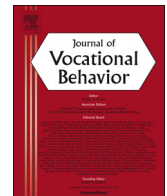




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Self-control during daily work activities and work-to-nonwork conflict



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ABSTRACT

Drawing on theories of self-regulation we propose that the nature of the activities performed at work, particularly those requiring self-control, can play an important role in the work-to-nonwork conflict process. We argue that because functional nonwork behavior requires continued self-control after work, occurrences of work-to-nonwork conflict will be more likely when one's limited self-control resources are expended during the day, and incidents of subsequent self-control failure in relation to the nonwork domain become more likely. We test hypotheses via a daily diary study, capturing the timing of different activities across a workday, along with independent ratings of how much self-control the activities require. We find, at the within-person level, that the extent that work activities performed that day require self-control explains variance in work-to-nonwork conflict, beyond the effects of work hours and mediated by depleted state self-control capacity after work. Furthermore, afternoon self-controlled work activities, compared to morning, are more strongly associated with work-to-nonwork conflict. Against our hypothesis, low sleep quantity weakened the association between self-controlled work activities and self-control capacity. We discuss our findings in relation to the utility of self-regulation approaches to work-to-nonwork conflict based on the self-control strength model.

As the boundaries between work and nonwork time continue to blur, the interest in the impact of work on employees' lives outside of work has increased. This area of work is critical because work-to-nonwork conflict is associated with poorer job and life satisfaction (Kossek & Ozeki, 1998) and lower worker performance (Amstad, Meier, Fasel, Elfering, & Semmer, 2011), and poorer wellbeing outcomes for workers' partners (Matthews, Conger, & Wickrama, 1996). While we know that factors such as long work hours (Netemeyer, Boles, & McMurrian, 1996), high workload (Ilies et al., 2007) and lack of social support (Kossek, Pichler, Bodner, & Hammer, 2011) are associated with work-to-nonwork conflict, the underlying processes, which explain *how* work experiences come to influence experiences outside of work, remain poorly understood. Understanding these processes is important both for researchers, to develop an in-depth understanding of the mechanisms of negative work-to-nonwork conflict, and for employees and employers, to enable them to manage this conflict effectively.

In this paper we propose that people's ability to function effectively outside of work on a day-to-day basis is impeded when their tasks during the working day require them to control or regulate their natural behavior. This is based on propositions from self-regulation theory, and in particular the self-control strength model (Baumeister, Heatherton, & Tice, 1994). The self-control strength

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model explains that engaging in activities that require self-control depletes a person's self-control resources, making subsequent activities that require self-control more difficult. Self-regulation theory is highly appropriate here because many behaviors that contribute to work-to-nonwork conflict are not intentional, but represent examples of self-control failures, such as working longer than intended, checking work emails on one's phone without thinking, or allowing stressful work experiences to influence mood at home. Despite this, little research has considered self-regulation as a mechanism to explain work-to-nonwork conflict.

Our research contributes to the work-to-nonwork conflict literature in a number of ways. Firstly, we build on existing work that takes a resource depletion approach to work-to-nonwork conflict (also referred to as scarcity or drain approaches; Greenhaus & Beutell, 1985; Rothbard, 2001) by directly examining a particular depletion mechanism relating to self-control capacity. The role of personal resources (e.g. abilities, time, energy), in terms of both depletion and enrichment processes across the work-nonwork boundary, has been discussed in a several studies (e.g. Grawitch, Barber, & Justice, 2010; Ten Brummelhuis & Bakker, 2012), often drawing on Hobföll's (1989) Conservation of Resources Theory. However, these models are based on rather imprecise notions about a variety of personal resources. We argue that self-regulation theory offers a more specific articulation of the role of resource depletion in work-to-nonwork conflict, with a focused set of propositions that can be tested. This theoretical approach places self-control as a core, but inherently limited, resource that is required across the work and nonwork domains.

Secondly, our study extends previous work showing that work-to-nonwork conflict is influenced not only by the duration of activities at work, but also by the nature of those work activities (Rothbard, 2001; Sturges, 2012). While working hours are positively associated with reports of work-to-nonwork conflict (Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011), studies have found that the effect of working hours on work-to-nonwork conflict becomes marginal once work overload is taken into account at both a global level (Parasuraman, Purohit, Godshalk, & Beutell, 1996) and a daily level (Ilies et al., 2007). Indeed, Thompson and Bunderson (2001) suggest that the qualitative meaning of time in relation to work-life balance is equally important as the quantity of time worked. Our study contributes to this literature by examining the nature of different activities performed across the work day by weighting different tasks based on the degree to which they consume self-control resources, and comparing their effect against the total quantity of time they consume.

Thirdly, our research seeks to explain how and when *daily* experiences relating to work-to-nonwork conflict arise. In contrast to between-person approaches, a daily approach to examining work-to-nonwork conflict offers a more precise basis for understanding real-time and dynamic relations between work and nonwork experiences across a day (Ilies et al., 2007). Learning more about within-person variation in experiences relating to daily work-to-nonwork conflict is important, considering that outcomes include higher daily experiences of burnout (Derks & Bakker, 2014) and fatigue (Park & Sprung, 2015), and reduced evening interaction with families (Ilies et al., 2007). Contributing to these studies, we examine daily boundary conditions that explain when self-controlled activities will affect work-to-nonwork conflict. Specifically, we examine whether the engagement in activities requiring self-control in the afternoon will have a stronger effect on outcomes than activities in the morning of a day, and consider the additional influence of lower sleep quantity during the previous night.

1. Self-control at work

While much human activity involves largely automatic responses to stimuli, for many tasks deliberate, conscious and controlled action is required. Self-regulation theories (e.g. Bandura, 1991; Baumeister et al., 1994; Carver & Scheier, 2001) are frameworks seeking to explain how people control their behavior, thoughts and emotions and what might account for breakdowns in self-control. Self-control is defined as "the ability to override or change one's inner responses, as well as to interrupt undesired behavioral tendencies (such as impulses) and refrain from acting on them" (Tangney, Baumeister, & Boone, 2004; p. 274). Self-control is needed for many activities including regulating thoughts and emotions, resisting temptations, making decisions, and detaching from one task and switching to another; all of which are typical to both work and nonwork activities (Baumeister, Vohs, & Tice, 2007). Other activities that are less effortful, such as those that are easy, largely automatic, intrinsically enjoyable or produce immediate gratification, are suggested to require less conscious self-control (Baumeister et al., 1994; Moller, Deci, & Ryan, 2006).

