Role of positive work reflection for perceived work meaningfulness, psychological availability, and co-worker support

Positive work reflection in the evening should be important for processes happening during the next day at work. Specifically, we argue that positive work reflection prepares employees for work engagement by increasing perceived work meaningfulness, by stimulating psychological availability, and by fostering co-worker social support. We build our research on the model of Kahn (1990) who identified meaningfulness, availability, and psychological safety, which is largely grounded on supportive interpersonal relationships, as psychological conditions that facilitate engagement. We extend this model by arguing that positive work reflection increases perceived work meaningfulness, psychological availability, and co-worker social support. Accordingly, we conceptualize perceived work meaningfulness, psychological availability, and co-worker social support as mediators between evening positive work reflection and next-day work engagement. Kahn's model was a useful starting point for our research because this model received empirical support from both qualitative and quantitative research (Kahn, 1990; May, Gilson, & Harter, 2004) and because it is rather specific about the psychological conditions that fuel engagement, in contrast to other engagement models that rely on broad conceptualizations of resources as predictors of engagement (Bakker & Demerouti, 2007). Figure 1 illustrates our research model.

Perceived work meaningfulness

Positive work reflection during the evening should be positively related to perceived work meaningfulness the next morning. Perceived work meaningfulness refers to the degree to which work is 'experienced as particularly significant and holding more positive meaning

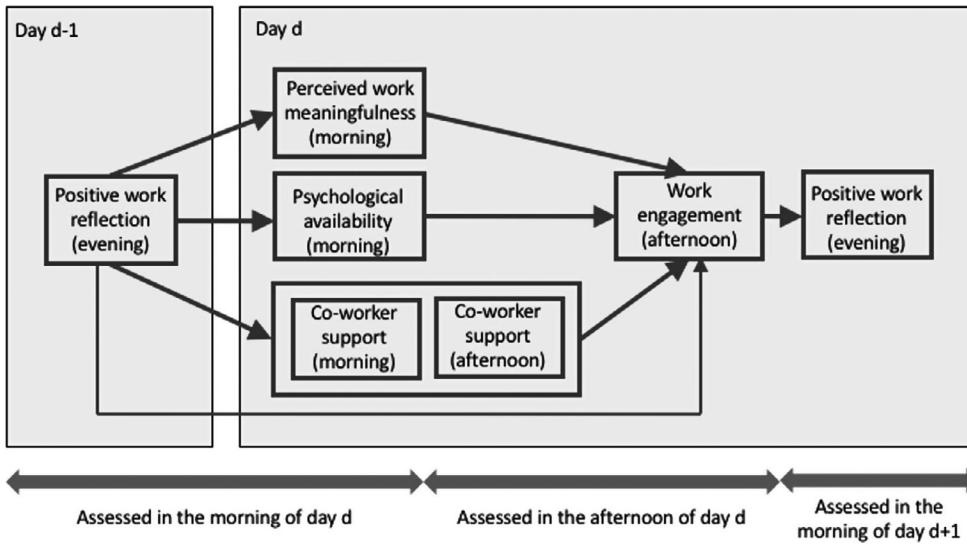

Figure 1. Conceptual model at the within-person level. (*d*) = present day. (*d*−1) = previous day.

for individuals' (Russo, Dekas, & Wrzesniewski, 2010, p. 95). Experiencing one's work as meaningful implies that it is seen as valuable, worthwhile, and useful (Hackman & Oldham, 1976; Kahn, 1990). Such outlook results from the 'feeling that one is receiving a return on investments of one's self in a currency of physical, cognitive, or emotional energy' (Kahn, 1990, p. 703–704). A large body of research has identified multiple antecedents of experienced meaningfulness of work, including job characteristics, organizational factors (e.g. leadership, organizational culture), the self (e.g. values, beliefs), other people, and spiritual processes (Lysova, Allan, Dik, Duffy, & Steger, 2019; Russo et al., 2010).

Most of these antecedents refer to between-person differences and provide insight about why some employees may experience more meaningfulness in their work than others. Recent research, however, has demonstrated that perceived work meaningfulness also fluctuates within persons from day to day (Fletcher, Bailey, & Gilman, 2018; Lam, Wan, & Roussin, 2016). These fluctuations cannot be attributed to differences between persons, jobs and organizational factors, but can only be explained by affective states or experiences that fluctuate within a person. We argue that positive work reflection is such an experience that can explain within-person fluctuations of perceived work meaningfulness.

When positively reflecting about one's job during evening hours, one becomes aware of the positive features of one's work and focuses on these positive features. By positively reflecting about one's work, the work is evaluated as valuable, and the investment of effort in this work is seen as worthwhile and useful. This aligns directly with the two core aspects of meaningfulness (Kahn, 1990, p. 703) that include the experience of 'receiving a return on investments' and the assessment that one's investments into the work role pay off. Positive work reflection can be seen as one way to elaborate on one's investments and the benefits resulting from these investments. Relatedly, researchers in the context of job crafting have argued that changing the way one perceives one's job (e.g. tasks, relationships) changes experienced meaningfulness (Berg, Dutton, & Wrzesniewski,

2013; Geldenhuys, Bakker, & Demerouti, 2020). Accordingly, focusing on a positive view of one's job—as is the case during positive work reflection—should increase experienced meaningfulness.

Positive work reflection may help alleviate negative impacts of an unpleasant day and even lead to a positive reappraisal of the day that manifests in a positive perspective on one's work. To this end, positive work reflection can be seen as a beneficial cognitive process that generates a positive effect unfolding its consequences during the next day at work. That is, evening positive work reflection will be positively associated with next-day perceived work meaningfulness. However, when positive work reflection in the evening is low or absent, one is likely to start the next workday with the disadvantage of having a neutral or even negative outlook on work, which would make it difficult to experience work as meaningful. Therefore, we hypothesize that the more employees positively reflect about work during the evening, the higher their perceived work meaningfulness will be the following day.

Psychological availability

Positive work reflection during the evening should be positively associated with psychological availability in the next morning. Kahn (1990, p. 714) defined psychological availability as 'the sense of having the physical, emotional, or psychological resources to personally engage at a particular moment'. The term refers to a person's readiness to show full engagement at work and implies that a person feels capable of behaving in a way that enables high performance. In essence, psychological availability is characterized by the confidence in one's ability to adequately handle the demands at work (May et al., 2004)—a state that is conceptually similar to self-efficacy (Bandura, 1997; cf., Rich, LePine, & Crawford, 2010). Research has demonstrated that psychological availability fluctuates from day to day (Fletcher et al., 2018). Accordingly, it may be influenced by processes that themselves fluctuate at the day level.

