Negative work reflection, personal resources, and work engagement: the moderating role of perceived organizational support

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Anna R. Ott*, Verena C. Haun and Carmen Binnewies

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This day-level study examined the role of perceived organizational support (POS) in the context of employees’ negative work reflection during off-job time. We hypothesized that negative work reflection during off-job time should be indirectly related to reduced work engagement on the next workday through personal resources (i.e., vigour and self-efficacy) in the morning. In addition, we hypothesized that POS moderated the relationships between negative work reflection and personal resources and between personal resources and work engagement. In total, 100 employees completed one general survey and three daily surveys (in the morning, after work, and at bedtime) over five workdays. Results of multilevel path analyses showed that negative work reflection was neither directly associated with personal resources nor indirectly with work engagement via personal resources, although vigour and self-efficacy positively predicted increased work engagement. However, negative work reflection was negatively associated with self-efficacy when POS was low. POS did not predict work engagement, but moderated the relationships between personal resources and work engagement: Consistent with the resource substitution hypothesis, high levels of POS compensated for low levels of vigour and self-efficacy. Negative work reflection had a significant negative indirect effect on work engagement through self-efficacy only when POS was low.

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After a demanding workday, many employees have difficulties getting their work out of their minds and ruminate about their work during off-job time (Vaehle-Hinz, Bamberg, Dettmers, Friedrich, & Keller, 2014; Volmer, Binnewies, Sonnentag, & Niessen, 2012; Wang et al., 2013). Thinking about negative work-related issues during off-job time hinders employee recovery from work and thus impairs employee well-being, health and job performance (Fritz & Sonnentag, 2006; Querstret & Copley, 2012). Empirical research suggests that these detrimental effects of negative work reflection during the evening do not only occur on the same day but do persist until the next workday (Meier, Cho, & Dumani, 2016; Wang et al., 2013). As a consequence of incomplete recovery during the evening, employees’ energetic and cognitive resources may not be fully restored in the next morning and their subsequent engagement and performance at work are likely to be negatively affected (Ten Brummelhuis & Bakker, 2012).

As employees may not be able to avoid negative work-related thinking during off-job time when facing stressful times at work (e.g., Volmer et al., 2012), it is important to identify protective factors that buffer against the detrimental effects of negative work reflection. Given that negative work reflection and low personal resources (e.g., energy, self-efficacy) have consequences for employees’ long-term health and work outcomes (Fritz & Sonnentag, 2006; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007), organizations should be highly interested in finding ways to help employees protecting their personal resources and staying engaged at work. Such knowledge about protective organizational factors would be useful for devising organizational interventions to foster employee well-being and engagement.

Drawing on organizational support theory (Kurtessis et al., 2017), we propose perceived organizational support (POS) as job resource that (1) buffers the negative effects of negative work reflection on employees’ personal resources, (2) fosters work engagement and (3) alleviates detrimental effects on work engagement when employees’ personal resources are low (see Figure 1). POS refers to employees’ perception concerning the extent that their organization is supportive and cares about their well-being (Eisenberger, Huntington, Hutchison, & Sowa, 1986) and has been shown to be a powerful predictor of employee well-being and work-related outcomes (Kurtessis et al., 2017; Rhoades & Eisenberger, 2002).

We make three main contributions to the literature. First, we contribute to the literatures on recovery and negative work reflection by identifying boundary conditions of harmful effects of negative work reflection during off-job time. We also contribute to recovery theory by taking a closer look at the specific personal resources that are further depleted or restored the next day after an evening with high levels of negative work reflection. Specifically, we focus on vigour as
an energetic resource and self-efficacy as a cognitive-motivational resource to disentangle the psychological processes of negative work reflection. Investigating effects of negative work reflection on specific personal resources allows gaining a deeper understanding of employees’ recovery processes and develop tailored interventions.

Second, we contribute to research on employee work engagement and the job demands-resources (JD-R) theory (Bakker & Demerouti, 2017). JD-R theory suggests that both job resources and personal resources jointly predict work engagement (Bakker & Demerouti, 2017) and empirical research supports this proposition (Reis, Hoppe, & Schröder, 2013; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009a). In this study, we extend these predictions of the JD-R theory and investigate interactive effects of job resources (i.e., POS) and personal resources (i.e., vigour and self-efficacy) when predicting work engagement. While previous research examined reciprocal relationships between job and personal resources (Xanthopoulou et al., 2007, 2009a), little is known about potential interactive effects between these two kinds of resources (see Schmitt, Zacher, & De Lange, 2013 for an exception). Based on the resource substitution hypothesis (Hobfoll & Leiberman, 1987), we examine if POS as job resource can compensate for low levels of personal resources when predicting work engagement.

Third, we contribute to POS research (Kurtessis et al., 2017). While the majority of studies on POS focused on direct effects of accumulated POS on employee well-being and performance, we apply a day-level perspective to gain further understanding of how POS contributes to employees’ well-being and engagement on a daily basis. Specifically, we focus on the moderating role of POS in the daily within-person relationships between negative work reflection and personal resources on the one hand and between personal resources and work engagement on the other hand.

**Negative work reflection during off-job time and personal resources**

At work, employees have to expend effort to meet their job demands. As a result, their personal affective, physical, and/or cognitive resources are drained and need replenishment (Meijman & Mulder, 1998). After work, employees are usually no longer exposed to their job demands and thus have the opportunity to rest and restore their drained resources (Meijman & Mulder, 1998). This process of unwinding and resource replenishment is called recovery from work (Sonnentag & Fritz, 2007). Recovery processes during off-job time are essential for employee well-being and job-related outcomes such as work engagement or task performance (Koch, Hahn, & Binnewies, 2013).

However, recovery from work and associated resource replenishment may be impeded by certain off-job experiences such as negative work reflection. Negative work reflection refers to thinking about negative work-related topics and events, such as past work failures, workplace conflicts and upcoming work problems (Binnewies, Sonnentag, & Mojza, 2009; Fritz & Sonnentag, 2006). Negative work reflection during off-job time should deplete employees’ resources because job demands stay mentally present during leisure time causing prolonged activation ((Brosschot, Pieper, & Thayer, 2005; Fritz & Sonnentag, 2006). As a result, stress reactions cannot be reversed, employees’ resources are further depleted (Binnewies et al., 2009), and negative consequences for employees’ recovery, well-being, and work outcomes can be expected (Fritz & Sonnentag, 2006; Meier et al., 2016; Wang et al., 2013).

