

SOCIAL MEDIA USE AND WORK ENGAGEMENT

**Share, like, twitter, and connect: Ecological momentary assessment to examine the relationship
between non-work social media use at work and work engagement**

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Abstract

Non-work social media use at work has seen a dramatic increase in the last decade and is commonly deemed counterproductive work behavior. However, we examined whether it may also serve as a micro-break and improve work engagement. We used ecological momentary assessment across one working day with up to ten hourly measurements in 334 white-collar workers to measure non-work social media use and work engagement, resulting in 2,235 hourly measurements. Multilevel modeling demonstrated that non-work social media use was associated with *lower* levels of work engagement between-persons. Within-persons, non-work social media use was also associated with lower concurrent work engagement. However, non-work social media use was related to *higher* levels of work engagement one hour later. While more extensive non-work social media use at work was generally associated with lower work engagement, our advanced study design revealed that the longer employees used social media for non-work purposes during one working hour, the more work engaged they were in the subsequent working hour, suggesting that employees turn to social media when energy levels are low and/or when they (temporarily) lose interest in their work. This behavior may serve as a break, which in turn increases work engagement later during the day.

Keywords: recovery, work engagement, ecological momentary assessment, micro-break, within-person fluctuations

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Introduction

Rapid changes in technology enable—and often compel—employees to work everywhere and around the clock, drastically limiting their opportunities to recover from job stress during their free time (e.g., Derks, ten Brummelhuis, Zecic, & Bakker, 2014; Dettmers, Vahle-Hinz, Bamberg, Friedrich, & Keller, 2016). While work regularly encroaches on people’s personal lives due to technology, nowadays personal life also pervades working life more easily. Social media enables sharing vacation pictures with friends, gossiping with colleagues, chatting with family members, watching a neighbor’s home video or sending a message to a sick friend while sitting at one’s work computer, appearing industrious (Van Dijk, 2013).

Social media use can be defined as using “[...] internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content” (Kaplan & Haenlein, 2010, p. 61) or simply as “[...] social interactions using technology [...]” (Smith, 2012, p. 1). It refers to electronic, instant communication via modern information communication technology devices such as smartphones, personal computers, notebooks, and tablet computers. This conceptualization of social media use includes usage of social networking sites like Facebook, Twitter, and Whatsapp, and also more "traditional" communication channels such as private emails, which are used in a very similar way to messages sent, for instance, via Facebook Messenger, requiring increasingly fast responses (e.g., Towers, Duxbury, Higgins, & Thomas, 2006). Social media use has seen a dramatic increase in the last decade, and people also use it more and more at work for non-work purposes. According to recent surveys, 65 percent of American adults use at least one social media platform regularly (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015; Perrin, 2015). It has been estimated that employees spend up to two hours of their daily working time on non-

work online activities such as reading and writing personal emails, instant messaging or social networking (e.g., Henle, Kohut, & Booth, 2009; Vitak, Crouse, & LaRose, 2011).

Non-work social media use at work implies disengagement from work tasks and, accordingly, is usually deemed a counterproductive work behavior detrimental to an employee's productivity.

However, this view of non-work social media use may be too simplistic and biased. We argue that non-work social media use can also serve as a break from work, replenishing and creating resources. This may manifest in higher levels of work engagement, defined as "[...] a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74). Work engagement entails high levels of mental and physical energy, perseverance, willingness to invest effort in one's job tasks as well as involvement in one's work, a sense of significance, pride, and enthusiasm. Engaged employees are more likely to be absorbed in their tasks and work fully concentrated (e.g., Bakker, Schaufeli, Leiter, & Taris, 2008). Organizations benefit from engaged workers because they perform well and are less likely to be absent from work, are more productive, open to new information, and willing to "go the extra mile" (e.g., Bakker, 2011; Christian, Garza, & Slaughter, 2011; Hakanen, Perhoniemi, & Toppinen-Tanner, 2008).

Using ecological momentary assessment, this study focuses on three different effects of non-work social media use at work: between-person effects, concurrent within-person effects, and lagged within-person effects. That is, we investigate how employees' general level of work engagement varies depending on their non-work social media use (between-person effects), how employees' non-work social media use within a specific working hour is related to their work engagement within that hour (concurrent within-person effects), and how employees' non-work social media use within a specific working hour is related to their work engagement during the subsequent working hour (lagged within-person effects).