The self-control strength model, which is central to Baumeister and colleagues' theory of self-regulation, proposes that while cognitive, affective and energetic demands can drain self-regulatory resources, acts requiring self-control particularly draw from a limited reservoir that is temporarily expended (often referred to as ego depletion; Baumeister et al., 1994; Muraven & Baumeister, 2000). This theory suggests that when depletion occurs a person has temporarily limited self-control capacity, so they will be unable to exert self-control to regulate their behavior effectively (Baumeister & Heatherton, 1996). The self-control strength model shares similarities with other perspectives that consider personal resource gain and loss as important in determining human behaviors (e.g. self-efficacy or self-esteem within Conservation of Resources Theory; Hobföll, 1989), but differs in several ways, most notably in its unitary focus on self-control as a central resource and the proposal that this resource is fundamentally limited (Hagger, 2015). While concerns have been raised over the replicability and size of some of the experimental effects from the serial task paradigm which dominates this body of research, and also about some of the experimental techniques used (e.g. Baumeister, Tice, & Vohs, 2018; Carter, Kofler, Forster, & McCullough, 2015; Hagger et al., 2015), meta-analytic findings have been generally supported the core tenets of the theory (Hagger, Wood, Stiff, & Chatzisarantis, 2010a). Diary studies have also found that self-control demands experienced during the work day are associated with ego depletion and need for recovery later in the day (Prem, Kubicek, Diestel, & Korunka, 2016; Rivkin, Diestel, & Schmidt, 2015).

Our approach to conceptualizing self-control is novel and can be seen as both episodic and activity-based. Lilius (2012) argues that all tasks within a work role are not equal and that different tasks can be conceptualized as either resource depleting or resource generating, or perhaps both. We focus on the extent to which different activities within a work role require varying degrees of self-

control and then the extent to which individuals engage in those activities across a workday. This approach allows us to use multiple sources of data to measure self-control demands; specifically we collect ratings from an independent panel of the level of self-control required for different activities within a certain work role, and then ask individuals within that role to report the activities they perform across the working day. This avoids a sole reliance on self-appraisals of self-control resources, which may conflate an individual's capacity and motivation to engage in self-control, and focuses on the engagement in volitional acts, which is the defining element of self-control strength theory (Lian, Yam, Ferris, & Brown, 2017). Secondly, the approach allows us to examine self-control across different parts of the work day. As self-control strength is a dynamic concept that fluctuates across the day, its effects are also likely to be time dependent. Thirdly, we can directly compare both the influence of work hours, in terms of time spent engaged in all work activities, and the influence of the nature of those activities in terms of self-control demands and how their accumulation may be related to state self-control capacity. This offers a more precise examination of the independent roles of the duration of activities with the quality of those activities in terms of self-control demands.

Based on the discussion above we expect that days spent engaged in work activities that require greater self-control will result in lower state self-control capacity at the end of the day, even when daily work hours are controlled for. Accordingly, we hypothesize that:

Hypothesis 1. The extent of self-controlled work activities over the course of a day is negatively associated with end-of-day state self-control capacity.

2. Self-control and work-to-nonwork conflict

Greenhaus and Beutell (1985) propose that work-to-nonwork conflict, defined as the degree to which participation in the nonwork role is made more difficult by virtue of participation in the work role, can take different forms based on; the time devoted to the work role, the strain experienced in the work role, and the behavior required in the work role. We believe that self-control depletion can contribute to each form of work-to-nonwork conflict. First, research finds that self-control is important for switching from one goal to another (Wrosch, Scheier, Carver, & Schulz, 2003) and that depleted self-control leads to goal persistence beyond a useful or necessary lifespan (Karoly, 1993). Depleted self-control is also linked to an inability to resist strong temptations (Baumeister et al., 1994). In this way self-control depletion resulting from earlier work activities can contribute to time-based conflict via the engagement in later work tasks for longer than intended (e.g., working late) or via being less able to resist returning to work tasks during the evening, for example by using a mobile phone to check work emails at home (Lanaj, Johnson, & Barnes, 2014).

Second, self-control depletion can contribute to strain-based conflict in two ways. Primarily, depleted levels of self-control resulting from earlier work activities can be seen as a form of work-related strain that directly affects people's ability to perform nonwork activities requiring continued self-control. For example, self-control has been found to be important for maintaining healthy social interactions (Finkel & Campbell, 2001), initiating physical exercise (Hagger, Wood, Stiff, & Chatzisarantis, 2010b), or making healthy food and alcohol choices (Muraven, Collins, Shiffman, & Paty, 2005; Sonnentag, Puntdt, & Venz, 2017). If a person has low self-control capacity at the end of their working day, their ability to function effectively in such nonwork activities will be compromised. Additionally, low levels of self-control make employees less able to regulate other strain symptoms originating from the work domain, thereby further enhancing the strain-based conflict. For example, work stressors like role conflict and role ambiguity are understood to create strain symptoms like tension and irritability that can spillover over into the nonwork domain (e.g. Frone, Russell, & Cooper, 1992). Someone who has low self-control capacity will be less able to resist expressing these strain symptoms in the nonwork domain, thereby making strain-based work-to-nonwork conflict more likely.

Third, adjustment to the different behavioral standards of the work domain and nonwork domain is a self-regulatory task. Behavioral standards are goals, ideals or other role-informed reference points against which current behavior is compared, and they require self-control in order to be met (Carver & Scheier, 2001). For example, standards for appropriate displays of emotion can vary considerably across the two domains (e.g. from emotional restrictiveness at work to emotional openness at home; Greenhaus & Beutell, 1985) and self-control is needed to regulate affective displays (Tice & Bratslavsky, 2000; Wagner, Barnes, & Scott, 2014). When self-control capacity is depleted, individuals are less able to regulate this behavioral adjustment between life domains, making the spillover of behaviors from the work domain to the nonwork domain more likely. This process is also supported by laboratory studies finding that people with low self-control are less able to suppress learned behavioral responses (Muraven & Baumeister, 2000), which can become engrained by work norms. Therefore, we argue that self-control depletion can contribute to behavior-based work-to-nonwork conflict.