In our study, we hypothesize that on days when employees reflect negatively about work-related issues during the evening, they should experience low personal resources in the next morning. Personal resources are aspects of the self that refer to individuals’ sense of their ability to control and impact

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**Figure 1.** Conceptual model and research design. Please note that for clarity of presentation, the between-person paths of the variables assessed at the within-person level are not pictured.
upon their environment successfully such as individuals’ energies and positive self-evaluations (Hobfoll, 2002; Hobfoll, Johnson, Ennis, & Jackson, 2003). We focus on vigour and self-efficacy as important personal resources in this study representing changes in energy resources and cognitive-motivational resources due to (insufficient) recovery.

Vigour refers to a person’s feelings of vitality and aliveness (Ryan & Frederick, 1997) and reflects an individual’s general (i.e., context-free) energy levels (Demerouti, Bakker, Sonnentag, & Fullagar, 2012; Ten Brummelhuis & Bakker, 2012). As negative work reflection is theorized to cause prolonged stress-related affective and physiological activation, employees’ recovery processes should be impeded (Meier et al., 2016). As a result, employees’ energetic resources should be further depleted and not replenished (Brosschot, Gerin, & Thayer, 2006), resulting into low levels of vigour in the next morning. Research by Ten Brummelhuis and Bakker (2012) supports this idea as they found employees to experience low levels of vigour in the morning when they thought about their work (i.e., did not psychologically detach from work) during the previous evening.

Self-efficacy is a cognitive-motivational resource and comprises the momentary belief in one’s own capabilities to perform future tasks successfully (Bandura, 1997). Bandura (1997) described the experiences of mastery and performance accomplishments as two important sources of self-efficacy. While previous successes should raise self-efficacy, experienced failures should lower it. As negative work reflection includes thinking about one’s problems and failures at work, employees should be less convinced to meet their upcoming work challenges and more likely to expect future failures when they think negatively about their work. Thus, on days when employees think about negative work aspects during the evening, they should experience low self-efficacy in the next morning. Rumination research supports our proposition as Lyubomirsky, Kasri, and Zehm (2003) showed that rumination is associated with negative self-evaluations and feelings of helplessness.

Hypothesis 1: On the within-person level, negative work reflection during off-job time is negatively related to (a) vigour and (b) self-efficacy in the next morning.

Personal resources and work engagement

The way employees start their workdays frames the way they experience their work (Rothbard & Wilk, 2011). Therefore, the amount of personal resources (i.e., vigour and self-efficacy) employees are possessed with in the morning should influence how employees approach their work tasks (Sonnentag & Niessen, 2008). On days when vigour and self-efficacy are low in the morning due to negative work reflection during the previous evening, we expect employees to show less work engagement during the day at work.

Work engagement is a positive attitudinal work outcome, characterized by vigour, dedication, and absorption (Schaufeli, Bakker, & Salanova, 2006). Dedication is characterized by being strongly involved in one’s work and experiencing a sense of significance and enthusiasm. Absorption is the state of being fully concentrated and happily engrossed in one’s work. Vigour describes high levels of energy while working and the willingness to invest effort in one’s work. It is important to note that work engagement is both conceptually and empirically distinct from affective-energetic personal resources such as vigour or energetic arousal (Reis, Arndt, Lischetzke, & Hoppe, 2016). Conceptually, work engagement explicitly refers to high levels of energy directed towards one’s work whereas vigour as personal resource refers to an individual’s general energy level that is context-free (i.e., not necessarily work-related; cf. Casper, Sonnentag, & Tremmel, 2017; Ten Brummelhuis & Bakker, 2012). Empirically, research by Reis et al. (2016) showed that employees evaluated their energy directed at work (i.e., vigour as component of work engagement) differently from their general feelings of energy (i.e., vigour as affective-energetic resource).

The JD-R theory suggests that job resources as well as personal resources are important predictors of work engagement (Bakker & Demerouti, 2017). Job resources (e.g., POS) refer to those physical, psychological, social, or organizational aspects that help employees to achieve their work goals, reduce job demands and stimulate growth and development (Bakker & Demerouti, 2017). Employees’ personal resources (e.g., energies, positive self-evaluations) function in the same way as job resources to stimulate employees’ motivation at work (Xanthopoulou, Bakker, & Fischbach, 2013). Vigour and self-efficacy as personal resources are powerful motivators of daily behaviour at work as they determine the initial decision to perform a task, the amount of effort that is expended (Luthans & Youssef, 2007) and the persistence that emerges in the face of adversity (Xanthopoulou et al., 2013).

On days when employees experience low vigour and self-efficacy in the morning (due to negative work reflection), they have few energetic and cognitive-motivational resources available that can be allocated to work (Sonnentag & Niessen, 2008). On these days, employees should also be less likely to be able to fully concentrate on work tasks and have little energy available to become involved in their work. Consequently, work engagement should be impeded. In addition, on days when employees start work with low levels of resources due to previous negative work reflection, they feel that their resources are still threatened and must be protected (Hobfoll, 1989). As a consequence, employees may refrain from becoming highly engaged at work in order to protect their resources on days when their personal resources are low.

Previous research supports the relationship between personal resources and work engagement. For example, Xanthopoulou and colleagues (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009b) found daily self-efficacy and work engagement to be positively associated and Ten Brummelhuis and Bakker (Ten Brummelhuis & Bakker, 2012) found daily vigour to be positively associated with work engagement.