Our theoretical reasoning is based on the episodic process model proposed by Beal, Weiss, Barros, and MacDermid (2005), which segments the continuous flow of daily behavior at work into units termed behavior episodes. The model reflects a within-person approach, which highlights the time varying state-like nature of people's experiences and behaviors at work. It was originally designed to predict performance during an episode which is considered to be "a joint function of resource level and resource allocation" (p. 1057). We focused on work engagement as a precursor of job performance (e.g. Salanova et al., 2006, 2010; Hakanen et al., 2008). According to the episodic process model, employees have to regulate the focus of their attention and the application of their resources to the task, despite off-task concerns. This process will be reflected in higher levels of work engagement. We argue that social media represents an off-task concern present in the work environment. As will be elaborated in more detail below, on the one hand, during non-work social media use, attentional resources are not allocated to the work task at hand but to off-task concerns. Accordingly, negative effects on work engagement are to be expected a) for employees who use more social media for personal purposes compared to employees who use social media less (between-person effect), as well as b) for those hours during which an employee uses more social media for personal purposes compared to hours in which the employee less often uses social media. On the other hand, during non-work social media use, the regulatory resources necessary to maintain the focus of attention on work tasks are not taxed and can be renewed (Muraven & Baumeister, 2000). We argue that during non-work social media use these regulatory resources are replenished. With renewed regulatory resources, subsequent engagement in work tasks should be facilitated for the following hour. We therefore expect negative between and concurrent within-person relationships and a positive lagged within-person relationship. Figure 1 illustrates these hypotheses.

Research Aims and Contributions

We used ecological momentary assessment and an intra-individual study design to capture the influence of episodic non-work social media use on work engagement. Ecological momentary assessment “[...] involves repeated sampling of subjects’ current behaviors and experiences in real time, in subjects’ natural environments” (Shiffman, Stone, & Hufford, 2008, p. 1). We collected data across one working day with hourly measurements of all variables under study.

Our study contributes to the literature in four ways. Social media enable people to share information with others (as do other media), at the same time, the recipients of the information can also react and interact with the sender (in contrast to other media). Non-work social media use at work signifies disengagement from work tasks and, accordingly, is usually deemed a counterproductive work behavior detrimental to employee productivity. However, this view may be too simplistic and biased. The first contribution of this study is based on the idea that non-work social media use can also serve as a break from work, for replenishing and creating resources. Social media use is extremely common at the workplace and an intriguing, emerging phenomenon – understanding its impact on work engagement, which is linked to employee health, well-being, and performance (Bakker, Demerouti, & Sanz-Vergel, 2014; Christian, et al., 2011; Seppälä, 2012), is therefore extremely important for work organizations. Secondly, by focusing on non-work social media use, we avoid the methodological problems of some earlier studies grouping together a very large range of online activities such as online shopping, gambling, gaming or chatting with friends (for further criticism of this approach, see Weatherbee, 2010). Thirdly, the research designs used previously to study non-work online activities at work have mostly been cross-sectional, limiting the possibility to elucidate causal relationships. Using ecological momentary assessment, we aim to measure everyday life processes with as little recall bias as possible (Shiffman et al., 2008). These processes are difficult to capture with measurements at single points in time distant from the actual behavior (Wilhelm, Perez, & Pawlik, 2012). Fourthly, by studying

fluctuations in non-work social media use and work engagement over one entire working day, we can examine processes that are inherently manifested at the intra-individual level, thereby extending and complementing the study of between-individual differences (Beal et al., 2005; Ilies, Aw, & Pluut, 2015) aiming to arrive at a fuller understanding of the dynamic nature of non-work social media use at work and work engagement. By using multilevel modeling, we can disentangle differential effects of non-work social media use between as well as within persons both concurrent and lagged, thereby gaining new insights into a modern, widespread phenomenon. In the following, we outline how non-work social media use should be related to work engagement by differentiating between the dark and the bright side of non-work social media use.

-----Insert Figure 1 here-----

The Dark Side: Non-work Social Media Use at Work as Counterproductive Work Behavior

According to the episodic process model (Beal et al., 2005), allocation of attention to work is a prerequisite for performance. The percentage of moments focused on-task during a certain time period should influence how much work engagement an employee experiences and thus how well the employee performs during this episode (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Non-work social media use can be seen as an off-task concern. The longer employees engage in off-job activities such as non-work social media use during the working day, the more their actual working time and productivity decrease (e.g., Andreassen, Torsheim & Pallesen, 2014a). A cross-sectional study, for example, found that use of social media was related to poorer self-reported work performance (Andreassen, Torsheim & Pallesen, 2014b). In terms of the episodic process model, employees who use social media for non-work purposes more extensively than other employees allocate their attentional focus less often to their work tasks. This should be reflected in lower work engagement among employees using social media more extensively for non-work purposes than among

employees using social media less.

There is a body of research on predictors and consequences of non-work online activities at work which seems to support this view. Non-work online activities are usually taken to be misuse of working time and company resources (e.g., Lim & Teo, 2005; Mill, Hu, Beldona, & Clay, 2001). The terms used in the literature corroborate this view: cyberloafing (e.g., Lim & Chen, 2009), cyberslacking (e.g., Lavoie & Pychyl, 2001), virtual absenteeism (e.g., Friedman, 2001), and goldbricking (e.g., Lundgren & Lundgren, 1999). Like other types of workplace deviance, these behaviors relate to organizational norms ('everybody does it'), effort-reward imbalance (e.g., remuneration for working overtime), organizational injustice (e.g., dissatisfaction with pay) as well as breaches of the psychological contract (e.g., taking revenge on the organization for perceived injustices) (e.g., Berry, Ones, & Sackett, 2007; Bordia, Restubog, & Tang, 2008; Fox, Spector & Miles, 2001; Lim, 2002; Lim & Teo, 2005; Mastrangelo, Everton, & Jolton, 2006). Non-work social media use at work can accordingly be considered a "voluntary behavior that violates significant organizational norms and, in doing so, threatens the well-being of an organization, its members, or both" (Robinson & Bennett, 1995, p. 556). In other words, we anticipate that employees with more extensive non-work social media use are generally less work engaged than workers who use social media less. In line with this view, we hypothesize:

Hypothesis 1: Non-work social media use at work is associated with lower levels of work engagement *between persons*.