Some limited reference to both self-regulation and ego depletion as antecedents to work-to-nonwork conflict can be found within the literature. For example, Rothbard (2001) suggested the increased self-regulation associated with coping with negative emotions at work can reduce the availability of self-regulatory resources in the nonwork role, due to ego depletion. Wagner et al. (2014) theoretically suggested that ego depletion may mediate the relationship between daily surface acting and work-to-nonwork conflict. Likewise, Allen, Johnson, Kiburz, and Shockley (2013) drew on self-regulation theory as a post-hoc explanation for the small relationship they found between workplace flexibility and work-to-nonwork conflict, suggesting that the increased need for decision-making that comes with workplace flexibility can draw on self-control resources in a negative manner. To date little work has considered self-control as a resource for limiting work-to-nonwork conflict.

Empirically, and often drawing on self-regulation theory as a theoretical framework, studies have established that fatigue and exhaustion positively predict work-to-nonwork conflict (e.g. Demerouti, Bakker, & Bulters, 2004), mediate the link between various job demands and work-to-nonwork conflict (e.g. Krannitz, Grandey, Liu, & Almeida, 2015) and that supervisory undermining at work

predicts sleep difficulties, which in turn spillover into undermining of cohabitants at home (Barber, Taylor, Burton, & Bailey, 2017). However, given that volitional resources rather than energetic resources are located at the heart of self-regulation theory (Baumeister et al., 1994), research is needed to focus on their specific function in the spillover of work to nonwork. This work has begun but is not complete; for example, depleted self-regulatory resources have been found to mediate the effect of job stressors on destructive reactions to behavior between romantic partners later that day, but only in a study of a single workday (Unger, Sonnentag, Niessen, & Kuonath, 2017).

In summary, there is some acknowledgement that self-control is an important resource for effective functioning across the work and nonwork domains. We propose that the engagement in self-controlled work activities and the accompanying reduction in state self-control capacity is associated with work-to-nonwork conflict, beyond any influence of daily work hours. Because limited state self-control capacity has been found in experimental studies to lead to various instances of self-control failure as a result of previous use of self-control resources (Baumeister & Heatherton, 1996), we suggest that state self-control capacity operates as a mediator in the relationship between engagement in self-controlled work activities and work-to-nonwork conflict. So, we hypothesize:

Hypothesis 2. a) The extent of self-controlled work activities over the course of a day is positively associated with work-to-nonwork conflict, b) end-of-day state self-control capacity is negatively associated with work-to-nonwork conflict; and c) there is a positive indirect relationship between extent of self-controlled work activities over the course of a day and work-to-nonwork conflict via end-of-day state self-control capacity.

2.1. Moderators of time of day and sleep quantity

We further inspect the notion of limited self-control strength by examining contextual features that will contribute to an individual's level of momentary resource availability as they perform daily activities. Firstly, we argue that it is not simply the extent of self-controlled work activities that results in work-to-nonwork conflict, but also their placement during the work day. Scholars have argued that, as a person is working, cognitive functioning and physiological arousal reduce as cognitive and energetic resources become depleted over time (Thayer, 1987; Van der Linden, Frese, & Meijman, 2003). Accordingly, early in the working day an individual will have more cognitive and energetic resources at their disposal to meet work demands compared with later in the day when they will have fewer resources to draw on. This process has been referred to as workday accumulation (Benedetti, Diefendorff, Gabriel, & Chandler, 2015), but perhaps represents more of a dissipative process when relating to resource loss, and we extend this logic to the context of self-control resources. Additionally, we suggest that opportunities for resource recovery, which is a restorative process through which depleted psycho-physiological systems are allowed to regain earlier levels (Meijman & Mulder, 1998), reduce towards the end of a working day. Resource recovery during a day can be achieved via psychological detachment (Sonnentag & Fritz, 2007), taking breaks (Troughakos, Hideg, Cheng, & Beal, 2014) and engaging in autonomously regulated activities (Moller et al., 2006). We propose that there is simply less time to engage in such restorative activities later in the day.

Evidence of time-of-day effects is emerging and this research contributes to this burgeoning literature. For example, Grech, Neal, Yeo, Humphreys, and Smith (2009) found that workload (vigilance) was positively related to fatigue later in a shift in comparison to early in a shift, when it was negatively linked to fatigue. Likewise, Benedetti et al. (2015) found that controlled regulation is particularly powerful later in the day in terms of reducing psychological well-being. To our knowledge, time-of-day effects in relation to self-control strength and work-to-nonwork conflict have received little attention to date. Based on our earlier argumentation, we expect that activities requiring high levels of self-control towards the latter half of the work day are more likely to affect state self-control capacity and work-to-nonwork conflict than those in the earlier half of the day, over and above any effect of work hours. So, we hypothesize:

Hypothesis 3. The extent of self-controlled work activities over the course of an afternoon (post 2 pm) has a stronger association than the extent of self-controlled work activities over the course of a morning (pre-2 pm) with a) end-of-day state self-control capacity and b) work-to-nonwork conflict, and c) the positive indirect relationship between the extent of self-controlled work activities over the course of an afternoon (post 2 pm) and work-to-nonwork conflict via end-of-day state self-control capacity will be larger than the same indirect effect from the extent of self-controlled work activities over the course of a morning (pre-2 pm).

As we argue above, engagement in self-controlled activities may be more likely to lead to self-control failure if the individual is partially depleted in other personal resources. We extend this argument to consider residual depletion at the start of the day. Theories of sleep suggest that sleep is an important human mechanism for restoring resources that have been lost during activities the previous day (Monk et al., 1994). It has been argued that when sleep is inadequate, either in quantity or in quality, a person will not have sufficiently recovered energetic resources, and therefore remains to some extent depleted (Barnes, Schaubroeck, Huth, & Ghumman, 2011). While the distinction between energetic and self-control resources is not fully understood, it is likely that self-control requires energetic resources to trigger action (Quinn, Spreitzer, & Lam, 2012).