Hypothesis 2: On the within-person level, (a) vigour and (b) self-efficacy in the morning are positively related to subsequent work engagement.
**Perceived organizational support**

According to organizational support theory, employees form a generalized perception concerning the extent to which the organization values their contributions and cares about their well-being (Kurtessis et al., 2017). Hence, experiencing perceived organizational support (POS) refers to employees’ conviction that the organization is on their side (Eisenberger et al., 1986). POS mainly depends on employees’ accumulated experiences within the organization, for example, received supervisor support, experienced fairness and favourable job conditions (Kurtessis et al., 2017; Rhoades & Eisenberger, 2002). The more employees feel treated with respect, the more they feel that the organization cares about their well-being; the higher will be their perception of organizational support (Rhoades & Eisenberger, 2002). Previous research showed that POS is associated with favourable outcomes such as higher job satisfaction, feelings of competence, increased affective commitment, and reduced turnover (Kurtessis et al., 2017; Rhoades & Eisenberger, 2002). As POS is based on employees’ accumulated experience (Eisenberger et al., 1986), POS is relatively stable (e.g., Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002). Accordingly, consistent with previous research (e.g., Ford, Wang, Jin, & Eisenberger, 2018) we treat POS as a between-person variable in our study. We argue that the between-person variable POS buffers the within-person relationships between negative work reflection and personal resources (vigour and self-efficacy). Further, we expect POS both to have a positive main effect on employees’ work engagement on the one hand and to moderate the relationships between personal resources (vigour and self-efficacy) and work engagement on the other hand.

**The buffering effect of POS on the relationship between negative work reflection and personal resources**

According to transactional stress theory appraisal processes play an important role in the stress process (Lazarus & Folkman, 1984). If individuals perceive an event or situation as threatening (primary appraisal) and overtaxing their resources (secondary appraisal), a stress reaction will follow (Lazarus & Folkman, 1984). If employees ruminate and worry about negative aspects of their work during off-job time, they most likely appraise their work (or some aspects of their work) as threatening and overtaxing their resources; hence, the stress response is prolonged, further depleting their personal resources. We argue that POS should affect employees’ appraisal of their resources and coping options (i.e., their secondary appraisal) and thus should have the potential to alleviate the detrimental effects of negative work reflection (cf. Kurtessis et al., 2017).

POS implies that employees have positive expectations about the future, that is, that help will be available when needed (Eisenberger et al., 1986). Employees experiencing high levels of POS believe that they will be supported by their organization to cope with their work challenges (Wang et al., 2013). Thus, POS should meet employees’ need for emotional support during stressful times (Kurtessis et al., 2017). Further, if employees believe that the organization will not take advantage of their vulnerabilities as they attempt to deal with organizational stressors, employees will be more likely to seek and get support (Kurtessis et al., 2017). Hence, if employees perceive higher POS, they should be more confident about their ability to deal with negative aspects of their work they ruminate about. Consequently, negative work-related thoughts during off-job time should be less detrimental for their personal resources if POS is high.

Hypothesis 3: POS buffers the negative within-person relationships between negative work reflection during off-job time and (a) vigour and (b) self-efficacy in the morning.

**The compensating effect of POS on the relationship between low personal resources and work engagement**

Moreover, we argue that POS as job resource directly fosters employees’ work engagement and additionally has the power to compensate for low levels of personal resources in predicting employee work engagement. According to the JD-R theory (Bakker & Demerouti, 2017), job resources trigger a motivational process resulting in increased work engagement due to their intrinsic or extrinsic motivational potential. On the one hand, job resources may enhance employees’ intrinsic motivation towards work by fostering personal growth, learning and development and fulfilling basic human needs. On the other hand, job resources may enhance employees’ extrinsic motivation by increasing the likelihood of attaining important work goals (e.g., when instrumental support is offered). We propose that POS as job resource should enhance employees’ work engagement as it fosters both employees’ intrinsic and extrinsic motivation. First, POS fulfills employees’ socio-emotional needs (e.g., need for self-esteem) because employees perceive that the organization values their contributions and treats them with respect. Second, POS provides employees with the assurance that help will be provided when they need it. Third, POS conveys to employees that good performance will be highly rewarded.

Regarding empirical evidence, cross-sectional and longitudinal between-persons research showed that POS is positively associated with employees’ work engagement (Caesens, Marique, Hanin, & Stinglhamber, 2015; Kinnunen, Feldt, & Mäkikangas, 2008). In addition, Caesens, Stinglhamber, and Ohana (2016) showed that within persons, weekly fluctuations in employees’ POS were associated with fluctuations in their work engagement.

Hypothesis 4: On the between-person level, POS is positively associated with work engagement.

Moreover, based on the notion of compensatory resources (Hobfoll & Leiberman, 1987), we expect high levels of POS to compensate for low levels of personal resources in the morning in predicting work engagement such that employees with
high POS and low personal resources show similar levels of work engagement as employees with high personal resources. The resource substitution hypothesis suggests that “when a given resource is absent a second resource may substitute for it” (Hobfoll & Leiberman, 1987, p. 20). As both job and personal resources activate similar motivational processes by fostering employees’ intrinsic and extrinsic motivation, they should be able to compensate for each other.

We argue that when POS is low, personal resources and work engagement should be positively associated because on days when employees have high personal resources they should be better able to maintain a vigorous work style and to have resilience to stay absorbed in work tasks even when facing difficulties. However, on days when employees have little energy and doubt their capability to successfully perform their job tasks (i.e., have low self-efficacy) and thus are less motivated to engage at work to achieve their work goals, POS gives them assurance that support is available when they need it to attain their goals and that their efforts will be rewarded. Thus, employees should be motivated to invest energy into their work and stay absorbed in work tasks even when facing difficulties. Accordingly, when POS is high, the relationship between personal resources and work engagement should be attenuated as employees try to uphold their work engagement even when their personal resources are low. Consistent with the resource substitution hypothesis (Hobfoll & Leiberman, 1987), we do not expect high levels of POS and personal resources to lead to an additional increase in work engagement, but rather that the lack of both motivational resources results in low levels of work engagement. A study by Schmitt et al. (2013) provides empirical support for the idea that job and personal resources may compensate for each other as they found focus on opportunities as personal resources to compensate for low levels of job control in predicting work engagement.

Hypothesis 5: POS moderates the positive within-person relationships between (a) vigour and (b) self-efficacy in the morning and work engagement. When POS is high, the relationships are weaker.