Additionally, the episodic process model focuses on within-person fluctuations in performance. Within a given episode, performance is dependent on employees' attentional focus. According to Beal et al. (2005, p. 1057), "the percentage of moments focused on-task during the episode determines one's relative level of performance for that episode". Within each of these episodes, the on- and off-job tasks

employees engage in, like their emotions and performance, may vary. Task attentional pull and off-task attentional demands affect whether a person focuses on off- or on-job tasks. Task attentional pull includes factors such as the importance or difficulty of a task, intrinsic interest, or sense of urgency (i.e., tight deadlines). Off-task attentional demands refer to distractions by issues other than work such as those inherent in social media. Consequently, we would expect that non-work social media use during a specific hour reduces the percentage of moments during which employees direct their focus of attention to their work tasks, which in turn leads to lower work engagement within that particular hour. During an hour in which an employee uses social media for non-work purposes more extensively compared to hours with less non-work social media use, the employee allocates fewer attentional resources to actual work tasks. Accordingly, during this hour, lower work engagement is expected in comparison to hours in which the employee uses social media less extensively. The standard of comparison is thus not other employees' level of work engagement, but the employee's individual level of work engagement during other behavioral episodes (i.e. hours of the working day). We thus hypothesize:

Hypothesis 2: Non-work social media use within a specific hour is related to lower levels of work engagement within this specific hour (*concurrently within persons*).

The Bright Side: Non-work Social Media Use at Work as a Micro-Break

The relationship between non-work social media use and work engagement could appear in a different light when we pay closer attention to time, i.e., how non-work social media use during the previous hour affects work engagement during the following hour. Specifically, we propose that taking into account lagged within-person relationships between non-work social media use and work engagement throughout the working day affords a new perspective. According to the episodic process model, a working day is “[...] composed of a series of episodes that have a coherent, thematic

organization and are associated with specific people, occurrences, and goals.” (Beal et al., 2005, p. 1055). A person’s level of self-regulatory resources determines whether or not one engages intermittently in off-job activities. In contrast to cognitive resources, regulatory resources are prone to resource depletion. Using regulatory resources to allocate cognitive resources to one’s work can lead to the depletion of regulatory resources. According to Muraven and Baumeister (2000) regulatory resources function like a muscle. Taxing these resources leads to resource depletion, while not taxing these resources leads to resource replenishment. Accordingly, we argue that during non-work social media use, the self-regulatory resources necessary for focusing one’s attention on work tasks are not taxed and can therefore be replenished (Muraven & Baumeister, 2000). In terms of the model by Beal et al. (2005), non-work social media use at work can be seen as an off-task activity that helps to replenish the regulatory resources needed to concentrate on work and not be distracted by off-task attentional demands. Following this argumentation, non-work social media use at work may constitute a micro-break, which helps employees to recover from job stress (Anandarajan & Simmers 2005; Lim & Chen, 2009; Stanton, 2002). Accordingly, our predictions regarding the relationship between non-work social media use and work engagement within-persons are more complex, that is, dependent on the time frame. We argue that workers use non-work social media use particularly during those hours in which regulatory resources are depleted. While they are not expended, these resources are replenished. In the same hour this should lead to negative effects on work engagement, because a person’s attentional focus is not specifically on her work (see H2, concurrent within-person effect). However, due to the replenishment of regulatory resources during this hour, it may be easier to allocate cognitive resources to work in the subsequent hour. This should become apparent in the experience of work engagement. Accordingly, although non-work social media use in one hour may have negative effects on work engagement (due to less attentional focus) it may yield positive effects on work

engagement in the subsequent hour (due to regulatory resource replenishment). Some empirical findings recently supported this view. For instance, several studies have demonstrated that employees tend to deliberately use non-work online activities to manage their energy levels at work (De Bloom, Kinnunen, & Korpela, 2015; Fritz, Lam, & Spreitzer, 2011; Zacher, Brailsford, & Parker, 2014). Thus, we hypothesize:

Hypothesis 3: Non-work social media use within a given hour during the working day is related to higher levels of work engagement during the *following hour within persons (lagged within-person effect)*.

Method

Procedure and Design

Three hundred and thirty-four employees responded to digital hourly surveys across one working day (6.69 times on average). In our sample, the mean length of the working day was nine hours ($SD = 0.84$). The maximum number of obtainable measurements was 3,006. Our data set included 2,235 hourly measurements, indicating a completion rate of 74%. On the next day employees responded to a digital survey eliciting demographic information and information on their specific working times during the previous day.