Research has found a direct association between sleep quantity and the subsequent experience of state self-control capacity (Lanaj et al., 2014), and that shorter periods of sleep can have negative effects on workplace behaviors via reductions in self-control (e.g. Christian & Ellis, 2011). However, our particular interest here is to look beyond direct effects and consider daily sleep quantity as a moderator of the within-person relationship between self-controlled work activities and both state self-control capacity and work-to-nonwork conflict. Within self-regulation theory, it is argued that the greater the pool of self-control resources available to an individual, the greater one's ability to deal with subsequent depleting situations (Baumeister et al., 2007). However due to the finite nature of self-control resources, a deficit in these resources causes individuals to more easily and more quickly experience self-control

failure, should they engage in further activities drawing on that resource (Baumeister & Heatherton, 1996).

We argue that when sleep is shorter than usual during the previous night, the resources needed for self-control will be partially depleted, and individuals therefore start the day at a lower resource baseline than if their sleep had been longer. Accordingly, the availability of subsequent self-control resources is lower. It then requires fewer self-control activities to deplete individuals' available self-control capacity, and influence work-to-nonwork conflict more easily or more quickly as a result. Recent studies would support this assertion. Trougakos, Beal, Cheng, Hideg, and Zweig (2015) found that chronic exhaustion exacerbates the negative effects of daily surface acting on following day organizational citizenship behavior (towards individuals) via end-of-day exhaustion. Likewise, Diestel, Rivkin, and Schmidt (2015) conducted two diary studies, which showed that the links between mid-day emotional dissonance and both evening state self-control capacity and need for recovery were heightened by low daily sleep quality. Accordingly, we hypothesize:

Hypothesis 4. Daily sleep quantity moderates the associations between extent of self-controlled work activities over the course of a day and both a) end-of-day state self-control capacity and b) work-to-nonwork conflict, such that the effects are stronger when daily sleep quantity is low and weaker when daily sleep quantity is high.

3. Method

3.1. Procedure and sample

The study examined the daily activities of Church of England ministers. Church ministers are a suitable population for this study because they have discretion over work hours and tasks, but tend to work long hours, often have high levels of integration between work and nonwork, and can experience work-to-nonwork conflict throughout a working day (Peyton & Gatrell, 2013). Most Church of England ministers have partners and dependents (Church of England Research & Statistics, 2019), creating nonwork demands that require regulation. Their roles also include activities that require significant self-control (Dewe, 1987), including provision of emotional support to others, performance of a public persona, and heavy administration. These activities can involve regulating emotion, suppressing spontaneous impulses, and overcoming inner resistance, which would be considered self-control demands (Schmidt & Diestel, 2015).

A stratified random sample of 900 incumbent ministers was selected from a national database to include equal proportions of men and women and equal proportions of ministers who were responsible, singly and in teams, for single and multiple churches. Potential participants were invited to complete an online background survey and then seven consecutive online daily diaries. Diary surveys were sent via email at 3 pm and participants were instructed to complete them at the end of the day.

Background survey and daily diary data were provided by 193 people. Days on which no work was conducted were removed (2.5% of all days), as were surveys that contained substantial missing data (4.8% of all days), leaving a total of 1138 useable days on which the analyses were conducted. The large majority of the online responses were received in the evening: 8% of responses were received between 3 and 5 pm, 10% between 5 and 7 pm, 15% between 7 and 9 pm, 33% between 9 and 11 pm, 13% after 11 pm, 10% before 1 pm the following day and 11% after 1 pm the following day. A proportion of participants ($n = 12$; 6.2%) preferred to participate using paper booklets, rather than online diaries. For these participants we recorded the date, but not the time of day when they completed the diaries.

Participants were mostly women (59.1%), which is an over-representation of the general population as women make up around 30% of ordained ministers in the UK (Church of England Research & Statistics, 2019), but this is explained in large part by our sampling strategy which targeted equal numbers of men and women. Most participants were married or in a relationship (86.5%), had dependent children or relatives that required care (60.1%) and were primarily 50–59 years in age (57.0%). Thirty-two participants (16.5%) were neither married or in relationship, nor had dependents, but did not significantly differ in the level of daily work-to-nonwork conflict reported compared with the other participants (respective means = 1.81 vs 1.83; $t = 0.178$, $df = 191$, $p = .859$). The majority had full-time posts (95.3%) and were responsible for multiple churches (64.7%). In the Church of England, churches are primarily managed in groups (70% of churches; Church of England Research & Statistics, 2019). Average daily work hours was over 12 h, which is not unusually high for the population (Peyton & Gatrell, 2013), with just over 3 h on average in which breaks were taken during the working day.

3.2. Measures

Extent of self-controlled work activities. The measure examined 14 common activities for incumbent ministers (e.g. preaching, administration, pastoral work) that were generated following discussions with existing ministers and senior managers within the Church of England. Respondents completed a 24-hour activity grid where they recorded each of their activities during each hour of that day from the list of the 14 activities (and a 15th 'other' activity that they could report and describe if it did not fall under one of the 14 common activities). From this it was possible to calculate the hours spent on different activities each day (and in the morning/afternoon).

Separately, another eight incumbents (four men, four women), selected by a Director of Education within the Church as having relevant experience and expertise for the task, independently rated the activities according to the degree to which they would require self-control using the following measure: "Much of human behaviour involves automatic or nonconscious processes, but it is suggested that a significant proportion involves deliberate, conscious and controlled action. We are interested in examining the degree to

Table 1
Ratings of activities: Mean daily hours & extent of self-control.

| Activity | Daily hours (N = 1138 days) | | Extent of self-control (N = 8) | |
|---|-----------------------------|------|--------------------------------|------|
| | Mean | SD | Mean | SD |
| Administration and organization | 2.83 | 2.25 | 4.13 | 0.64 |
| Engaging in your own CMD (continuing ministerial development) | 0.23 | 1.02 | 3.75 | 1.04 |
| Extra-parish activities (e.g., Diocesan or Deanery task) | 0.55 | 1.43 | 3.63 | 1.30 |
| Intentional outreach (e.g., offering hospitality, hanging around the school gate, etc) | 0.22 | 0.73 | 3.50 | 0.76 |
| Use of social media (e.g., Twitter, Facebook) | 0.22 | 0.73 | 3.38 | 1.30 |
| Working with children and/or young people | 0.29 | 0.91 | 3.25 | 0.71 |
| Preaching/teaching (including preparation) | 1.26 | 1.82 | 3.00 | 0.76 |
| Running nurture courses for new Christians and/or new members | 0.13 | 0.56 | 3.00 | 1.07 |
| Participation in corporate & individual prayer | 1.16 | 1.17 | 2.88 | 0.83 |
| Leadership role in local community (both as minister & recognizable community leader) | 0.45 | 1.14 | 2.88 | 0.84 |
| Working with colleagues (either supportively, collaboratively or in providing leadership, e.g., within schools) | 0.94 | 1.64 | 2.87 | 0.99 |
| Exercising pastoral ministry (e.g., in crisis and in regular pastoral care, visiting people's homes) | 1.34 | 1.65 | 2.75 | 0.46 |
| Liturgical duties (e.g., planning, preparing and presiding at worship/services at church and other public venues) | 1.56 | 2.15 | 2.63 | 0.74 |
| Conducting and preparing for occasional offices (e.g., baptisms, weddings, funerals) | 0.69 | 1.33 | 2.62 | 0.52 |