In this paper, we argue that evening positive work reflection is associated with increased psychological availability in the next morning. Evening positive work reflection implies that one becomes aware of positive experiences such as one's accomplishments and successes (Fritz & Sonnentag, 2005). This awareness, in turn, will boost one's confidence in being able to adequately deal with upcoming demands (Bandura, 1997; Sitzmann & Yeo, 2013), that is to be psychologically available when returning to work on the next day. Moreover, when positively reflecting about one's work, attention to positive features of one's work situation increases. For instance, evening positive work reflection may foster clarity about one's tasks and available resources. Task clarity and access to resources have been shown to be positively related to day-level psychological availability (Fletcher et al., 2018). Importantly, when positively reflecting about one's work during the evening, negative features of one's work as well as non-work features become less salient. This reduced salience of negative or non-work features makes it less likely that in the next morning distractive thoughts draw one's attention away from the work to be done—a process that would reduce psychological availability (Kahn, 1990). Accordingly, after positive work reflection, it is more likely that one's emotional and mental resources are available for the tasks to be accomplished because they are less absorbed by negative work-related or non-work thoughts.

Co-worker social support

Positive work reflection in the evening should enable the mobilization of social resources during the next day at work. Specifically, we propose that evening positive work reflection will be positively related to co-worker social support experienced during the next workday. Social support refers to the 'provision of emotional or instrumental help' (Parker, 2014, p. 665). Social support is an 'emergent and dynamic' job characteristic (Daniels, 2006, p. 276), depending on how people interpret and shape their jobs (Wrzesniewski & Dutton, 2001). Here, we focus on co-worker social support because supervisor social support may not be available every day (Barnes, Lucianetti, Bhave, & Christian, 2015). Earlier studies have shown that co-worker social support fluctuates on a daily basis (Pluut, Ilies, Curşeu, & Liu, 2018; Sonnentag, Eck, Fritz, & Kühnel, 2020).

There are several explanations why positive work reflection will be positively related to co-worker support on the next workday. The first explanation refers to a perceptual process. Positively reflecting about one's work during the evening implies that one appraises various aspects of one's job in a more positive way (Sonnentag & Grant, 2012). This positive appraisal should refer to one's co-workers as well because interpersonal relationships with co-workers are a crucial element of work life (Colbert, Bono, & Purvanova, 2016). Accordingly, when appraising co-workers in a more positive light, one will anticipate that co-workers will react more positively to requests for help and that co-workers' actions will be more helpful in the end. These positive evaluations and expectations will imply that one will be more likely to ask for support from co-workers (Lim, Tai, Bamberger, & Morrison, 2020). Asking for support will increase the chances of actually receiving social support (Anderson & Williams, 1996; Grodal, Nelson, & Siino, 2015).

The second explanation focuses on an instrumental process: when reflecting positively about work, work-related goals are activated and appear important and desirable. At the same time, positive affect associated with positive work reflection (Meier et al., 2016) implies that expectancy for goal attainment is high (Seo, Bartunek, & Barrett, 2010). To actually achieve these important and desirable goals, employees mobilize and allocate resources to these goals (DeShon & Gillespie, 2005), for instance by asking others for help and support (Lim et al., 2020). Again, requesting help and support will increase the likelihood of receiving social support (Anderson & Williams, 1996; Grodal et al., 2015).

The third explanation is derived from a social exchange perspective (Cropanzano & Mitchell, 2005). In addition to co-worker support provided upon requests for help, co-workers may give support, even when not explicitly asked to do so. After having positively reflected about work in the evening, employees will be in a more positive affective state (Meier et al., 2016) and so will behave more positively at work (Scott, Matta, & Koopman, 2018), creating positive experiences for co-workers. As the social exchange perspective suggests, these co-workers will show social support '*in response* to positive experiences' (Spitzmuller & Van Dyne, 2013, p. 561) they had with the person who had positively reflected about work.

Unlike perceived work meaningfulness and psychological availability that can be present from the beginning of the workday because they heavily depend on psychological processes within individuals, the matter could be different for co-worker support. On some days it might be easy to obtain support at the start of the workday, for instance, when a close co-worker is available and happy to help immediately. On other days, however, co-worker support might not yet be available at the start of the workday because it would take some time until one had the opportunity to elicit social support and until co-workers

could actually provide such support. As a consequence, positive work reflection will not only be related to co-worker support experienced in the morning but to co-worker support experienced in the afternoon as well, resulting in high co-worker support experienced throughout the entire day at work. Considering our theorizing above, we hypothesize the following:

Hypothesis 1. Positive work reflection during the previous evening is positively related to (a) perceived work meaningfulness in the morning, (b) psychological availability in the morning, and (c) co-worker support experienced during the workday.

Role of perceived work meaningfulness, psychological availability, and co-worker support for work engagement

Perceiving work as meaningful should help employees to experience work engagement. Specifically, we propose that perceived work meaningfulness in the morning will be positively related to work engagement in the afternoon. Kahn (1990) introduced the concept of personal engagement at work and described it as the experience of employing and expressing the self at work. Although the original concept has been differentiated during the past decades (Byrne, Peters, & Weston, 2016; Rothbard & Patil, 2011), core aspects of engagement include high levels of energy experienced at work and invested into work, immersion in one's work, as well as high levels of concentration and focus on one's work (Schaufeli & Bakker, 2004).

Kahn (1990) described experienced meaningfulness as an important psychological condition for personal engagement at work, and subsequent quantitative research identified meaningfulness as a strong predictor of engagement (May et al., 2004; cf., Allan, Dexter, Kinsey, & Parker, 2018). Perceiving one's work as meaningful is based on the experience that one's work goals are valuable in relation to one's ideals and standards (May et al., 2004) and that it is worthwhile to invest oneself into the work (Kahn, 1990). Accordingly, when perceived work meaningfulness is high, employees should be more willing to invest their selves into their work, to be energetic at work, to be absorbed, and to be dedicated. However, when perceived work meaningfulness is low, employees do not value what they are supposed to do, and so they will be reluctant to exert much effort and energy on the job, to devote attention to their job, and to get immersed into their work. Research has shown that on days when employees perceive their work to be meaningful they experience high levels of vigour (Lam et al., 2016) and high levels of overall work engagement (Fletcher et al., 2018). Therefore, we propose the following:

Hypothesis 2a. Perceived work meaningfulness in the morning is positively related to work engagement in the afternoon.

Based on Kahn's model (1990), we propose that psychological availability positively relates to work engagement. Psychological availability implies that one is confident to immerse oneself into one's work role (May et al., 2004). In a state of high psychological availability, people are aware of their capabilities and energy they can invest into work, and they believe in their ability to meet the demands at work. This confidence in one's

abilities and energy helps a person to bring in their selves into work and to get immersed into work, which will be reflected in a high level of work engagement (Fletcher et al., 2018; Xanthopoulou et al., 2009). When a person is not psychologically available, for instance, because one is absorbed by distractive thoughts or has doubts about one's ability to address work demands, it will be difficult for the person to mobilize the necessary energy to immerse oneself into work and become engaged. Accordingly, we hypothesize the following:

Hypothesis 2b. Psychological availability in the morning is positively related to work engagement in the afternoon.