We chose hourly time lags as we assumed that an initial impact model (Frese & Zapf, 1988) would apply to our data, following the idea that the impact of social media on work engagement unfolds directly. Ilies et al. (2015) argued that well-being indicators such as work engagement can be “conceptualized as dynamic states that exhibit substantial variation within the same person from one moment to another” (p. 828). We tried to capture as much of this variation as possible, while simultaneously keeping the burden on the participants within reasonable limits. Furthermore, the hourly time interval provides a close alignment to Beal et al.’s (2005) conceptualization of a working day with

an underlying episodic structure.

Sample

The sample of our study consisted of 334 white-collar employees working in knowledge-intensive jobs with fairly regular office hours. The respondents were recruited through a convenience sampling approach whereby the authors and their students approached their network (response rate 78%). Participants worked in various organizations in different sectors, the largest of which were engineering, IT, and finance. Respondents' mean age was 33.8 years ($SD = 10.73$, ranging from 18 to 64), and 50% of the sample was female. Weekly working time was 40 hours, average duration of employment was 5.7 years and 73.9% of the sample had a permanent contract. Eighty percent worked full time. Level of education was distributed as follows: 56% held master's or higher academic degrees, 33% held bachelor's (polytechnic) degrees and 9% held vocational qualifications or had only basic compulsory education. The majority (61%) were married or co-habiting and 24% had at least one minor child living with them. As an incentive to participate, participants were offered the option to get feedback about the results of the study.

Measures

Non-work social media use

Non-work social media use was measured with the question: "Within the last hour, how much time have you spent using the following media for non-work purposes: 1) non-work related use of social networks (e.g., Facebook, MySpace, chat rooms), 2) non-work related use of instant messaging (e.g., Whatsapp, Threema, Facebook Messenger), 3) non-work related emails, 4) non-work related use of VOIP services (e.g., Skype, Facetime), 5) non-work related use of social games (e.g., Farmville, Words with Friends), 6) other (please specify)?" Participants could indicate the exact number of minutes they used on these different kinds of social media during the last hour. Minutes reported in the "other" category were only

taken into account if the reported activity matched our definition of non-work social media use. For example, chatting in a forum for cat owners was considered non-work social media use, while reading the newspaper was not.

Work engagement.

Work engagement was assessed with a shortened version of the cross-nationally validated Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006). Six items were used to measure work engagement (e.g., “I am immersed in my work”) within the last hour. Items were assessed on a 7-point rating scale, ranging from 1 = *absolutely disagree* to 7 = *absolutely agree*. Cronbach’s alpha during the day ranged between .90 and .94 (mean Cronbach’s alpha was .93).

Analytic Strategy

Multilevel analysis. We followed Bliese and Ployhart (2002) to estimate multilevel models in R, using the NLME library written by Pinheiro and Bates (2000), and restricted maximum likelihood for estimation. Multilevel modeling techniques were used to account for the non-independence of the data as well as for the systematic, chronological structure of the data (by including time as a predictor). We tested for autocorrelation and heteroscedasticity before entering the core predictor.

Person (between) and hour (within) effects. Multilevel analyses make it possible to model between-person effects and within-person effects at the same time. To analyze the “uncorrupted” effects between persons, we focused on the effect which does not inherit the relationships within persons (also referred to as the “compositional effect”). We followed Raudenbush and Bryk (2002) and included hour-level predictors (person-mean centered, depicting within-person variance) and their aggregates (grand-mean centered person-means, capturing the overall level of non-work social media use over the day), so that the effect is decomposed into within- and between-person components.

Lagged effects. We examined the effect of non-work social media use during the previous hour (lag -1) on work engagement.

Results

Table 1 presents the means, standard deviations, and zero-order correlations between the study variables.

---Insert Table 1 about here---

Preliminary Analysis

Before testing our hypotheses, we determined the strength of data non-independence and estimated a null model (Raudenbush & Bryk, 2002). The intra-class correlation coefficient (ICC1,1) for work engagement was .41, indicating that approximately half of the variance in individual ratings of engagement was due to inter-individual differences, and that there was also substantial variance within persons across hours. The results showed a linear ($\beta = -3.38$, $SE = 1.15$, $t = -2.94$, $p < .01$) and quadratic ($\beta = -2.48$, $SE = 0.94$, $t = -2.63$, $p < .01$) time trend. Additionally, the model that included autocorrelation ($\Phi = .16$), but did not incorporate heterogeneity in the error structures, fitted best.

On average employees used social media for non-work purposes for 4.6 minutes per hour (range = 0 to 60 minutes; Table 1). For the whole working day the average time of using social media was 39 minutes. Nine people did not use social media at all for non-work purposes during working hours. The most extensively used media were in order of importance: 1) instant messaging, 2) social networks, and 3) non-work emails. The time trend for non-work social media use over the working day was quadratic and positive (that is, u-shaped) ($\beta = 30.43$, $SE = 5.86$, $t = 5.19$, $p < .001$). Visual inspection of the scatterplot indicates that non-work social media use peaked at the beginning and end of the working day.