Indirect and conditional indirect effects of negative work reflection on work engagement

Combining our previous hypotheses, we propose that negative work reflection has negative indirect effects on work engagement through vigour and self-efficacy. Further, we propose that these effects are moderated by employees’ POS. Past research showed that on days when employees psychologically detach from work (i.e., do not negatively reflect about their work), their work engagement is higher on the following day (Sonnentag & Kühnel, 2016; Ten Brummelhuis & Bakker, 2012). Similarly, we propose that employees’ daily negative work reflection is indirectly related to their daily work engagement on the following day because employees have fewer personal resources (i.e., vigour and self-efficacy) in the morning when they negatively reflected about their work during the previous evening.

With reference to Hypotheses 3 and 5, we argue that these indirect effects are moderated by employees’ POS. The moderation takes place both at the first and at the second stage of the mediation chain: (1) POS moderates the links between negative work reflection and vigour and self-efficacy and (2) between vigour and self-efficacy and work engagement on the other hand. This corresponds to a first and second stage moderated mediation (Edwards & Lambert, 2007).

Hypothesis 6: On the within-person level, negative work reflection has a negative indirect effect on work engagement via (a) vigour and (b) self-efficacy.

Hypothesis 7: On the within-person level, negative work reflection has a negative conditional indirect effect on work engagement via (a) vigour and (b) self-efficacy that is moderated by employees’ POS in such a way that the effect is stronger when POS is low.

Method

Overview

This daily diary study was part of a larger research project on work stress and recovery in Germany. Participants filled in one general survey and completed three daily surveys over a period of five consecutive workdays (in the morning, after work, and at bedtime). We linked daily survey data assessed at bedtime (bedtime survey) to daily survey data assessed the next morning before going to work (morning survey) and at the end of the work day (after work survey). All surveys were paper-and-pencil format.

Sample and procedure

We conducted our study in non-profit organizations that offer assistance and counselling to people in difficult life situations (e.g., marriage counselling, educational counselling, debt counselling). To recruit participants, we contacted the organizations’ managers and informed them about our study. Participation criteria were that employees worked at least half-time and on consecutive workdays (since we focused on the relationships between negative work reflection during off-job time and its outcomes on the next day).

In two organizations, managers expressed their organization’s consent to participate and distributed survey packages (including information leaflets, general and daily surveys as well as postpaid return envelopes) among all of their employees. In 23 organizations, managers distributed an information leaflet about our study on “health and recovery” among their employees which included a web-link to sign up for participation. Employees who signed up for study participation were sent survey packages. In total, 252 survey packages were distributed, from which 110 filled-in surveys were returned to us (response rate = 43.65%). Data from ten employees who did not provide sufficient information (e.g., the general survey was not completed; the diary was filled in on only
one day) for analyses were excluded. We checked if employees complied with our instructions when to fill in daily surveys. Participants reported the times when they completed each survey. On average, morning surveys were filled in at 7:21 am, after work surveys were filled in at 5:38 pm, and bedtime surveys were filled in at 10:50 pm.

Bedtime data was matched with morning data and after work data of the next day. Hence, we had matched data from four days. The final sample comprised 100 employees (82.8% women) from 20 organizations who provided data on 337 days (out of possible 400 days) altogether. This sample size is in line with the recommendations of Maas and Hox (Maas & Hox, 2005) for conducting multilevel analyses. The average age was 46.01 years (SDs = 10.33). A total of 42% percent lived with a partner; about a third of the employees (35%) had children. Average tenure within the organization was 10.54 years (SD = 8.92).

**Measures**

All items were presented in German. Unless otherwise indicated, items were answered on 5-point Likert scales ranging from 1 = "strongly disagree" to 5 = "strongly agree".

**Negative work reflection during off-job time** was assessed in the bedtime survey with the scale developed by Fritz and Sonnentag (2006) and complemented by Binnewies et al. (2009). The four items refer to thinking about the negative aspects of one’s work during the specific evening (e.g., “Tonight during leisure time, I considered the negative aspects of my job”). Cronbach’s alpha at the within-person level was .83.

**Vigour** was measured in the morning survey with four items (e.g., “vigorously”, “lively”) from the German version (Bullinger, Heinisch, Ludwig, & Geier, 1990) of the profile of mood states (POMS; McNair, Lorr, & Droppleman, 1971). Employees indicated on a five-point Likert scale from 1 = “not at all” to 5 = “very much” how vigorous they felt in the morning. Cronbach’s alpha at the within-person level was .83.

**Self-efficacy** was measured in the morning survey with three items from Schwarzer and Jerusalem (1995). A sample item was “I am confident that today while at work I will be able to deal efficiently with unexpected events”. Cronbach’s alpha at the within-person level was .74.

**Work engagement** was measured in the after work survey with the daily 9-item version of the Utrecht Work Engagement Scale (Schaufeli et al., 2006), recently validated by Breevaart, Bakker, Demerouti, and Hetland (2012). Employees answered items such as “Today at my job, I was immersed in my work”. Cronbach’s alpha at the within-person level was .87. In line with a recent recommendation to drop the differentiation between the three subscales of work engagement (Fong & Ho, 2015) and due to the high internal consistency between all work engagement items, we decided to use a composite scale for work engagement.

**Perceived organizational support**

In the general survey, we measured between-person POS and employees’ demographic data. POS was measured with four items from Eisenberger et al. (1986) that refer to employees’ global perception regarding the extent that their organization is supportive. A sample item was “Help is available from my organization when I have a problem”. Items were answered on a 7-point Likert scale ranging from 1 = “strongly disagree” to 7 = “strongly agree”. Cronbach’s alpha was .94.

**Data analysis**

Due to the nested nature of our data (days nested within persons), we tested our hypotheses with multilevel structural equation modelling (MSEM) in Mplus Version 7.3 (Muthén & Muthén, 1998-2014), following the recommendations by Preacher, Zyphur, and Zhang (2010) on multilevel mediation analysis. In this approach, the variance of the manifest day-level measures is decomposed into latent within- and between-person variance components thus ensuring that the estimation of the within-person effects and between-person effects will not contaminate each other (i.e., similar to the person-mean centering used in hierarchical linear modelling that ensures the accurate estimation of within-person effects).

Accordingly, the path coefficients on the within-person level represent mere day-level relationships, while the path coefficients on the between-person level represent mere person-level relationships.