In addition to perceived work meaningfulness and psychological availability, co-worker support experienced during the workday should be positively related to work engagement. Within Kahn's (1990) model of engagement, supportive interpersonal relationships and positive group and intergroup dynamics—as they are experienced as co-worker social support—contribute to psychological safety, defined 'as feeling able to show and employ one's self without fear of negative consequences to self-image, status, or career' (p. 708). Psychological safety, in turn, is an important factor that facilitates engagement at work: It is easier for people to bring in their selves into the work process when feeling psychologically safe and supported. Similarly, within the job demands-resources model (Bakker & Demerouti, 2007), co-worker support is conceptualized as a typical job resource that helps people to feel psychologically safe and to stay motivated to attain work-related goals. For instance, on days when employees perceive that they are being supported by co-workers, it will be easier for them to stay energetic at work, to be dedicated to their jobs, and to focus on their tasks (Simbula, 2010) because they know they can fall back on their co-workers, both emotionally and instrumentally. However, when employees feel that they lack social support, they will be more likely to fail to achieve their goals, to experience a drain of energy and an increased tendency to withdraw from the process of working. Building on these lines of reasoning and on earlier empirical findings (Sonnentag et al., 2020; Xanthopoulou, Bakker, Heuven, Demerouti, & Schaufeli, 2008), we hypothesize that co-worker support experienced during the workday will be positively associated with work engagement.

Hypothesis 2c. Co-worker support during the workday is positively related to work engagement in the afternoon.

To this end, we suggest that when employees reflect positively about their work in the evening, they focus on the positive aspects of their work and see its value. This emphasis on the positive aspects goes along with higher levels of experienced work meaningfulness in the morning, which in turn should stimulate work engagement. Positive work reflection in the evening puts employees' attention on positive job features and makes negative and off-job thoughts less salient, enabling employees to be cognitively and emotionally available for their work. Being available for one's job helps to increase work engagement. In addition, positive work reflection helps employees to view their jobs favourably. This positive view is likely to have an effect on how they view their co-workers, making it more likely that they will receive social support from them, which in turn will foster work engagement. Linking Hypotheses 1a to 1c with Hypotheses 2a to 2c,

we hypothesize that experienced work meaningfulness, psychological availability, and co-worker support mediate the relationship between positive work reflection and work engagement.

Hypothesis 3. Positive work reflection during the previous evening is positively related to work engagement in the afternoon via (a) perceived work meaningfulness in the morning, (b) psychological availability in the morning, and (c) co-worker support during the workday.

Work engagement and subsequent positive work reflection

Work engagement during the day should not only result from positive work reflection and subsequent perceived work meaningfulness, psychological availability, and co-worker support: We propose that work engagement experienced during the day also predicts positive work reflection during the subsequent evening. Two interrelated processes explain this association between work engagement and subsequent positive work reflection. First, because of its high energy level as well as attention devoted to work, greater work engagement is likely to enable favourable on-the-job behaviours and experiences. For instance, on days when employees are more engaged at work, they show higher task performance (Parke et al., 2018; Xanthopoulou et al., 2008), more helping (Bormann, 2017; Xanthopoulou et al., 2008), and more proactive behaviour (Sonnentag, 2003). On these high-engagement days, people also experience higher levels of perceived pro-social impact (Lanaj, Foulk, & Erez, 2019). These positive behaviours and experiences give people reasons to think positively about their work after the end of the workday. For instance, they might remember episodes of task accomplishment and positive reactions from others to their helpful behaviours (Lee, Bradburn, Johnson, Lin, & Chang, 2019). Accordingly, it will be more likely that they positively reflect about their work.

Second, being engaged at work leads to positive affective experiences at work. For instance, when having been engaged during the day at work, employees experience more positive affect and feel happier (Culbertson, Mills, & Fullagar, 2012; Rodríguez-Munoz, Sanz-Vergel, Demerouti, & Bakker, 2014). Because of mood-congruent recall (Bower, 1981), these positive affective states, in turn, will tend to stimulate positive thoughts—instead of negative thoughts—about work. Research on work-home interpersonal capitalization shows a similar pattern: On days when employees have experienced high engagement at work, they are more likely to share positive work experiences at home (Ilies, Liu, Liu, & Zheng, 2017). Most probably, they will not only share positive experiences, but also reflect positively on such experiences. Taken together, we hypothesize the following:

Hypothesis 4. Work engagement in the afternoon is positively related to positive work reflection in the evening.

Bringing together our hypotheses on perceived work meaningfulness, psychological availability, and co-worker support as predictors of work engagement and positive work reflection as an outcome of work engagement, we hypothesize indirect relationships between perceived work meaningfulness, psychological availability, and co-worker

support on the one hand and positive work reflection on the other hand, via work engagement. When employees experience more work meaningfulness, they are more engaged during the day (Fletcher et al., 2018), which, in turn, stimulates positive work reflection in the evening. Work engagement is higher for employees who are psychologically available, which contributes to higher positive work reflection in the evening. Similarly, co-worker support should help to be engaged at work (Sonnentag et al., 2020) and this, in turn, will also be associated with subsequent positive work reflection.

Hypothesis 5. Perceived work meaningfulness in the morning (a), psychological availability in the morning (b), and co-worker support experienced during the day (c) are positively related to positive work reflection in the evening via work engagement in the afternoon.

Method

Sample

We collected data at a relatively large local government in Western Australia, which had more than 260 full-time employees. We first contacted the HR director and the CEO to seek permission to conduct a survey of their employees. Upon receipt of permission, we distributed online questionnaire links to employees through the human resources (HR) department. To satisfy the university research ethical guidelines, we did not directly approach the respondents, but left instructions with the HR director for the respondents to be contacted via individual departments. A total of 237 full-time employees (i.e. all employees except those being on vacation or sick leave) received invitations from their departments to complete an entrance survey and a series of daily surveys. Paper-based surveys were used to reach some employees who did not have immediate access to the Internet during work hours. Employees occupied a range of jobs, including administration, finance, HR, information systems, community service, maintenance, health and safety, city planning, and executive management.

Of those 237 employees invited, 164 completed the entrance survey (response rate: 69.2%), and 177 participated in the daily survey phase (response rate: 74.7%), with 152 of them providing usable data (64.1% of those who were invited). In this final sample of 152 employees,[1] 50% were female. Mean age was 39.51 years (SD = 12.32) and average organizational tenure was 3.95 years (SD = 3.84). Among all participants, 9.6% worked in high-level managerial positions, 10.3% were team leaders, 13.7% were coordinators, and 66.4% worked in non-managerial positions. Employees who provided usable daily survey data did not differ from employees who dropped out from the study after the entrance survey in terms of gender, $\chi^2 = 0.198$, $df = 1$, $p = .656$, age, $t = 0.787$, $df = 162$, $p = .664$ or organizational tenure, $t = 0.435$, $df = 162$, $p = .433$, suggesting that attrition was not selective.