Hypotheses Testing

Work engagement between persons. The results (model 2, Table 2) showed that between persons non-work social media use was related to lower work engagement ($\beta = -.04$, $SE = .01$, $t = -2.98$, $p < .01$), such that employees who generally used social media more extensively for non-work purposes throughout the day reported lower levels of work engagement than employees using social media less extensively. Our results therefore provided support for Hypothesis 1.

Work engagement within persons. Our results (model 2, Table 2) showed that non-work social media use was negatively related to concurrent work engagement ($\beta = -.02$, $SE = .003$, $t = -4.90$, $p < .001$). The results suggest that concurrent non-work social media use was related to lower levels of work engagement within persons. This finding supported Hypothesis 2.

The lagged effect (time-1) of non-work social media use in the previous hour on work engagement (model 3, Table 2) was positive and significant ($\beta = .01$, $SE = .004$, $t = 1.98$, $p < .05$). Thus, non-work social media use within a given hour during the working day was related to higher levels of work engagement during the following hour within persons. Hypothesis 3 was therefore supported.

---Insert Tables 2 about here---

Additional Analysis

Reverse Causation. On the one hand, after being especially work engaged, some people may turn to social media for gratification. On the other hand, one could argue that with replenished resources off-task demands such as social media use are less likely to interfere with one's attention and less likely to be needed as a micro-break. We therefore used concurrent and previous work engagement as a predictor of non-work social media use. Within persons, work engagement was concurrently significantly related to non-work social media use ($\beta = -.72$, $SE = .16$, $t = -4.63$, $p < .001$), but the lagged effect was not significant ($\beta = -.17$, $SE = .18$, $t = -.93$, $p = .35$). Reverse causation thus seems

unlikely.

Subdimensions of work engagement. As work engagement may also be considered a three-dimensional construct (e.g. Reis, Hoppe, Arndt, & Lischetzke, 2017), we investigated the relationships between non-work social media use and vigor, dedication, and absorption. Between persons, non-work social media use was negatively related to vigor ($\beta = -.05$, $SE = .01$, $t = -3.90$, $p < .001$), dedication ($\beta = -.03$, $SE = .01$, $t = -2.39$, $p < .05$) and marginally to absorption ($\beta = -.02$, $SE = .01$, $t = -1.80$, $p = .07$), such that employees who generally used social media more extensively throughout the day reported lower levels of vigor, dedication and (by trend) absorption than employees using social media less extensively. Within-persons, non-work social media use was negatively related to concurrent vigor ($\beta = -.02$, $SE = .004$, $t = -4.27$, $p < .001$). The lagged effect of non-work social media use in the previous hour was not significant ($\beta = .003$, $SE = .005$, $t = .68$, $p = .50$), while the effect of social media use two hours previously was significant and positive ($\beta = .01$, $SE = .005$, $t = 2.07$, $p < .05$). Social media use was concurrently negatively related to dedication ($\beta = -.01$, $SE = .004$, $t = -3.51$, $p < .001$). The lagged effect in the previous hour was positive, but only marginally significant ($\beta = .01$, $SE = .005$, $t = 1.81$, $p = .07$). For absorption, the results indicated that non-work social media use was related concurrently to lower absorption ($\beta = -.02$, $SE = .004$, $t = -4.88$, $p < .001$). The lagged effect showed that more social media use during the previous hour was associated with higher absorption ($\beta = .01$, $SE = .005$, $t = 2.60$, $p < .01$).

Discussion

In this study, we aimed to ascertain how non-work social media use at work relates to employees' work engagement. We investigated this relationship with ecological momentary assessments during one working day. Using multilevel modeling, we tested between- and within-person effects concurrently and with a time lag of one hour. Our results demonstrated that non-work social media use is very common: 97.3 percent of our sample of knowledge workers used social media during

working time. Across a working day, employees engaged in non-work social media use for 39 minutes on average.

The findings of our study demonstrated that the relationship between non-work social media use and work engagement is more complex than previously thought. Firstly, our results confirm earlier research findings deeming non-work social media use at work a counterproductive work behavior. More specifically, our study showed that those employees who used social media more throughout the working day reported lower levels of work engagement (negative between-person effect). Furthermore, we found that if an employee used social media more within one hour than his or her average use of social media throughout the working day, that employee was less engaged (negative concurrent within-person effect). This finding corroborates earlier, mainly cross-sectional, findings suggesting that extensive use of social media may be connected to lower levels of work motivation and productivity. This is also in line with the theoretical assumptions of the episodic process model (Beal et al., 2005). The share of minutes of an hour during which an employee had no on-task focus but instead was focused on social media (off-task) affected how engaged an employee pursued work tasks. Accordingly, non-work social media use has a dark side.