To test Hypotheses 1, 2, 4 and 6, we specified a multi-level path model (Model M1) with random intercepts and fixed slopes including negative work reflection as predictor, vigour and self-efficacy as mediators, and work engagement as outcome. This model can be described as a 1-(1,1)-1 model with two mediators with correlated residuals as all four variables were assessed at the day-level (Preacher et al., 2010). At the between-person level we additionally included the person-level variable POS as predictor of vigour, self-efficacy, and work engagement. POS was centered at the grand mean.

To test Hypotheses 3, 5 and 7 about the moderating role of POS, we specified two moderated lower-level mediation models with random intercepts and slopes. To keep these models parsimonious, we ran separate analyses for self-efficacy as mediator (Model M2a) and for vigour as mediator (Model M2b) respectively. In our model, moderation takes place (1) between the predictor variable and the mediating variable (Hypotheses 3a and 3b) and (2) between the mediating variable and the outcome variable (Hypotheses 5a and 5b); thus, our moderated mediation model (Hypotheses 7a and 7b) corresponds to a first-stage and second-stage moderation model (Edwards & Lambert, 2007). To model these cross-level interactions, we regressed the slope of the paths between negative work reflection and vigour and self-efficacy and between vigour and self-efficacy and work engagement on the person-level variable POS, respectively.

**Results**

Table 1 displays means, standard deviations at the within and between-person level and correlations between the study variables. For calculating the correlations between within-person and between-person variables, we averaged within-person
variables across the days. Moreover, we examined the variability of all variables across the four days. The intraclass correlation coefficients (ICC1; see Table 1) of the variables ranged between 0.50 and 0.57. This indicates that between 50 and 43% of the variance of the study variables is within-person variance suggesting that using multilevel modelling techniques is appropriate.

**Main effects and unconditional indirect effects**

Table 2 presents the parameter estimates in the MSEM model (i.e., M1) described earlier. Negative work reflection was neither associated with vigour nor with self-efficacy at the within-person level. Thus, Hypothesis 1a and 1b were not supported. Hypotheses 2a and 2b received support as both vigour and self-efficacy positively predicted work engagement at the within-person level. Vigour and self-efficacy were positively associated (estimate = 0.092, ICC = 0.56). Hence, Hypothesis 4 was not supported. Further, at the between-person level, negative work reflection was associated with self-efficacy, but not with vigour. Vigour was associated with work engagement, but self-efficacy was not. Vigour and self-efficacy were positively associated (estimate = 0.092, SE = 0.041, p = 0.026).

**Interaction effects and conditional indirect effects**

Tables 3 and 4 present the parameter estimates of the moderated mediation models M2a and M2b. Hypotheses 3a and 3b stated POS moderated the within-person relationships between negative work reflection and vigour and self-efficacy across the days. Moreover, we examined the variability of all variables across the four days. The intraclass correlation coefficients (ICC1; see Table 1) of the variables ranged between 0.50 and 0.57. This indicates that between 50 and 43% of the variance of the study variables is within-person variance suggesting that using multilevel modelling techniques is appropriate.

**Table 1.** Means, standard deviations (SDs), ICCs, and correlations between study variables.

<table>
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<th>Mean</th>
<th>SDa</th>
<th>SDwa</th>
<th>ICC</th>
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<th>3</th>
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</tr>
<tr>
<td>2 Negative work reflection</td>
<td>1.78</td>
<td>0.58</td>
<td>0.66</td>
<td>0.57</td>
<td>-26**</td>
<td>-21**</td>
<td>-30**</td>
<td>-28**</td>
<td></td>
</tr>
<tr>
<td>3 Vigour in the morning</td>
<td>3.14</td>
<td>0.58</td>
<td>0.57</td>
<td>0.50</td>
<td>0.23*</td>
<td>-25**</td>
<td>0.44**</td>
<td>0.50**</td>
<td></td>
</tr>
<tr>
<td>4 Self-efficacy in the morning</td>
<td>3.94</td>
<td>0.45</td>
<td>0.50</td>
<td>0.56</td>
<td>0.24*</td>
<td>-37**</td>
<td>0.48**</td>
<td>0.41**</td>
<td></td>
</tr>
<tr>
<td>5 Work engagement</td>
<td>3.17</td>
<td>0.51</td>
<td>0.58</td>
<td>0.56</td>
<td>0.33**</td>
<td>-33**</td>
<td>0.56**</td>
<td>0.46**</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 100 employees and 337 days. Means, standard deviations at the between-person (SDb) and within-person level (SDwa). ICC = intraclass correlation. Correlations below the diagonal represent between-person correlations. Correlations above the diagonal represent within-person correlations.

* p < .05. ** p < .01. *** p < .001.

Using the interactive tool by Selig and Preacher (2008), we created confidence intervals for the indirect effects based on 20,000 repetitions. The results are displayed in Table 5. The indirect effects of negative work reflection on work engagement via vigour and self-efficacy were not significant. Hence, Hypotheses 6a and 6b were not supported. At the between-person level, POS was not associated with work engagement. Hence, Hypothesis 4 was not supported. Further, at the between-person level, negative work reflection was associated with self-efficacy, but not with vigour. Vigour was associated with work engagement, but self-efficacy was not. Vigour and self-efficacy were positively associated (estimate = 0.092, SE = 0.041, p = 0.026).
Table 4. Results of multi-level path analysis predicting work engagement from negative work reflection via self-efficacy (Model M2b).