Study procedure

Data collection started with an online entrance survey in which we collected demographic data. In the following week (Monday to Friday), participants received

[1] *Demographic data were available from 146 persons only.*

invitations to complete two short surveys per day. The first daily survey had to be completed during the morning and assessed positive work reflection during the previous evening, perceived work meaningfulness in the morning, psychological availability in the morning, and co-worker social support in the morning. The second daily survey had to be completed in the afternoon and assessed co-worker social support in the afternoon and work engagement. Office workers who had access to the Internet during work hours received an email link to the morning survey at 10 a.m. and an email link to the afternoon survey at 3 p.m. Surveys were accessible online until noon and 5 p.m., respectively. Employees without access to the Internet during work hours (mainly employees working outdoors) received paper versions of the surveys. To ensure that these paper surveys were actually completed in the morning and in the afternoon of the respective days, project members distributed paper copies of the surveys every morning and every afternoon at the worksites and collected the completed copies 30 to 60 min later. Both in the online and the paper version, participants entered a personal code that helped match the surveys completed at the various measurement points. A total of 177 employees provided day-level data on a total of 712 days. We excluded the data from 25 employees who provided day-level data on one day only because these employees had no within-person variance in their data, resulting in a sample size of 152 employees from whom we received day-level data on a total of 687 days.

Measures

Unless otherwise reported, participants responded to all items on a 5-point scale ranging from 1 = 'strongly disagree' to 5 = 'strongly agree'.

Positive work reflection

Following the measurement protocols of earlier studies on evening experiences (Chawla, MacGowan, Gabriel, & Podsakoff, 2020; Lanaj, Johnson, & Barnes, 2014), we assessed positive work reflection during the previous evening in the morning survey. We used three items from Fritz and Sonnentag (2005), adjusted for day-level assessment (Meier et al., 2016; sample item: 'Yesterday after work, I noticed what is positive about my work'.). Cronbach's alpha ranged from .90 to .96 for the five days of data collection (within-person omega = .88, between-person omega = .99; Geldhof, Preacher, & Zyphur, 2014).

Perceived work meaningfulness

We assessed perceived work meaningfulness in the morning with three items from Spreitzer (1995), adjusted to day-level assessment (sample item: 'Today, I feel that my work activities are personally meaningful to me'.). Cronbach's alpha ranged from .92 to .94 for the five days of data collection (within-person omega = .80, between-person omega = .98).

Psychological availability

In line with the approach of May et al. (2004), we assessed psychological availability as the confidence to be available for dealing with work demands. Specifically, we used one item from the measure developed by Chen, Gully, and Eden (2001): 'Today after the first two

hours after starting work, I felt that when I am facing difficult tasks at work today, I am certain that I will accomplish them'.

Co-worker social support

We assessed co-worker social support with six items (Frese, 1999; Niessen, Sonnentag, & Sach, 2012), with three items referring to support during the morning (assessed in the morning survey) and three items referring to support during the afternoon (assessed in the afternoon survey). A sample item: 'This morning, how much were your colleagues willing to listen to your work-related problems?' The response scale ranged from 1 = 'never' to 5 = 'always'. Cronbach's alpha ranged from .88 to .94 for the five days of data collection (within-person omega = .73; between-person omega = .97).

Work engagement

In line with earlier day-level studies (Ouweneel, Le Blanc, Schaufeli, & van Wijhe, 2012; Xanthopoulou et al., 2009), we measured work engagement with six items from the Utrecht Work Engagement Scale (Schaufeli, Salanova, González-Romá, & Bakker, 2002), capturing vigour, dedication, and absorption. In the afternoon survey, we instructed participants to think about how they 'felt and behaved in the past few hours', so that the responses would reflect work engagement during the afternoon (sample item: 'I felt strong and vigorous while working'.). Cronbach's alpha ranged from .89 to .92 for the five days of data collection (within-person omega = .82; between-person omega = .96).

Construct validity

To examine the construct validity of our measures, we conducted multilevel confirmatory factor analysis with latent factors at the between-person and within-person level. Specifically, we modelled a six-factor model with all items loading on the respective factors (positive work reflection, perceived work meaningfulness, morning co-worker support, afternoon co-worker support, and work engagement) at both levels, with availability modelled as a 1-item factor at both levels, and with allowing correlations between the co-worker support items assessed in the morning and the respective co-worker support items assessed in the afternoon. As shown in Table 1, this model had a good model fit, $\chi^2 = 525.139$, $df = 270$, $p < .001$, comparative fit index (CFI) = .947, Tucker-Lewis index (TLI) = .933, root mean square error of approximation (RMSEA) = .038, and fit the data better than alternative models.

Data structure and data analysis

Our final multilevel data set comprised 687 day-level cases nested in 152 persons. Each of the 687 day-level cases included the assessment of positive work reflection in the evening of day d-1 (assessed in the morning of day d), work meaningfulness in the morning of day d, availability in the morning of day d, co-worker support in the morning and afternoon of day d, work engagement in the afternoon of on day d, and positive work reflection in the evening of day d (assessed in the morning of day $d + 1$). To make full use of the day-level data (Newman, 2014), we included all days in the analysis on which data from at least one occasion (morning of day d, afternoon of day d, and morning of day $d + 1$) was available.

Table 1. Results of multilevel confirmatory factor analysis

	χ^2	*df*	SCF	CFI	TLI	RMSEA	S-B χ^2	*df*	*p*
Morning survey									
Model 1: Six-factor model	525.139	270	1.071	.947	.933	.038			
Model 2: Three-factor model	1,860.580	294	1.144	.677	.624	.090	796.886	24	.001
Model 3: Two-factor model	2,815.312	298	1.131	.481	.404	.114	1,533.539	28	.001
Model 4: One-factor model	3,918.937	302	1.123	.254	.155	.135	2,374.941	32	.001

Note. Model 1: Six-factor model with all items loading on the respective factors (positive work reflection, perceived work meaningfulness, morning co-worker support, afternoon co-worker support, and work engagement) at both levels, with availability modelled as a 1-item factor at both levels, and with allowing correlations between the co-worker support items assessed in the morning and the respective co-worker support items assessed in the afternoon. Model 2: Three-factor model at both levels with all mediators (perceived work meaningfulness, psychological availability, morning co-worker support, and afternoon co-worker support) loading on one common factor at the within-person level and one common factor at the between-person level. Model 3: Two-factor model at both levels with all variables assessed in the morning loading on one factor at both levels and all variables assessed in the afternoon loading on a second factor at both levels. Model 4: One-factor model at both levels with all variables loading on one within-person and one between-person factor.
CFI = comparative fit index; RMSEA = root mean square error of approximation; S-B χ^2 = Satorra-Bentler χ^2 referring to the comparison with the 6-factor model; SCF = Scale Correction Factor; TLI = Tucker-Lewis Index.