Secondly, our results extended the existing research by providing a fine-grained view on employees' non-work social media use during one working day so that positive lagged effects could be detected. Our advanced study design and analyses thus enabled us also to discover positive aspects of social media. Considering time (lagged effects), our results support the idea that non-work social media use at work has beneficial effects on *subsequent* work engagement and may potentially serve as a micro-break. This means that non-work social media use has also a bright side.

The findings of our study have important theoretical implications: Firstly, our results show that time is essential in the accurate evaluation of common workplace behaviors (Taris & Kompier, 2014). While engaging in non-work social media use at one point in time is negative, the impact of this

behavior changes with time (see positive lagged effect). Secondly, we considered the effects on the between- and the within-person level of analyses and could confirm differential effects on these levels. This result not only sheds new light on a very common workplace behavior in today's working world, but also highlights the importance of investigating effects on different levels of analyses (Ilies et al., 2015). Thirdly, although we did not ask participants to segment their working day into behavioral episodes, our procedure of hourly assessments allowed us to capture and test an integral component of the model by Beal and colleagues: the idea that the working day can be divided into temporal units, and that characteristics of these units are relevant for behavioral outcomes of the same unit, subsequent units, and the entity of units of the day. Furthermore, our results suggest that self-regulatory resources are necessary to establish an on-task focus, and that restoration of self-regulatory resources during episodes not requiring self-regulatory resources (here: during non-work social media use) may enable employees to re-establish on-task focus later on.

The u-shaped time trend for non-work social media use with higher levels in the morning and at the end of the work day may imply that employees use social media to fade into the working day by slowly reattaching themselves to their work (see also Sonnentag & Kühnel, 2016). As the end of the working day draws closer, employees may use social media as a means to fade out and mentally reconnect to their private lives. One might also speculate that in the course of the working day employees' self-regulatory resources – necessary to focus on the task at hand – become increasingly depleted (Baumeister, Vohs, & Tice, 2007; Hagger, Wood, Stiff, & Chatzisarantis, 2010), making employees prone to distractions and task-irrelevant temptations such as spending time on social media towards the end of the working day.

In order to provide focus and in line with previous research (e.g. Vahle-Hinz, 2016), we examined work engagement as a one-dimensional construct. Yet, some studies found evidence for the three-dimensional structure (Reis et al., 2017) and the differential relationships may help explaining the

proposed mechanisms, we examined the three sub-dimensions separately as well. The results for the subdimensions reflect the results for the overall scale of work engagement in general. Interestingly, employees' vigor could be positively predicted from non-work social media use only after two hours. One might speculate that dedication and absorption precede the feeling of being vigorous at work. That is, one has to be fully involved in and devoted to a work task in order to develop a sense of drive and vigor at work. However, these findings should be interpreted with caution due to the limitation of having assessed each dimension with two items only. Our study hints at the dynamic nature of the different temporal processes underlying work engagement and opens up interesting pathways for future studies.

Practical Implications

Our study showed that a considerable number of knowledge workers use social media for non-work purposes during the working day. However, on average, employees used social media only for 4.6 minutes per hour, adding up to about 39 minutes per day. It seems that, at least at this point in time, non-work social media use may be less common and problematic in terms of productivity loss than has previously been assumed. On the positive side, non-work social media use gives working people at least the impression that they can combine work and personal life more easily. Given that we found positive time-lagged effects of non-work social media use on work engagement, at this point in time, the scientific evidence does not seem to warrant legal, policy or technological measures to prevent or prohibit non-work social media use at work. It is quite likely that monitoring, restricting or blocking employees' access to social media would be counterproductive and be perceived as a lack of trust, possibly resulting in low levels of work motivation and well-being (see also Coker, 2011; Moqbel, Nevo, & Kock, 2013; Oravec, 2002). In addition, it is likely that employees would still find a way to use social media (e.g., by secretly configuring virtual private network connections to access banned

websites) which might be more time consuming and harmful to the organizations than condoning sporadic non-work social media use during the working day. More research is needed to arrive at evidence based best practices.

Strengths and Limitations of the Present Study

First, even though we used ecological momentary assessment “[...] to minimize recall bias, maximize ecological validity, and allow study of microprocesses that influence behavior in real-world contexts” (Shiffman et al., 2008, p. 1), the exact duration of non-work social media use within a certain working hour may be difficult to assess accurately in hindsight and susceptible to various types of recall bias (e.g., Bolger, Davis & Rafaeli, 2003). Data from multiple sources and particularly automatic logging and tracking of employees’ computer use (including social media use) would be desirable, but is also highly questionable in terms of privacy. We therefore believe that collecting self-reported information on non-work social media use close in time to its occurrence may be one of the most feasible and accurate ways to assess non-work social media use at work. Furthermore, we cannot rule out that work (dis)engagement within one hour influenced non-work social media use during the same hour. It is possible that work engagement was triggered by different antecedents (such as low task variety or perceived support), which then lead to higher or lower social media use. Building on the episodic process model one would suggest that social media use as an off-task concern consumes resources and thus impairs well-being. However, a reciprocal relationship is conceivable and an interesting avenue for future research.