which certain activities require incumbents to move beyond behavior that is more automatic or nonconscious for them, towards more intentionally self-controlled or 'self-regulated' behavior. This could mean that they need to do one or more of the following: i. exert substantial willpower when engaging in the activity; ii. resist temptation to procrastinate or do something else; iii. suppress inner thoughts and emotions when engaging in the activity. Below is a list of activities in which incumbents typically engage. Please use the grid below to indicate the extent to which you believe that each of the activities would require 'the typical incumbent' to engage in self-control of their behavior... e.g. preaching/teaching" (0–4; Requires no self-control – Requires substantial self-control). Inter-rater reliability was moderate: ICC(1) = 0.134, ICC(2) = 0.553 (LeBreton & Senter, 2008), suggesting that the judges' rank ordering of the activities was modestly consistent. As shown in Table 1, the standard deviations in the judges' ratings of self-control range from quite small (e.g. pastoral ministry, occasional offices) to more moderate (e.g. extra-parish activities, use of social media), indicating generally low levels of between-person variance in the judges' ratings, but some activities where that variance was higher. Complete descriptive statistics for the activities are provided in Table 1, including information about the mean time per day spent engaged in each activity reported by participant ministers. Administrative tasks scored highest for self-control (and were recorded as the most time-consuming activity also), whereas activities more typical of a minister's calling were rated lowest on self-control (e.g. occasional offices, liturgical duties).

These separate mean ratings of self-control were then used to weight the 14 daily diary activities ('other' activities were not included). For each hour of the working day, a score of self-control was calculated based on the proportion of that hour the activity took multiplied by the mean value of the objective raters for that activity. If just one activity was reported in an hour, the proportion was 1, if two activities were reported the proportion was 0.5, and so on; we assume that multiple tasks reported in an hour block were equally spread across that hour block. If multiple activities were reported in an hour period, the self-control scores for the different activities were summed. The scores for each hour block of work were then summed to give a score for the whole day (self-control_{all-day}; mean = 31.16, SD = 6.25) and for the morning (pre-2 pm) and afternoon (post-2 pm) of each day (self-control_{am} [mean = 15.63, SD = 2.56] and self-control_{pm} [mean = 16.61, SD = 4.36] respectively). 2 pm was selected as the boundary as it fell at the average mid-point of the working day in our sample.

Work-to-nonwork conflict was measured using three items based on items developed by Netemeyer et al. (1996) and Hill (2005) and modified to the day-level. These were "To what extent do you feel your activities today... "Interfered with your personal/family life?", "Made you feel that you have insufficient time or energy to attend to personal/family matters", "Stopped you from doing something personal/family-related" (1–5; not at all-a great deal; mean daily alpha = 0.92). This short scale therefore concisely measures the degree to which work activities are believed to have interfered with personal or family activities at a daily level.

State self-control capacity was measured using four items based on the scale from Ciarocco, Twenge, Muraven, and Tice (2011). This scale was adapted in line with suggestions from Lian et al. (2017) that the original items typically reference fatigue and low cognitive resources rather than volitional resources. Our adaptations intend to better capture the perceived volitional resources required to achieve an action; "To what extent do you agree with the following... "It would take a lot of effort to concentrate on something", "I would find making a decision more difficult than usual", "It would be hard to find the energy to perform even moderately challenging tasks", "I would not have the energy to deal with demanding people" (1–5; strongly agree-strongly disagree; mean daily alpha = 0.88).

Because we used adapted measures for both daily work-to-nonwork conflict and state-self-control capacity, we further tested them with a heterogeneous sample of workers: 174 full-time workers in the United Kingdom (64.2% women; mean age = 34.21 years, SD = 8.69 years; all lived with a spouse or partner) from a variety of occupations (e.g. 30.1% were professionals, 18.5% were clerical or secretarial workers, 15.6% were managers and administrators, 14.5% were associated professional/technical workers). They were

asked to complete a single survey on one day at least two hours after work. The sample was recruited via Prolific Academic Limited and participants were paid £1.25 (equivalent to \$1.64 US) to complete the short survey. Alpha for work-to-nonwork conflict was 0.84, with a mean of 1.94 (SD = 0.96). Alpha for state self-control capacity was 0.89, with a mean of 2.86 (SD = 1.13). These statistics are broadly comparable with the same statistics from the main study. Using these data, we also supported out prediction that state self-control capacity was negatively related to work-nonwork conflict (std. $b = -0.382$, $p < .001$) after controlling for daily work hours.

Sleep quantity, from the Pittsburgh Sleep Diary (Monk et al., 1994), was measured by asking the approximate time (to the nearest 30 min) that the respondent went to sleep the previous day and woke up that morning, from which the hours of sleep was calculated.

3.3. Data analysis

The hypotheses were tested using multi-level structural equation models (MSEMs) within Mplus 7 (Muthén & Muthén, 1998-2012). Intraclass correlations showed substantial within-person variance for all variables (> 50%). Direct, indirect and moderated effects were calculated by following the advice of Preacher, Curran, and Bauer (2006) and Preacher, Zyphur, and Zhang (2010), based on maximum likelihood estimation. Multi-item measures were examined as latent variables. The study variables were grand mean centered prior to analysis. The latent within-person component of the variables is centered to the group mean by default. At the between-person level the latent variables were estimated and their means, variances and covariances, along with those of observed variables, were requested.

Weekday was controlled for at the within-person level, to account for day of the week effects (McFarlane, Martin, & Williams, 1988), and daily work hours was controlled for at both within- and between-person level. This was identified by calculating the time between the first and last entry of a work activity within the daily 24-hour activity grid.