We tested our hypotheses with one overall multilevel path model in which we specified paths at the between-person and the within-person level (Preacher, Zyphur, & Zhang, 2010) with Mplus 7.4, using manifest scores. Because between-person relationships are specified in the model, the within-person part of the models is based on scores that are implicitly centred at the person mean (Preacher et al., 2010, p. 210). We modelled all within-person relationships as fixed and used the MLF[2] estimator. We allowed correlations between the three mediators—perceived work meaningfulness, psychological availability, and co-worker support—at the between-person and the within-person level. As discussed by Beal and Weiss (2003) and Gabriel et al. (2019), we controlled for linear and cyclical trends in our data by including weekday (i.e. day of data collection) as well as its sine and cosine functions as additional within-person predictor variables[3].

To gain insight into the variance components of our study variables at the within-person and between-person level, we examined intraclass correlations (ICCs). ICCs ranged between .48 and .78 as indicated in Table 2, demonstrating that between 22% and 52% of the total variance of our study variables was at the within-person level.

Results

Test of hypotheses

Tables 3 and 4 show the unstandardized coefficients at both levels of analysis. Because our hypotheses refer to the day level, the within-person estimates are most relevant

[2] *We used the MLF estimator because when using the MLR estimator, the Mplus output included a warning pointing to potential problems. Results from hypotheses tests remained the same when using the MLR estimator instead (Tables available from the first author upon request). When using the MLR estimator, weekday and its sine and cosine functions became significant negative predictors of work meaningfulness, pointing to a complex temporal pattern of work meaningfulness over the course of the week.*
[3] *Not including weekday, sine, and cosine did not change the results of hypotheses testing.*

Table 2. Means, standard deviations, intraclass coefficients, and zero-order correlations

	M_{person}	SD_{person}	M_{day}	SD_{day}	ICC	1	2	3	4	5	6
1 Positive work reflection (Previous evening)	3.38	0.62	3.37	0.80	.54		.19**	.15**	.16**	.28**	−.09*
2 Perceived work meaningfulness	3.61	0.75	3.61	0.80	.78	.65**		.24**	.17**	.26**	.04
3 Psychological availability	3.72	0.57	3.73	0.73	.48	.59**	.43**		.20**	.13**	.04
4 Co-worker support	4.08	0.76	4.07	0.86	.72	.48**	.43**	.53**		.23**	−.01
5 Work engagement	3.41	0.60	3.41	0.69	.67	.77**	.82**	.70**	.49**		.26**
6 Positive work reflection	3.40	0.66	3.39	0.82	.56	1.00**	.68**	.62**	.49**	.79**	

Note. Means and standard deviations at the between-person level are displayed in columns 1 and 2; means and standard deviations at the within-person level are displayed in columns 3 and 4; M_{day} refers to the means before (implicit) person-mean centring. Correlations below the diagonal are between-person correlations ($N = 152$); correlations above the diagonal are within-person correlations (≤687 days). All correlations were computed in Mplus, taking the nested data structure into account. ICC = Percentage of variance between persons (ICC = variance between persons/[variance between persons + variance within persons]).
*$p < .05$; **$p < .01$.

here. Positive work reflection during the previous evening was positively related to perceived work meaningfulness in the morning, psychological availability in the morning, and co-worker support during the workday (Table 3), providing support for Hypotheses 1a, 1b, and 1c. Perceived work meaningfulness and co-worker support, in turn, were positively related to work engagement, but psychological availability was not (Table 4). Thus, the data are in line with Hypotheses 2a and 2c, but not with Hypothesis 2b. Interestingly, not only perceived work meaningfulness and co-worker support, but also positive work reflection during the previous evening was positively related to work engagement in the afternoon. Neither weekday nor the sine or cosine functions were significant predictors of work meaningfulness, availability, co-worker support or work engagement.

To examine the indirect effects stated in Hypotheses 3a, 3b, and 3c, we followed the approach of Preacher et al. (2010) and used Monte Carlo simulations with 20,000 iterations. Table 5 shows all within-person indirect effects. The indirect effects from positive work reflection in the previous evening to work engagement in the afternoon via perceived work meaningfulness in the morning, point estimate = 0.026, 95% CI [0.0033, 0.0545] and via co-worker support during the day, point estimate = 0.018, 95% CI [0.0007, 0.0460], were significant. Because psychological availability was not related to work engagement, the indirect effect from positive work reflection to work engagement via psychological availability was not significant, point estimate = 0.003, 95% CI [−0.0101, 0.0192]. These findings provide support for Hypotheses 3a and 3c, but not for Hypothesis 3b.

As stated in Hypothesis 4, work engagement in the afternoon was positively related to positive work reflection during the evening (Table 4). Neither weekday nor the sine or cosine functions were significant predictors of positive work reflection. The indirect effects from perceived work meaningfulness in the morning, point estimate = 0.081, 95% CI [0.0080, 0.1795] and from co-worker support during the day, point estimate = 0.058, 95% CI [0.0066, 0.1224], to positive work reflection in the evening via work engagement in the afternoon were significant. However, the indirect effect from psychological availability in the morning to positive work reflection during the evening via work engagement in the afternoon was not significant, point estimate = 0.008, 95% CI [−0.0328, 0.0595]. Thus, the indirect effects proposed in Hypotheses 5a and 5c were supported, but the indirect effect proposed in Hypothesis 5b was not.

Supplementary analysis

To address the question of whether positive work reflection may exert its potential influence beyond next-afternoon work engagement, we tested the indirect effect from positive work reflection to next-evening positive work reflection via work engagement and the serial indirect effect from positive work reflection to next-evening positive work reflection via the mediators and work engagement in the afternoon. The serial indirect effect via co-worker support and work engagement was significant, point estimate = 0.008, 95% CI [0.0004, 0.0661]. The serial indirect effect from positive work reflection on next-evening positive work reflection via work meaningfulness and work engagement missed the 5% significance level, point estimate = 0.011, 95% CI [−0.0003, 0.0971], but was significant at the 10% significance level, 90% CI [0.0028, 0.0840], which Preacher et al. (2010, p. 217) considered suitable for testing indirect effects in multilevel models. Moreover, the indirect effect from positive work reflection to next-evening positive work reflection via work engagement only, point estimate = 0.067, 95% CI [0.0234, 0.1163] and the sum of all indirect effects, point estimate = 0.087, 95% CI [0.0375, 0.1359], were