Second, reporting non-work social media use may be socially biased (as it is usually considered a counterproductive work behavior). Making people aware of their non-work social media use throughout the working day may have changed their behavior. Most people may have used non-work social media less than usual during the study. However, this effect would only be problematic if their

use of social media during the day was systematically restricted, while a reduction in the hourly means would not change the interpretation of the within-persons results. Also, we observed a u-shaped trend in non-work social media use throughout the working day, rendering it less likely that people reduced their non-work social media use due to the repeated measurements.

Third, our definition of social media included one-on-one as well as one-to-many communication (including, for instance, social network sites and private email as communication channels). However, some scholars have called for a more precise definition of social media or for a clearcut distinction between social media and social networks (e.g., Edosomwan, Prakasan, Kouame, Watson, & Seymour, 2011; Obar & Wildman, 2015). Future studies may seek to narrow down the aspects of social media studied and, for example, focus solely on the effects of electronic communication from one-to-many or many-to-one, or focus on social networks only.

The limitations of the study are offset by several strengths. A clear strength of the study is its design, incorporating hourly measurements throughout one working day. We thus followed Mitchell and James' (2001) call to measure cause and effect when they are believed to occur. We are closely aligned with the conception of Beal et al. (2005) of a working day with an underlying episodic structure. Further, we examined between-person, concurrent, and lagged within-person effects in order to shed light on the relationships between non-work social media use and employees' work engagement. Our findings therefore add to the understanding of the relationship between non-work social media use and work engagement and inspire interesting paths for future research.

Suggestions for Future Research

Compared to the use of other off-line or online media and non-work online activities such as online shopping, social media use inherently involves interactions with other people, potentially fulfilling a person's need for relatedness (Ryan & Deci, 2000). Future studies could delve deeper into

the quality and different types of social media use (e.g., messages to groups of friends, sharing or only reading status updates etc.) to arrive at a better understanding of the nature and the antecedents of different aspects of social media use and their impact on work engagement.

Our analyses further showed that the slope of non-work social media use predicting work engagement was random. A random slope indicates that day-specific variables and inter-individual differences may moderate our findings. We explored some possible moderators post-hoc (e.g. gender, age, smartphone addiction, job control, time pressure), but detected no meaningful relationships. Future research could assess other possible moderators (e.g., segmentation preferences).

In this study, we focused on the relationship between non-work social media use and work engagement, without examining possible antecedents of social media use. Future studies may also assess potential work related predictors of social media use (e.g. perceived injustice; Fox et al., 2001) and take recovery research into account in order to shed light on the question what triggers non-work social media use (e.g. energy level, recovery, happiness, regulatory strength; Muraven & Baumeister, 2000). An intervention study might provide further evidence on our between-person finding showing that persons who use social media more often (compared to other persons) are less work engaged. For instance, different departments within the same company could be either discouraged or encouraged to use social media for non-work purposes for a certain period of time to examine the effect on work engagement.

Furthermore, one might speculate whether employees compensate for non-work social media use at work: When employees spent more time on social media in a particular hour, they subsequently reported higher work engagement. Future studies might investigate whether this is a result of employees' conscious endeavors to refocus their attention on work to make up for the time lost to the use of social media. A related question is whether employees are indeed able to compensate fully or in

part for their previous use of social media. However, looking at the results of our between-person analyses, we can rule out full compensation: Employees using social media more extensively reported lower work engagement in general.

In order to closely depict the episodic process model and reliably assess the outcome variable on an hourly self-reported level, we assessed work engagement as a precursor for employees' task performance (e.g. Salanova et al., 2006, 2010; Hakanen et al., 2008). Demerouti and Cropanzano (2010) state that "work engagement captures both the 'can do' and 'will do' dimensions, [therefore] it will tend to have stronger effects on job performance than other related constructs" (p. 148). Work engagement can be reliably assessed with self-reports and has also been shown to be assessed reliably in diary surveys (Bakker, 2011). Our study was based on the idea that work engagement implies that the person has established attentional focus and allocates resources to the task. Therefore, work engagement precedes employees' hourly task performance. Future studies may examine (objective) task performance and depict the assumptions of Beal et al. even more precisely.

By choosing an hourly time interval, we aimed to provide a close alignment to Beal et al.'s (2005) conceptualization of a working day with an underlying episodic structure. The design of our study was grounded on the idea that meetings and calls are typically scheduled at the full hour and are usually timed one (or two) hours. Future studies might use day reconstruction methods (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004) with employees reporting the segmentation based on their own perceptions to assess the specific content of the episodes to shed light on the question whether fixed time units or allowing employees to segment their own time units result in substantial differences.

Conclusion

Our study confirmed the prevailing view that more extensive use of social media at work is related to lower levels of work engagement. However, we also challenged this rather narrow view of

non-work social media use as counterproductive work behavior and aimed to arrive at a more balanced view of non-work social media use. Using the episodic process model as a theoretical framework and ecological momentary assessments throughout the entire working day, we also examined concurrent and time-lagged within-person effects. These examinations demonstrated that non-work social media use may serve as a micro-break from work, helping employees to replenish their resources and improve their subsequent work engagement. Non-work social media use at work may not only have a dark side, but also a bright side. Future research is urgently needed to better understand the phenomenon and the implications of non-work social media use at work.