<table>
<thead>
<tr>
<th>Path</th>
<th>Estimate</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>b1a: Direct effect</td>
<td>−0.066</td>
<td>0.053</td>
</tr>
<tr>
<td>b1b: Direct effect</td>
<td>0.324***</td>
<td>0.090</td>
</tr>
<tr>
<td>b2b: Direct effect</td>
<td>−0.031</td>
<td>0.065</td>
</tr>
<tr>
<td>b3b: Direct effect</td>
<td>0.191***</td>
<td>0.028</td>
</tr>
<tr>
<td>b3c: Direct effect</td>
<td>0.230***</td>
<td>0.025</td>
</tr>
<tr>
<td>SD (self-efficacy)</td>
<td>0.031</td>
<td>0.070</td>
</tr>
<tr>
<td>SD (work engagement)</td>
<td>0.05</td>
<td>0.201</td>
</tr>
<tr>
<td>R² (self-efficacy)</td>
<td>0.13</td>
<td></td>
</tr>
</tbody>
</table>

Cross-Level

| Path m2a: POS → Path a1w (H3b) | 0.066** | 0.022|
| Simple Slopes                  |         |     |
| at −1 SD POS                  | −0.163**| 0.053|
| at + 1 SD POS                 | 0.031   | 0.070|
| Path m3a: POS → Path b1w (H5b) | −0.086* | 0.039|
| Simple Slopes                  |         |     |
| at −1 SD POS                  | 0.451***| 0.091|
| at + 1 SD POS                 | 0.197   | 0.120|

Between Level

| Path a1w: Direct effect        | −0.193   | 0.123|
| Path b1w: Direct effect        | 0.057    | 0.201|
| Path m1: POS → self-efficacy  | −0.068   | 0.057|
| Path m2: POS → work engagement | −0.148   | 0.100|
| Intercept self-efficacy        | 4.402    | 0.183|
| Intercept work engagement      | 1.943    | 0.719|
| Residual variance self-efficacy| 0.198*** | 0.042|
| Residual variance work engagement | 0.224*** | 0.046|
| SD (self-efficacy)             | 0.22     |     |
| SD (work engagement)           | 0.33     |     |

Note: * p < .05, ** p < .01, *** p < .001.

Table 5. Indirect and conditional indirect effects.

<table>
<thead>
<tr>
<th>Effect</th>
<th>Estimate</th>
<th>SE</th>
<th>[95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect effects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative work reflection → vigour → work engagement (H6a)</td>
<td>−0.023</td>
<td>0.016</td>
<td>[−0.033; 0.005]</td>
</tr>
<tr>
<td>Negative work reflection → self-efficacy → work engagement (H6b)</td>
<td>−0.025</td>
<td>0.018</td>
<td>[−0.062; 0.010]</td>
</tr>
<tr>
<td>Conditional indirect effects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative work reflection → vigour → work engagement (H7a)</td>
<td>−0.062</td>
<td>0.034</td>
<td>[−0.132; 0.001]</td>
</tr>
<tr>
<td>at −1 SD POS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at + 1 SD POS</td>
<td>−0.003</td>
<td>0.016</td>
<td>[−0.040; 0.032]</td>
</tr>
<tr>
<td>Negative work reflection → self-efficacy → work engagement (H7b)</td>
<td>−0.074</td>
<td>0.031</td>
<td>[−0.138; −0.024]</td>
</tr>
<tr>
<td>at −1 SD POS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at + 1 SD POS</td>
<td>0.006</td>
<td>0.016</td>
<td>[−0.018; 0.055]</td>
</tr>
</tbody>
</table>

Note: Estimates are unstandardized estimates from Mplus 7.3. Confidence Intervals were obtained using the Monte Carlo Method for assessing indirect effects with 20,000 repetitions (Selig & Preacher, 2008).

efficacy, respectively. POS was not a significant cross-level moderator of the relationship between negative work reflection and vigour, failing to support Hypothesis 3a. However, POS was a significant cross-level moderator of the relationship between negative work reflection and self-efficacy. Consistent with our hypothesis, simple slope analyses showed that for employees with low POS (1 SD below the mean), negative work reflection was significantly related to self-efficacy in the morning whereas for employees with high POS (1 SD above the mean), negative work reflection was not related to morning self-efficacy. The pattern of this interaction is displayed in Figure 2.

Hypotheses 5a and 5b stated the POS moderated the relationship between (a) vigour and (b) self-efficacy on the one hand and work engagement on the other hand. POS was a significant cross-level moderator of the relationship between vigour and work engagement. Results of simple slopes tests showed that for employees with low POS (1 SD below the mean), vigour was significantly related to work engagement whereas for employees with high POS (1 SD above the mean), the relation was weaker, but still significant. The interaction pattern is displayed in Figure 3. Thus, Hypothesis 5a was supported. Similarly, POS was a significant cross-level moderator of the link between self-efficacy and work engagement. Supporting Hypothesis 5b, we found that for employees with low POS (1 SD below the mean), self-efficacy was significantly related to work engagement whereas for employees with high POS (1 SD above the mean), self-efficacy was not related to work engagement. The interaction pattern is displayed in Figure 4.

To test for moderated mediation, we calculated simple indirect effects at conditional values of the moderator POS (see Table 5; Bauer et al., 2006). Again, we created confidence intervals for the conditional indirect effects using the Monte Carlo method with 20,000 repetitions (Selig & Preacher, 2008). The simple indirect effect of negative work reflection on work engagement via vigour was not significant neither for employees with low POS nor for employees with high POS; thus Hypothesis 7a was not supported. However, supporting Hypothesis 7b, the simple indirect effect of negative work reflection on work engagement via self-efficacy was significant for employees with low POS, but not significant for employees with high POS.

Additional analyses

To test the robustness of our findings, we re-ran our analyses controlling for daily sleep quality. As research suggests that employees’ personal resources (particularly their vigour levels) are affected by their sleep (Schmitt, Belschak, & Den Hartog, 2017), we wanted to rule out the possibility that differences in employees’ personal resources are driven by differences in their sleep quality. We assessed sleep quality in the morning survey with one item from the Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). The item “How do you evaluate this night’s sleep?” was rated on a four-point scale ranging from 1 (very bad) to 4 (very good). Including sleep quality did not change the results of our hypothesis testing. At the within-person level, sleep quality was positively associated with both vigour and self-efficacy, but not with work engagement. Further, negative work reflection was not associated with impaired sleep quality on the within-person level.

Discussion

This day-level study examined the consequences of employees’ negative work reflection during the evening for their personal resources in the next morning and their subsequent work engagement. Moreover, employees’ perceptions of
organizational support were examined as boundary conditions of the links between negative work reflection and employees' personal resources on the one hand and between personal resources and work engagement on the other hand. On the within-person level, we did not find negative work reflection to be directly associated with personal resources (vigour and self-efficacy) and indirectly with work engagement through employees' personal resources although vigour and self-efficacy were significant positive predictors of employees' work engagement. However, when POS was low, negative work reflection was associated with reduced self-efficacy and the indirect negative effect of negative work reflection on work engagement via self-efficacy was significant. Moreover, POS moderated the within-person relationships between...
personal resources and work engagement. High POS compensated for low levels of personal resources attenuating the positive relation between personal resources and work engagement. However, on the between-person level, POS was not associated with work engagement.