Table 3. Unstandardized coefficients from multilevel path analysis

	Estimate	*SE*	*z*	Estimate	*SE*	*z*	Estimate	*SE*	*z*
	Predicting perceived work meaningfulness			Predicting psychological availability			Predicting co-worker support		
Between level									
Intercept	1.338	0.708	1.890	2.205	0.553	3.989***	2.073	0.801	2.586*
Positive work reflection (previous evening)	0.783	0.201	3.899***	0.508	0.142	3.570***	0.590	0.218	2.708**
Residual variance	0.297	0.075	3.939***	0.166	0.054	3.079**	0.404	0.085	4.761***
Within level									
Weekday	−0.126	0.085	−1.495	−0.057	0.099	−0.576	−0.007	0.110	−0.059
Weekday (Sine)	−0.183	0.129	−1.418	−0.112	0.159	−0.705	0.029	0.180	0.162
Weekday (Cosine)	−0.098	0.087	−1.123	0.021	0.091	0.225	−0.084	0.101	−0.828
Positive work reflection (previous evening)	0.136	0.038	3.593***	0.151	0.053	2.852**	0.130	0.052	2.513*
Residual variance	0.137	0.011	12.339***	0.268	0.022	12.068***	0.197	0.014	14.342***

Note. $N = 152$ persons with a total of 687 days. Estimates are unstandardized, resulting from an overall analysis including the prediction of perceived work meaningfulness, psychological availability, co-worker support, work engagement, and positive work reflection in one model.
*$p < .05$; **$p < .01$; ***$p < .001$.

Table 4. Unstandardized coefficients from multilevel path analysis

	Predicting work engagement			Predicting positive work reflection		
Between level						
Intercept	−0.511	0.500	−1.021	−0.207	1.792	−0.115
Positive work reflection (Previous evening)	0.228	0.196	1.161	0.978	0.499	1.961*
Perceived work meaningfulness	0.431	0.123	3.497***	0.014	0.573	0.025
Psychological availability	0.404	0.159	2.546*	0.041	0.727	0.056
Co-worker support	−0.032	0.079	−0.401	0.001	0.292	0.003
Work engagement	–	–	–	0.027	1.142	0.023
Residual variance	0.051	0.022	2.294*	0.000	0.030	0.016
Within level						
Weekday	0.017	0.087	0.193	−0.010	0.323	−0.032
Weekday (Sine)	0.045	0.136	0.331	0.003	0.285	0.012
Weekday (Cosine)	0.007	0.083	0.080	−0.073	0.388	−0.189
Positive work reflection (Previous evening)	0.160	0.048	3.360**	−0.177	0.086	−2.063*
Perceived work meaningfulness	0.195	0.087	2.235*	0.000	0.107	0.000
Psychological availability	0.020	0.052	0.379	0.039	0.071	0.550
Co-worker support	0.138	0.061	2.254*	−0.079	0.123	−0.645
Work engagement	–	–	–	0.418	0.122	3.431**
Residual variance	0.139	0.010	13.469***	0.255	0.038	6.627***

Note. $N = 152$ persons with a total of 687 days. Estimates are unstandardized, resulting from an overall analysis including the prediction of perceived work meaningfulness, psychological availability, co-worker support, work engagement, and positive work reflection in one model.
*$p < .05$; **$p < .01$; ***$p < .001$.

significant. These indirect effects suggest that positive work reflection is associated with subsequent evening positive work reflection via experienced work meaningfulness and co-worker support, and particularly via work engagement. The direct relationship between positive work reflection and next-evening positive work reflection, however, was negative (Table 4), rendering the total effect from positive work reflection to next-evening positive work reflection (as well as the difference between the magnitude of the direct effect and the sum of all indirect effects) non-significant, unstandardized estimate = -0.090, $SE = 0.082$, $t = -1.102$, $p = .270$.

One might argue it is not primarily the process of positively reflecting about work that increases work meaningfulness, psychological availability, and co-worker support, but that positive work reflection is a by-product of job resources that lead to work meaningfulness, psychological availability, and co-worker support, resulting in a spurious association between positive work reflection on the one hand and work meaningfulness, psychological availability, and co-worker support on the other hand. To rule out this interpretation, we tested if positive work reflection remains a significant predictor of work meaningfulness, psychological availability, and co-worker support when including supervisor social support, an important job resource (Beattie & Griffin, 2014; Pluut et al., 2018), as additional predictor variable. We assessed day-specific supervisor support with two items (e.g. 'Today so far, how often did you feel that your immediate supervisor cares

Table 5. Within-person indirect effects

	Point estimate	95% confidence interval
Positive work reflection (day *d*−1) → Perceived work meaningfulness → Work engagement	0.026	[0.0033, 0.0545]
Positive work reflection (day *d*−1) → Psychological availability → Work engagement	0.003	[−0.0146, 0.0192]
Positive work reflection (day *d*−1) → Co-worker support → Work engagement	0.018	[0.0007, 0.0460]
Perceived work meaningfulness → Work engagement → Positive work reflection (day *d*)	0.081	[0.0080, 0.1795]
Psychological availability → Work engagement → Positive work reflection (day *d*)	0.008	[−0.0328, 0.0595]
Co-worker support → Work engagement → Positive work reflection (day *d*)	0.058	[0.0066, 0.1224]
Positive work reflection (day *d*−1) → Work engagement → Positive work reflection (day *d*)	0.067	[0.0234, 0.1163]
Positive work reflection (day *d*−1) → Perceived work meaningfulness → Work engagement → Positive work reflection (day *d*)	0.011	[−0.0003, 0.0971]
Positive work reflection (day *d*−1) → Psychological availability → Work engagement → Positive work reflection (day *d*)	0.001	[−0.0135, 0.0264]
Positive work reflection (day *d*−1) → Co-worker support → Work engagement → Positive work reflection (day *d*)	0.008	[0.0004, 0.0661]

Note. Indirect effects were computed using the Monte Carlo method (Preacher & Selig, 2010).

about your opinions?', response format ranging from 1 = 'never' to 5 = 'always') from the measure of Rhoades, Eisenberger, and Armeli (2001), adjusted for day-specific assessment (Cronbach's alpha ranged from .92 to .96; within-person omega = .78, between-person omega = .98).

We reorganized our data set for this supplementary analysis in order to take into account that according to this interpretation evening positive work reflection happens *after* having experienced supervisor support. Specifically, at the day level, we matched the afternoon assessment of supervisor support with the next morning assessment of positive work reflection referring to the previous evening, and of work meaningfulness, psychological availability, and co-worker support experienced in the morning, and with the next-day afternoon assessment of co-worker support experienced in the afternoon, resulting in 631 day-level cases. We specified a two-level model in which we used supervisor support as predictor of positive work reflection, work meaningfulness, psychological availability, and co-worker support, and positive work reflection as predictor of work meaningfulness, psychological availability, and co-worker support. As in the main analysis, we included weekday, sine, and cosine as additional predictors and allowed correlations between work meaningfulness, availability, and co-worker support. Positive work reflection remained a significant predictor of work meaningfulness, unstandardized estimate = 0.186, SE = 0.035, t = 5.356, p < .001, psychological availability, unstandardized estimate = 0.174, SE = 0.052, t = 3.329, p = .001, and co-worker support, unstandardized estimate = 0.186, SE = 0.044, t = 4.214, p < .001, even

when including supervisor support as an additional predictor variable in the model. Supervisor support was not a significant predictor of work meaningfulness, unstandardized estimate = 0.011, SE = 0.087, t = 0.129, p = .898, psychological availability, unstandardized estimate = 0.087, SE = 0.106, t = 0.816, p = .415 or co-worker support, unstandardized estimate = 0.035, SE = 0.090, t = 0.395, p = .693, suggesting that it is indeed not this underlying job resource of supervisor support, but positive work reflection that is essential for experiencing work meaningfulness, psychological availability, and co-worker support.