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Figures & Tables

Table 1

Means, Standard Deviations, and Correlations between Study Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3
1 Non-work social media use	4.60	6.91	-	-.06**	-.10***
2 Non-work social media use lag-1	4.54	6.72	-.06**	-	.07**
3 Work engagement	4.14	1.28	-.06**	.04 [†]	

Note. Correlations below the diagonal are person-level correlations ($N = 334$), correlations above the diagonal are hour-level correlations ($N = 2235$). *** $p < .001$, ** $p < .01$, * $p < .05$, [†] $< .10$.

Table 2

Multilevel Analyses Predicting Work Engagement

	<i>Null model</i>			<i>Model 1</i>			<i>Model 2</i>			<i>Model 3</i>		
	<i>Est</i>	<i>SE</i>	<i>t</i>	<i>Est</i>	<i>SE</i>	<i>t</i>	<i>(within concurrent)</i>			<i>(within lag -1)</i>		
	<i>Est</i>	<i>SE</i>	<i>t</i>	<i>Est</i>	<i>SE</i>	<i>t</i>	<i>Est</i>	<i>SE</i>	<i>t</i>	<i>Est</i>	<i>SE</i>	<i>t</i>
Intercept	4.13	.06	72.38	4.13	.06	72.08	4.13	.06	73.90	4.08	.06	66.26
Time linear				-3.38**	1.15	-2.94	-3.43**	1.16	-2.95	-4.96***	1.06	-4.69
Time quadratic				-2.48**	0.94	-2.63	-1.96*	0.95	-2.07	.74	.89	.83
Non-work social media use within ^{a,b}							-.02***	.003	-4.90	.01*	.004	1.987
Non-work social media use between ^c							-.04**	.01	-2.98	-.06***	.01	-4.12
Level-1 intercept variance (SE)	.66 (.81)			.59 (.77)			.57 (.76)			.52 (.72)		
Level-2 intercept variance (SE)	.97 (.98)			.95 (.98)			.90 (.95)			1.03 (1.01)		
Δ Pseudo R^2				.05			.05			.03		
BIC	6216.95			6122.36			6111.35			4471.59		
AIC	6199.81			6059.54			6037.12			440.58		

Note. *** $p < .001$, ** $p < .01$, * $p < .05$. ^a Concurrent within-person effect model (Model 2, $N = 2,235$). ^b

Lagged (-1) within-person effect model (Model 3, $N = 1,618$). ^c Between = compositional effect

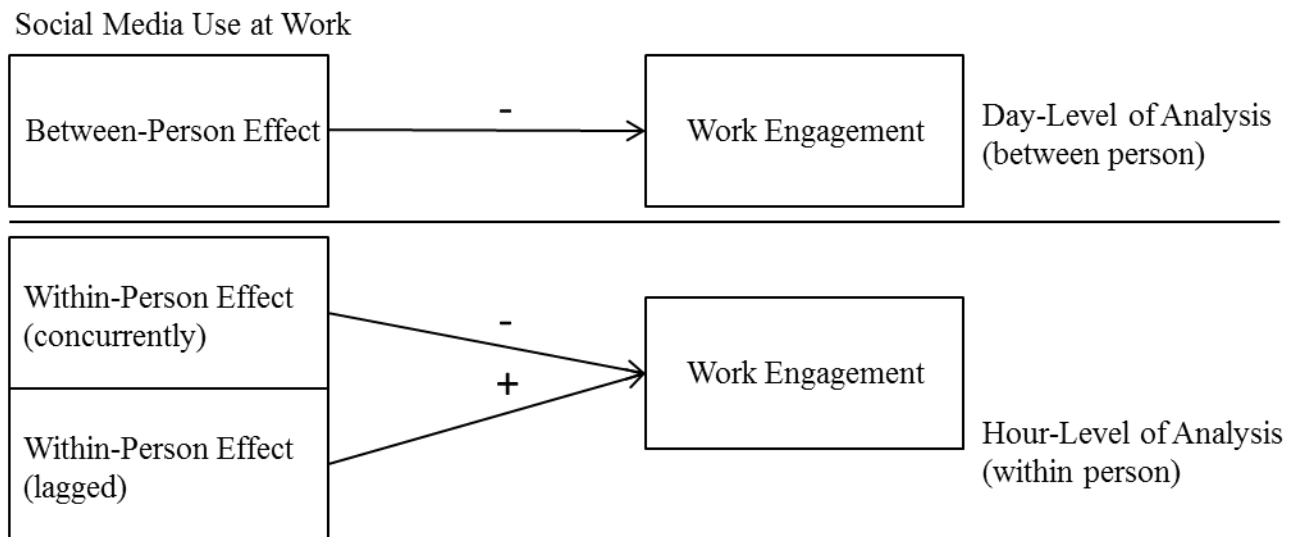


Figure 1. Conceptual Model.