4. Results

4.1. Measurement and structural models

First, the measurement model was examined using multilevel confirmatory factor analysis. The two multi-item measures, state self-control capacity and work-to-nonwork conflict, were examined within a two-factor model and self-control_{all-day} and work hours were added as observed variable covariates. This fitted the data well ($\chi^2 = 195.415$, $df = 48$; CFI = 0.98; TLI = 0.97; RMSEA = 0.049; sRMR = 0.025 [within] and 0.057 [between]); in this and all subsequent models one item's loading on the state self-control capacity measure was fixed to 0.8 and variance to 0.1 at the between-person level to avoid a negative residual variance), and better than a one-factor model in which items were loaded onto a single factor at each level ($\chi^2 = 2538.119$, $df = 56$; CFI = 0.61; TLI = 0.49; RMSEA = 0.187; sRMR = 0.198 [within] and 0.317 [between]). This supports the construct validity of the measures used and means, standard deviations and correlations of the study variables are presented in Table 2.

The hypotheses were tested over three MSEMs and we report the within-person estimates below and in Table 3. The first model (M_1) tested the first two hypotheses. In this model, work-to-nonwork conflict was regressed onto state self-control capacity and self-control_{all-day} and state self-control capacity was regressed onto self-control_{all-day}. All three variables were regressed onto the controls, including daily work hours. This model fitted the data well ($\chi^2 = 381.729$, $df = 90$; CFI = 0.95; TLI = 0.93; RMSEA = 0.055; sRMR = 0.043 [within] and 0.058 [between]). Self-control_{all-day} was negatively related to state self-control capacity (std. $b = -0.183$, $p < .001$) and positively related to work-to-nonwork conflict (std. $b = 0.234$, $p < .001$). State self-control capacity was negatively related to work-to-nonwork conflict (std. $b = -0.213$, $p < .001$). A significant indirect effect from self control_{all-day} to work-life conflict via state self-control capacity was recorded (unstd. $b = 0.026$, SE = 0.008). Monte Carlo estimates of the bias-corrected bootstrapped 95% confidence interval for the indirect effect produced via a simulation developed by Selig and Preacher (2008) did not contain a zero (LLCI = 0.012; ULCI = 0.043). Therefore, hypotheses 1 and 2a-c received full support.

The second MSEM (M_2) tested hypothesis 3. This model was identical to M_1 with the exception that the variable for self-control_{all-}

Table 2
Means, standard deviations, zero-order correlations and Cronbach's alpha.

| | Mean | SD _{between} | SD _{within} | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------------------------------|-------|-----------------------|----------------------|--------|---------|--------|---------|---------|---------|---------|
| 1 Work hours | 12.56 | 2.26 | 2.36 | | 0.50** | 0.36** | 0.39** | 0.02 | -0.01 | -0.16** |
| 2 Self-control _{all-day} | 31.16 | 6.25 | 9.85 | 0.49** | | 0.74** | 0.84** | -0.15** | 0.16** | -0.19** |
| 3 Self-control _{am} | 15.63 | 1.81 | 4.54 | 0.34** | 0.65** | | 0.26** | -0.11** | 0.06* | -0.21** |
| 4 Self-control _{pm} | 16.61 | 4.36 | 6.11 | 0.44** | 0.87** | 0.28** | | -0.09** | 0.17** | -0.08* |
| 5 State self-control capacity | 3.08 | 0.82 | 0.78 | -0.04 | -0.08 | 0.05 | -0.10 | (0.88) | -0.22** | 0.16** |
| 6 Work-to-nonwork conflict | 1.81 | 0.64 | 0.67 | 0.24** | 0.38** | 0.25** | 0.32** | -0.30** | (0.92) | -0.07* |
| 7 Sleep quantity (hours) | 7.23 | 0.91 | 0.94 | -0.16* | -0.30** | -0.26* | -0.26** | -0.06 | -0.22** | |

Notes: * $p < .05$, ** $p < .01$; correlations above the diagonal are within-person correlations (N = 1138); correlations below the diagonal are between person correlations (N = 193); Cronbach's alpha are in parentheses on the diagonal and are mean internal consistencies across days; state self-control capacity and work-to-nonwork conflict statistics are based on composites.

Table 3
Within-person path & indirect effect estimates.

| Model | Variables | State self-control capacity (SSCC) | | | | Work-to-nonwork conflict (WNWC) | | | |
|----------------|--|------------------------------------|-------|----------------------|---------|---------------------------------|---------------|----------------------|---------------|
| | | Unstandardized effects | | Standardized effects | | Unstandardized effects | | Standardized effects | |
| | | b | SE | β | p | b | SE | β | p |
| M ₁ | SC _{all-day} | -0.140 | 0.036 | -0.183 | < 0.001 | 0.154 | 0.031 | 0.234 | < 0.001 |
| | SSCC | | | -0.183 | < 0.001 | -0.183 | 0.032 | -0.213 | < 0.001 |
| M ₂ | SC _{am} | -0.196 | 0.073 | -0.112 | 0.007 | 0.039 | 0.063 | 0.026 | 0.535 |
| | SC _{pm} | -0.092 | 0.052 | -0.076 | 0.077 | 0.179 | 0.041 | 0.174 | < 0.001 |
| | SSCC | | | -0.178 | | -0.178 | 0.034 | -0.207 | < 0.001 |
| M ₃ | SC _{all-day} | 0.264 | 0.143 | 0.370 | 0.064 | 0.141 | 0.123 | 0.225 | 0.252 |
| | Sleep quantity | 0.247 | 0.064 | 0.359 | < 0.001 | -0.057 | 0.055 | -0.095 | 0.298 |
| | SC _{all-day} *Sleep quantity' | 0.055 | 0.019 | 0.572 | 0.004 | 0.004 [0.013] | 0.017 [0.014] | 0.053 [0.164] | 0.787 [0.340] |
| | SSCC | | | | | -0.176 | 0.032 | -0.201 | < 0.001 |

| Model | Indirect effects | Unstandardized effects | | Bias-corrected 95% CIs | |
|----------------|-------------------------------------|------------------------|-------|------------------------|-------|
| | | b | SE | ULCI | LLCI |
| M ₁ | SC _{all-day} → SSCC → WNWC | 0.026 | 0.008 | 0.012 | 0.043 |
| M ₂ | SC _{am} → SSCC → WNWC | 0.035 | 0.015 | 0.008 | 0.067 |
| M ₂ | SC _{pm} → SSCC → WNWC | 0.016 | 0.010 | -0.002 | 0.038 |