Discussion

Our study shows that the way people think about their work during the evening has implications for job-related states and experiences during the next day at work. Focusing on the positive aspects of one's work during evening hours is related to a positive outlook on one's work in the next morning. More specifically, after having reflected more positively than usual, work is perceived to be more meaningful, and psychological availability and co-worker support are higher. Perceived work meaningfulness in the morning and co-worker support during the day, in turn, are related to increased work engagement in the afternoon. High work engagement is related to increased positive work reflection during the subsequent evening.

Theoretical contribution

Our findings highlight that job-related thoughts during evening hours are important for employees' perception of on-the-job experiences. Positive thoughts fuel a positive perspective on one's work at the day level. Thus, it seems that not only events and cognitions that happen during the workday are relevant for work engagement (Wang, Zhu, Dormann, Song, & Bakker, 2019), but also that a prior evening's thoughts play a crucial role in work engagement. Ott, Haun, and Binnewies (2019) reported that in situations with low organizational support, negative work reflection during the evening predicted low work engagement during the next day via low self-efficacy. Our findings on positive work reflection can be seen as the more positive counterpart of the results reported by Ott et al. Thinking positively about work has the potential to elicit high work engagement that becomes important for in-role performance (Parke et al., 2018), organizational citizenship behaviour (Bormann, 2017), and proactive behaviour (Sonnentag, 2003). Importantly, our findings go beyond earlier research that has shown that positive as well as negative job-related thoughts during the evening are associated with next morning affective states (Meier et al., 2016; Wang et al., 2013). We found that, via its association with perceived work meaningfulness and enacted co-worker support, positive work reflection is so powerful that it yields greater work engagement even during the following afternoon.

Our findings on the benefits of positive work reflection can be viewed in the light of conservation of resources (COR) theory that proposes that people want to avoid resource loss and strive to gain new resources (Hobfoll, 1989). It is common to experience a loss of resources during the day at work, as becomes evident in increased levels of fatigue at the end of the workday. To recover from the loss of resources, to avoid their further loss, and to gain new ones, additional resources need to be invested, for instance, time and positive thoughts, as happens during positive work reflection. Positive work reflection then helps

to create new resources such as psychological availability and co-worker support. When following the COR interpretation of our findings, possibly a broader set of resources may to be considered than the three that are the focus of Kahn's model and were included in our study.

In concert with research on work events and work experiences as predictors of work reflection (Demsky, Fritz, Hammer, & Black, 2019; Frone, 2015), our findings demonstrate that work experiences and work-related cognitions during the evening are reciprocally interconnected. Work events and experiences trigger work-related cognitions during evening time, which then become associated with work experiences during the next day.

Moreover, our study adds a more nuanced perspective on recovery processes during evening hours. Whereas many studies have shown that overall psychological detachment from work predicts favourable affective states at the day level (Clinton, Conway, & Sturges, 2017; van Hooff, Benthem de Grave, & Geurts, 2018) and better well-being over longer periods of time (Sianoja, Kinnunen, Mäkikangas, & Tolvanen, 2018), our study demonstrates that a caveat is needed. Positive work-related thoughts during the evening help workers stay engaged during the following workday. Thus, the overall beneficial effect of psychological detachment appears to be driven by the absence of negative thoughts, but not by the absence of positive thoughts (Sonnentag & Niessen, 2020). Thus, full detachment from work during evening hours may not always be the optimal way of relating to one's work during non-work time. Possibly, episodes of positive work reflection need to outweigh episodes of negative work reflection (Casper, Tremmel, & Sonnentag, 2018). Future research examining positive work reflection may want to control for overall psychological detachment from work and for negative work reflection in order to test the unique benefit of positive work reflection.

Using data from a sample of UK government agency employees, Flaxman et al. (2018) reported that positive work reflection during the evening was unrelated to next-day work engagement. Perhaps, an unfavourable work climate or negative events have disrupted the positive impact of positive work reflection on work engagement in that study. In addition, differences in measures of positive work reflection might explain the inconsistency with our findings. Whereas we used a rather broad and affectively toned measure of positive work reflection (e.g. 'I realized what I like about my job'), Flaxman et al.'s measure focused on performance-related aspects (e.g. 'I thought positively about my work performance', 'I reflected on things that have gone well for me in my job', p. 61). Possibly, thinking about job performance is less effective in stimulating work engagement than is a more affectively toned reflection about one's work (Young, Glerum, Wang, & Joseph, 2018).

Our study findings did not demonstrate support for the hypothesized relationship between psychological availability in the morning and work engagement in the afternoon. This finding is in contrast to earlier research that has shown that psychological availability is related to work engagement during the day (Fletcher et al., 2018). In contrast to this earlier research, in which psychological availability and work engagement were assessed concurrently, we used time-separated assessments of availability (measured in the morning) and work engagement (measured in the afternoon). It might be that psychological availability in the morning is rather short-lived and not powerful enough to foster engagement later during the day. Psychological availability might translate into immediate engagement but might not be sustained over the course of an entire workday.

Our additional analysis revealed that positive work reflection has an indirect positive relationship with subsequent positive work reflection via perceived work meaningfulness, co-worker support, and work engagement, hinting at a potential gain cycle (Hobfoll,

Johnson, Ennis, & Jackson, 2003) with positive work reflection stimulating perceived meaningfulness, co-worker support, and engagement, which consequently increases positive work reflection. However, at the same time, we found a negative direct relationship between positive work reflection and subsequent positive work reflection, cancelling out the indirect positive relationship. The direct negative relationship might be explained by a contrast effect. For instance, one evening employees may reflect quite positively about their work, which would raise the comparison level (Carver & Scheier, 1982) against which the next workday is evaluated. On such days with a very high comparison level, positive work experiences and events might be devalued, and subsequent positive work reflection will be reported as relatively low.

Limitations and implications for future research

Our study has some limitations that need to be considered. First, we assessed our data with self-report measures that may raise concerns about common method bias. However, because we specified between-person and within-person paths in our model, within-person relationships cannot be attributed to between-person differences that might have contributed to common method bias such as implicit theories, social desirability or trait negative affectivity (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In addition, we tried to reduce the likelihood of common method bias at the day level by temporarily separating the measurement of most of our variables. Future studies may want to assess some of the study variables by using ratings from other sources (e.g. co-workers; Venz & Sonnentag, 2015). However, this approach has some limitations in itself because most of our study constructs (e.g. positive work reflection, perceived work meaningfulness) refer to internal processes happening within a person.