**Theoretical implications**

Our study contributes to recovery literature as we examined the potentially detrimental consequences of negative work reflection during the evening for employees’ personal resources and work engagement on the following work day. In contrast to our expectation, negative work reflection was neither directly associated with reduced personal resources (vigour and self-efficacy) nor indirectly with work engagement on the within-person level. Given that previous research supported the link between negative work reflection and recovery indicators such as positive and negative affective states (Meier et al., 2016), our study suggests that negative work reflection is not equally detrimental for all employees under all circumstances.

First, we found low POS to be a boundary condition for the effects of negative work reflection on employees’ self-efficacy and indirectly on their work engagement. When employees do not feel supported by their organization, thinking about negative aspects of their work harms their self-efficacy and their work engagement. If employees do not feel supported by their organization, they should make less favorable appraisals of their resources and coping options at work. Hence, they do not feel capable of dealing with imagined work problems, which brings about the harmful consequences of employees’ negative work reflection for their personal resources and their work engagement. Besides POS other factors affecting employees’ appraisal of their coping options might operate as moderators as well. For example, individuals who are chronically exhausted might appraise work-related thoughts as particularly threatening as they do not feel able to cope with the associated work-related problems. Accordingly, negative work reflection may affect morning personal resource levels only in highly exhausted employees.

Second, the effects of negative work reflection during the evening may not last until the next morning to affect employees’ personal resources as they might be compensated by a good night’s sleep (cf. Sonnentag & Binnewies, 2013). Previous research by Meier et al. (2016) provides indirect support for this notion as they found more evidence for associations between negative work reflection and affective states at bedtime than for the associations between negative work reflection and affective states and the next morning across two daily diary studies. This pattern of results suggests that the effects of negative work reflection may last until the next morning only under certain conditions.

Third, negative work-related thoughts may only harm employees’ personal resources when they occur during several evenings. A study by Sonnentag and Niessen (2008) showed that only employees’ recovery experiences accumulated over several evenings, and not the recovery experience attained immediately during the previous evening predicted employees’ vigour during the workday. Accordingly, thinking negatively about one’s work may not be detrimental for employees’ personal resources if it happens only once, but it may be harmful if it occurs over longer periods of time. Our finding of the significant between-person relationship between negative work reflection and self-efficacy provides tentative support for this idea as it suggests that employees with high chronic levels of negative work reflection have less self-efficacy. However, as we cannot draw any definite conclusions about the causal direction of the relationship (it may well be the case that employees with low self-efficacy tend to think more negatively about their work), longitudinal research is needed to clarify this question.

Our study further contributes to the JD-R theory and work engagement literature. Consistent with our hypotheses and previous research (e.g., Xanthopoulou et al., 2013), vigour and self-efficacy as personal resources were positively related to employees’ work engagement. On days when employees feel confident and full of energy in the morning, they are better able to cope with job demands, maintain a vigorous work style and stay absorbed in work tasks even when facing difficulties. Our results support the proposition of the JD-R theory that personal resources boost employee work engagement (Bakker & Demerouti, 2017).

Extending the predictions of JD-R theory, our study examined the interplay of job and personal resources in predicting daily work engagement. While previous research showed that job resources and personal resources are reciprocally related and jointly predict employee motivational outcomes such as work engagement (Xanthopoulou et al., 2009a), potential interactive effects between job and personal resources have been largely neglected (see Schmitt et al., 2013 for an exception). In line with resource substitution hypothesis (Hobfoll & Leiberman, 1987), we found that high levels of POS compensated for low levels of personal resources in predicting employee work engagement. In other words, when POS is high, employees engage at work both on days when they have high and low levels of personal resources available. However, when POS is low, employees engage at work only on days when their personal resources levels are high.

POS may be able to compensate for low levels of personal resources, as it may affect employees’ appraisal of their personal resources. When employees evaluate their actual ability to successfully accomplish their work (i.e., their self-efficacy) or their available energy levels in a negative light due to thinking about workplace problems and failures, POS may also help them to make a more realistic appraisal of the personal resources they have. Thus, feeling supported by their organization may counter employees’ tendency to underestimate their personal resources after thinking about negative work aspects and thus to refrain from engaging at work. Moreover, when employees are convinced that help is available when needed and their efforts will be rewarded, they should be more likely to engage at work to achieve their work goals although their personal resources are low. In other words, POS motivates them to engage at work, when their personal resources are too low to motivate them to engage at work. Having both POS and personal resources does not lead to an additional increase of work engagement; rather a lack of both POS and personal resources results in low levels of work engagement.
engagement. Apparently, employees need the motivating power of either job or personal resources to engage at work supporting the notion that job and personal resources have a similar motivating function and can compensate for each other (Bakker & Demerouti, 2017).

Interestingly, self-efficacy was unrelated to work engagement when POS was high while the positive relation between vigour and work engagement was still significant, though weaker, when POS was high. This pattern of results tentatively suggests that POS may be able to fully compensate for a lack of self-efficacy, but not for a lack of vigour in the morning. As this result points into the direction that resource substitution may be dependent on the type of resources (cf. matching hypothesis; de Jonge & Dormann, 2006), future research should investigate which organizational resources are able to compensate which personal resources and vice versa.

Moreover, our finding that POS as job resource was not related with work engagement on the between-person level contributes to JD-R theory and POS literature suggesting that POS may not be equally motivating for all employees under all circumstances, that is, certain moderators may conceal the link between POS and work engagement. First, as suggested by the resource substitution hypothesis (cf. Hobfoll & Leiberman, 1987), the motivating potential of POS may be dependent on the presence of other job or personal resources: POS may unfold its motivational potential only when employees lack other resources. Specifically, our finding of the interaction between POS and personal resources in predicting work engagement suggests that POS is particularly important for employees’ work engagement when their personal resources are low. Hence, high personal resources compensate for a lack of POS. When employees feel self-efficacious and energized, they may engage at work even when they perceive little support by their organization.