Notes: Weekday and daily work hours were included as controls; SE = standard error; SC = Self-control; SSCC = State self-control capacity; WNWC = Work-to-nonwork conflict; SE = standard error; ULCI = Upper limit confidence interval; LLCI = Lower limit confidence interval. To aid convergence, self-controlled work activities and work hours were divided by 10, meaning that all variables were scaled to roughly the same metric. Values in parentheses are those from a further version of M₃, in which no path was included between state self-control capacity and work-non-work conflict. Note that no difference in interpretation of the effects to those in the original is observed.

day was replaced by the variables self-control_{am} and self-control_{pm} at both levels. Self-control_{am} was negatively related to state self-control capacity (std. b = -0.112, p = .007) but self-control_{pm} was so only at the 10% level of significance (std. b = -0.076, p = .077). Counter to hypothesis 3a, self-control_{am} appears to have the stronger association with state self-control capacity than self-control_{pm}, but this was not a significant difference (unstd. b_{diff} = 0.103, p = .250). However, only self-control_{pm} was related to work-life conflict (std. b = 0.174, p < .001) and marginally more significantly strongly than self-control_{am} (unstd. b_{diff} = 0.143, p = .061). An indirect effect was evident between self-control_{am} and work-to-nonwork conflict via state self-control capacity (unstd. b = 0.035, SE = 0.017; Monte Carlo bias-corrected 95% LLCI = 0.008; ULCI = 0.067), however the indirect between self-control_{pm} and work-to-nonwork conflict via state self-control capacity was just outside of significance thresholds (unstd. b = 0.016, SE = 0.010; Monte Carlo bias-corrected 95% LLCI = -0.002; ULCI = 0.038). The difference between these indirect effects is nonsignificant (unstd. b_{diff} = 0.018, p = .261). Therefore support is only found for hypothesis 3b. Support was not found for either hypotheses 3a, as we find that self-control_{am} is similarly associated to evening state self-control capacity as self-control_{pm}, or hypothesis 3c, as the indirect effect of self-control_{pm} on work-to-nonwork conflict via state self-control capacity was not significant. Instead it is the indirect effect of state self-control capacity in the association between self-control_{am} and work-to-nonwork conflict that is significant.

The third MSEM (M₃) tested hypotheses 4a and 4b and was identical to M₁ but included the variable sleep quantity and its interaction term with self control_{all-day}, which were added as predictors of state self-control capacity and work-to-nonwork conflict at the within-person level and as covariates at the between-person level. Sleep quantity was significantly and positively related with state self-control capacity (std. b = 0.359, p < .001) but not related with work-to-nonwork conflict (std. b = -0.095, p = .298). Pertinent to hypothesis 4, findings indicated a significant moderation effect on state self-control capacity (std. b = -0.572, p = .004; see Fig. 1) but not on work-to-nonwork conflict (std. b = 0.053, p = .787; this non-significant effect was confirmed in a model that did not include a path between state self-control capacity and work-to-nonwork conflict). However, rather than low sleep quantity strengthening the effects of self control_{all-day} on state self-control capacity as hypothesized, the effects of self control_{all-day} on state self-control capacity are stronger when sleep quantity is high (at sleep quantity +1SD [8.2 h], unstd. b = -0.183, p < .001; at sleep quantity -1SD [6.3 h], unstd. b = -0.079, p = .045). Therefore, hypotheses 4a and 4b did not receive support.

4.2. Additional analysis

To examine the influence of participants completing diaries both relatively early in the day, and so not allowing many instances of work-to-nonwork conflict to have been recorded, and on the following day, and therefore reliant on participants' recall of the previous day's events, we ran all models again on a subsample of the data in which all diaries identified as being completed earlier than 7 pm or on the subsequent day were removed (n = 780 days remained). Paper diaries were included if the final work activity reported was at 7 pm or later. Completing the diary at 7 pm or later (after when one might expect work to have ended) also makes it more likely, although not verifiable, that participants responded in the nonwork domain, which would be most appropriate for the

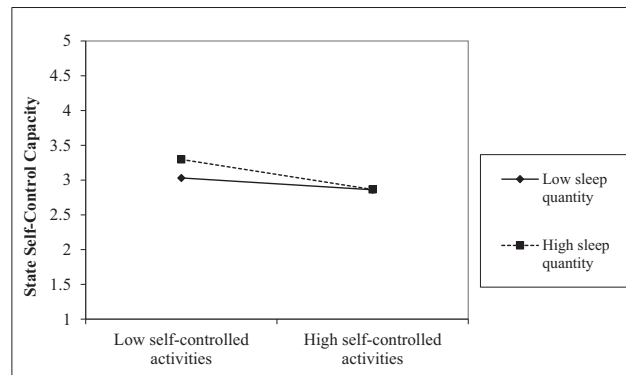


Fig. 1. The relationship between self-control activities and state self-control capacity at both high sleep quantity (+1SD; 8.2 h) and low sleep quantity (-1SD; 6.3 h).

measure of work-to-nonwork conflict, and that the experience of work-to-nonwork conflict temporally followed the self-controlled activities reported. The substantive findings were replicated (all findings from this additional analysis are available on request from the authors). Therefore, we are confident that our main findings are robust regardless of the timing of response in the day. The one slight exception to this relates to the sleep moderation finding (H4), which was significant only at the $p < .10$ level in the subsample. This may be due to the lower statistical power of the smaller subsample, which is a common issue in tests of moderation, but equally may signal that this effect, which runs counter to our hypothesis, may not be particularly robust.