Second, our correlational study design does not allow for conclusions about causality. Indeed, a circular process appears to be in effect with positive work reflection predicting work engagement via perceived work meaningfulness and co-worker support, and work engagement predicting subsequent positive work reflection. To bring more light to the underlying causal processes, experimental designs are needed. For instance, researchers might want to stimulate positive work reflection during the evening (Meier et al., 2016) and then assess subsequent perceived work meaningfulness, psychological availability, and enacted co-worker support. Similarly, perceived work meaningfulness, psychological availability, and co-worker support could be manipulated in experimental studies. Admittedly, implementing experimental designs within daily survey studies is not easy because the specific instruction should vary from day to day (Lanaj et al., 2019), but such an approach may be worthwhile because it can deepen the understanding of the benefits of positive work reflection. Another—although less effective—approach could be to control for state affect at each measurement point in order to rule out the possibility that momentary positive affect has driven the assessment of positive work reflection and the assessment of the mediators, contributing to a spurious association between positive work reflection and the mediators.

Third, in our study, we used an established measure for assessing positive work reflection (Fritz & Sonnentag, 2005). This measure, however, does not differentiate between retrospective (i.e. thoughts addressing past workday) versus future-oriented (i.e. thoughts addressing the next workday) thoughts. It would be interesting to know if primarily future-oriented or retrospective thoughts have driven our research findings. Developing and validating a more differentiated measure of work reflection will open up

new lines of research that could capture the effects of various temporal perspectives on work reflection.

Forth, one could argue that not only work meaningfulness, psychological availability, and co-worker support, but also other job or personal resources foster work engagement and may function as the linking mechanism between positive work reflection and work engagement. For instance, day-specific resources that could be generated by approach-oriented job-crafting efforts (Zhang & Parker, 2019) might play a role here. It is conceivable that positive work reflection increases feedback-seeking and creates learning opportunities that in turn translate into work engagement. Future studies might want to explore such alternative pathways between positive work reflection and work engagement.

Finally, our study did not assess the degree to which participants negatively reflected about their work. Future research should measure both positive and negative work reflection. It would be important to know if positive work reflection has the power to counteract the onset of negative work reflection after negative events have occurred (Frone, 2015) or to buffer detrimental consequences of negative work reflection (Ott et al., 2019). For instance, a study using latent-profile analysis showed that employees who combined negative work reflection with positive work reflection had higher levels of vigour and lower levels of exhaustion than employees whose reflection about work was exclusively negative (Casper et al., 2018). It would be interesting to see if similar patterns occur at the day level as well. Moreover, future research might examine whether and how positive work reflection combines with work-related conversations (Tremmel et al., 2019) or capitalization (Ilies et al., 2011) in predicting next-day work-related outcomes. For instance, positive work reflection might be an important precursor of positively talking about work—or it might follow from it.

Future research may want to examine the links between positive work reflection and its mediators in greater depth. It will be particularly interesting to test if the explanations we proposed for the relationship between positive work reflection and co-worker support (i.e., positive perception of co-workers, activation of work-related goals, request for support, creating positive experiences for co-workers) correspond to the actual mechanisms that occur after evening positive work reflection. So far, these explanations remain untested.

In addition, it will be important to explore if positive work reflection is not only related to next-day processes that are positive in itself (i.e. perceived work meaningfulness, psychological availability, co-worker support, and work engagement), but if positive work reflection helps workers deal with more negative and stressful events. For instance, stressors encountered at work the next day might be appraised by workers in a more beneficial way (e.g. as a challenge; Crane & Searle, 2016) after they have positively reflected about work.

Practical implications

Although causal processes still await an empirical test in future experimental studies, our research has implications for employees' everyday life at the border between work and non-work. Our findings demonstrate that employees may benefit from positively thinking about work on a daily basis. Employees should focus on the positive aspects of their work, such as inspiring encounters, successes, and pleasurable experiences (Bono et al., 2013). For instance, they may want to remember and mentally re-live positive work experiences during a quiet moment at home. They may also want to develop the habit of deliberately

thinking about specific positive events at work, for instance, while commuting home. In case they did not enjoy any positive work experience during the specific day, they may want to reappraise a negative or neutral experience in a more positive way (e.g., as a learning experience), or they may want to reflect on what they like about their work in general. Although we did not directly test its impact, journaling about positive experiences at work may deepen positive work reflection over time, along with its benefits on the next workday. Importantly, supervisors may encourage positive work reflection, for instance by emphasizing past workday's positive events when they talk to their team towards the end of the workday.

Moreover, because perceived work meaningfulness predicted work engagement later during the day, employees may want to focus on the meaning of their work tasks and activities when arriving at work in the morning. For instance, during the reattachment process, they might not only think about the duties that are awaiting them but explicitly connect to the underlying meaning of their tasks and activities (Sonnentag et al., 2020). In addition, organizations and leaders need to recognize and encourage high-quality co-worker social support so that employees are able and willing to provide social support on days when it is needed. For example, organizations may offer formal training to emphasize and showcase how individuals can benefit from supportive collegial relationships at work. Organizations should also establish formal recognition and reward system to reward and reinforce employees' efforts to help and support their co-workers (Halbesleben & Wheeler, 2015). In addition, leaders may facilitate and encourage high-quality co-worker interactions by setting a good example in demonstrating supportive behaviours to their team members, and by developing trust between co-workers so that employees are more motivated to provide support for their co-workers. Employees across the organization's hierarchy should be encouraged to maximize their engagement with each other by contributing their expertise as well as soliciting help from others (Gibbs, Gibson, Grushina, & Dunlop, 2021). Additionally, leaders should seek to reassure and minimize potential negative belief that accepting help from co-workers may indicate a lack of self-reliance and undermine their own performance (Thompson & Bolino, 2018).

Conclusion

While previous research has mainly examined the rather immediate affective benefits of positive work reflection, our study demonstrated that positively thinking about work during the evening extends into the next workday. Positive work reflection in the evening fuels the perception of meaningfulness and psychological availability the next morning as well as co-worker support throughout the day, with perceived work meaningfulness and co-worker support predicting afternoon work engagement. In turn, positive work reflection is more likely to occur after an employee has experienced a high level of work engagement. Thus, positive work reflection during after-work hours appears to be a vital ingredient that is helpful in keeping people engaged at work.

Conflicts of interest

All authors declare no conflict of interest.

Author contributions

Jie Cao (Writing – review & editing). Svetlana V. Grushina (Writing – review & editing) Sabine Sonnentag (Conceptualization; Formal analysis; Methodology; Writing – original draft) Amy Wei Tian (Conceptualization; Data curation; Project administration; Writing – review & editing).

Data availability statement

Participants did not provide consent to make data publicly available.

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