Second, POS may be less motivating for employees with a high negative affective disposition. Previous research suggests that employees’ affective disposition influences the way they perceive POS and their motivation to act on POS (Marchand & Vandenbergh, 2016; Sears, Zhang, & Han, 2016). Employees with high negative affectivity may view POS as resulting from self-serving effort on part of the organization to achieve organizational goals rather than reflecting an authentic concern for their well-being. As a result, the motivating effect of POS on performance is weaker for employees with a high negative affective disposition (Sears et al., 2016). Third, the motivating potential of POS may be reduced when employees doubt that the organization rewards their efforts as expected. A study by Gupta, Agarwal, and Khatri (2016) showed that the perception of unfulfilled expectations (i.e., psychological contract breach) weakened the motivating effect of POS on nurses’ work engagement.

Limitations and directions for future research

One limitation of our study is that all of our measures are based on self-reports of the same person and thus common method variance might be a problem (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). We tried to minimize this problem by temporally and methodologically separating the measurements of our variables (i.e., general survey, three daily surveys). Such a procedure should reduce common method variance (Podsakoff et al., 2003). Nevertheless, the question for more objective measures may still be raised particularly with respect to POS. In line with previous research (e.g., Wang et al., 2013), we assessed POS as individual perception of available support and resources as social support literature argues that particularly the subjective perception of support sources is critical for the beneficial outcomes (Solomon, Mikulincer, & Hobfoll, 1987). However, future research may want to examine POS as a climate variable by aggregating self-ratings of employees from the same organization to eliminate within-person variance and rule out interpretations based on confounding variables (Shamir, Zakay, Breinin, & Popper, 1998). In addition, as recent research suggested that POS may not be as stable as suggested, but may vary from week to week (Caesens et al., 2016), future research may want to study weekly or daily fluctuations of employees’ perception of POS. Clinical research suggests that individuals have difficulties to recognize support sources, such as organizational support in their environment, when stress is high (cf. Beck & Alford, 2009). Hence, employees’ perception of organizational support sources may be affected by their job demands. Future studies may assess employees’ week-level or day-level perceptions of organizational support and job demands to shed light on possible dynamics of employees’ POS.

A second limitation of our study is that we cannot ultimately draw conclusions about the causal relationships between our study variables. Although our design (separating measurements) and data-analysis (decomposition of variance into within- and between-person variance) should have ruled out many alternative explanations (Dollard & Bakker, 2010), such as stable individual differences, we cannot draw causal relationships between our variables. Although we cannot rule out the possibility of reversed causality, intervention research supports the notion that negative work-related thinking affects employees’ resources and well-being (e.g., Querstret, Croteau, & Fife-Schaw, 2016) and employees’ personal resources in turn affect their work engagement (e.g., Wingerden, Bakker, & Derks, 2016). In addition, we conceptualized vigour and self-efficacy as independent mediating processes although they may also be related (e.g., vigour predicting self-efficacy). Future studies should address this question with a suitable design (e.g., assessing vigour in the morning at home and self-efficacy when arriving at work) to disentangle how energetic and cognitive-motivational resources are related.

A third limitation of our study is that we used daily paper-and-pencil surveys. We discussed different options of data collection (e.g., web-based surveys) with experts for our sample (i.e., members of the management and staff of the participating organizations) who recommended paper-and-pencil surveys in order not to exclude potential participants without internet access from study participation (cf. Ohly, Sonnentag, Niessen, & Zapf, 2010). We provided employees with detailed instructions on the precise times of the day when to complete the daily surveys and checked the self-reported completion time. However, we
cannot be sure that all employees continuously complied with these instructions, which may have affected our study’s results. Therefore, to validate our findings, future research should replicate our findings with electronic surveys that record the time when participants answer the daily surveys.

**Practical implications**

Several practical implications can be derived from our study. First, reducing negative work reflection can be an important step to increase employees’ personal resources and subsequent work engagement, when POS is low. Previous studies have demonstrated that mindfulness-based and cognitive behavioral interventions are effective approaches that benefit employees’ personal resources and work outcomes (e.g., Querstret et al., 2016; Querstret, Cropley, Kruger, & Heron, 2015).

Second, we showed that POS is an important organizational resource in the context of employees’ negative work reflection and thus constitutes a promising starting point for organizations and managers who aim at fostering their employees’ personal resources and work outcomes. As supervisors’ communication with employees in terms of giving positive feedback, informing employees about organizational changes and expressing support, fosters employees’ POS (Neves & Eisenberger, 2012), open communication could be implemented as HR policy and supervisors could be trained in order to maximize the potential of open communication in their organization (Neves & Eisenberger, 2012). Moreover, other aspects of supervisors’ supportive behaviours such as interational justice and respectful treatment were found to be highly associated with employees’ POS (Kurtessis et al., 2017; Rhoades & Eisenberger, 2002) and thus could be encouraged. However, responsibility for employees’ POS should not be exclusively attributed to supervisors. Organizations should also take additional steps by creating favourable job conditions (e.g., favorable opportunities for rewards, high job security, etc.) as these were also found to benefit POS (Kurtessis et al., 2017; Rhoades & Eisenberger, 2002). Relying on social exchange theory, it can be suggested that high levels of POS create feelings of obligation to repay the organization for the goodwill it expends through increased effort and extra-role behaviour (Rhoades & Eisenberger, 2002). Thus, efforts in fostering employees’ POS may not only benefit the employees themselves, but also the organization as a whole.

**Acknowledgment**

This study is part of Anna R. Ott’s (née Koch) dissertation. We thank Carolin Boye and Vanessa Preuss for their support during data collection.

**Notes**

1. This is the first publication from this data set.
2. In addition, in our study, employees were nested in organizations. However, as ICCs showed that less than 4% of the variance in all day-level variables was attributable to the organization level, we specified a two-level model (with days nested in persons) only.

3. As the models initially specified with random intercepts and slopes did not converge, we set the residual variances of the random slopes to 0. This procedure implies that all the slope variance is accounted for by the Level 2-predictor POS.

**Disclosure statement**

No potential conflict of interest was reported by the authors.

**References**