To examine the influence of between-rater variance in the judges' ratings of self-control demands on the daily activities, we constructed two alternative versions of the self-controlled activities measure. For $\text{Self-control}_{\text{alt1}}$, we removed the two activities with the highest standard deviations on the judges' ratings – extra-parish activities and use of social media. For $\text{Self-control}_{\text{alt2}}$, we removed the five activities with the highest standard deviations on the judges' ratings – extra-parish activities, use of social media, engaging in own CMD, running nurture courses, and working with colleagues. Within-person correlations revealed very high correlations between the original self-controlled activities measure and both $\text{Self-control}_{\text{alt1}}$ ($r = 0.91$; $p < .001$) and $\text{Self-control}_{\text{alt2}}$ ($r = 0.79$; $p < .001$). The correlations presented in Table 1 using the original self-controlled activities measure were almost identical with those of the two alternative measures and both state self-control capacity ($\text{Self-control}_{\text{alt1}}$ $r = -0.13$; $p < .001$; $\text{Self-control}_{\text{alt2}}$ $r = -0.11$; $p < .001$) and work-to-nonwork conflict ($\text{Self-control}_{\text{alt1}}$ $r = 0.16$; $p < .001$; $\text{Self-control}_{\text{alt2}}$ $r = 0.11$; $p < .001$). We interpret this additional analysis as offering support for the reliability of the self-controlled activities measure used.

5. Discussion

The findings support several of our hypotheses. The extent of daily self-controlled work activities was found to be negatively related to end-of-day state self-control capacity and positively related to work-to-nonwork conflict, over and above any effects of daily work hours. State self-control capacity was found to operate as a mediator of the relationship between self-controlled work activities and work-to-nonwork conflict. Also, the placement of self-controlled work activities within the day was found to be important; as hypothesized, self-controlled work activities placed in the second half of the day were more strongly and positively linked to work-to-nonwork conflict than those in the first half of the day. However, some hypotheses were not supported as the effects on end-of-day state self-control capacity did not significantly vary by the timing of self-controlled work activities, and did not mediate the relationship between afternoon self-controlled work activities and work-to-nonwork conflict. Sleep quantity the previous night moderated the effect of self-controlled work activities on state self-control capacity, but not those on work-to-nonwork conflict. However, rather than exacerbating the effect of self-controlled work activities as hypothesized, less sleep appeared to reduce their effect on state self-control capacity.

5.1. Theoretical implications

These findings have several theoretical implications. First, they provide support for a self-regulation perspective to work-to-nonwork conflict. In particular they suggest that participation in nonwork roles becomes more difficult when one's self-control resources are depleted within the work domain. We suggest that central to this process is the greater likelihood of self-control failure in the nonwork domain, that follows depleted self-control capacity due to work. The mediation effects support this notion and our general proposition that work-to-nonwork conflict can be partly viewed as a symptom of self-regulation failure. Self-control as a resource within the work-to-nonwork conflict literature is receiving increasing attention (e.g. Unger et al., 2017), particularly to understand the impact of daily nonwork-to-work conflict on aggressive and abusive behavior at work (Courtright, Gardner, Smith, McCormick, & Colbert, 2015; Liu et al., 2015), and there seems scope to explore this further. How self-control fits within the wider nomological network of the work-nonwork interface at the start and end of the day should be further probed, considering the evidence now for reduced self-control resources as a mechanism to partly account for the effects of both work-to-nonwork conflict

and nonwork-to-work conflict. It is also important to better understand how self-control resources can be retained or even enhanced in both the work and nonwork domains, so as to reduce negative spillover between the domains.

Secondly, we find evidence that the timing of self-controlled work activities is important, and that such activities placed later in the day have a particularly strong effect on work-to-nonwork conflict. These add to findings elsewhere suggesting that demanding activities are particularly powerful later in the day (Benedetti et al., 2015). More generally, research on the placement or sequence of events within a day has revealed that the timing of events, and the nature of the events that precede them, are important contextual variables that influence the effects of those events (e.g. Bledow, Schmitt, Frese, & Kühnel, 2011). While self-controlled work activities later in the day were more predictive of work-to-nonwork conflict than those earlier in the day, counter to our hypothesis these stronger effects could not be explained by state self-control capacity; indeed, the effects of self-controlled work activities later in the day on end-of-day state self-control capacity were not significantly different to those in the morning. Accordingly, it appears that depletion of self-control resources in the morning remains as potent for end-of-day self-control capacity, as depletion later in the day.

A potentially more tenable explanation for the stronger effect of afternoon self-controlled work activities on work-to-nonwork conflict is based on workday accumulation (Benedetti et al., 2015), but via a non-self-regulation pathway. For example, engaging in self-controlled work activities late into the day may provoke feelings of anger and frustration, perhaps due to the lost nonwork time involved, and provoke rumination after work, especially if goals remain incomplete. These emotions and thoughts may spill over into the nonwork domain, but not into experiences of lower self-control. These are important issues for future research to resolve. A less speculative and more practical implication of these findings is to recommend that, where possible, activities requiring significant self-control should be both limited and scheduled within the earlier part of the day.

Thirdly, the findings raise questions about how different types of depleting experiences and activities interact to contribute to outcomes, and about thresholds of experienced self-control capacity. Similar to other studies (e.g. Lanaj et al., 2014), we find that sleep quantity is positively related with state self-control capacity. However, the lack of support for the hypothesized moderation effect of sleep quantity in the relationship between self-controlled work activities and work-to-nonwork conflict, and more pertinently the dampening effects of low sleep quantity in the relationship between self-controlled work activities and state self-control capacity, do not support previous findings that poor sleep quality (Diestel et al., 2015) and chronic exhaustion (Troughakos et al., 2015) exacerbate the effects of subsequent self-control resource depletion. It is not clear why the results diverge, however it may be that sleep quantity captures both positive and negative sleep-related health (e.g. depression can be related to longer hours of sleep; Thase, 1998). A recent meta-analysis found that sleep quality had stronger relationships with correlates than sleep quantity (Litwiller, Snyder, Taylor & Steele, 2017). Our results point to a limited role for prior sleep quantity as a moderator in these self-regulation processes relating to daily work-to-nonwork conflict. Future work should examine multiple dimensions of sleep via the most reliable measures.

If we were to speculate based on the significant moderation between sleep quantity and self-control activities in predicting state self-control capacity, it would be that people in our sample rarely allow their self-control capacity to go beneath a threshold, and that threshold can be reached from low sleep hours alone. Once the threshold has been reached, people may regulate their behavior to reduce the level of self-control resources that they invest in activities that typically consume such resources, for example by putting less effort into those activities or having a short break. People are understood to conserve resources when anticipating future self-control needs and will not go below a residual level in order to ration resources for later tasks (Hagger, 2015; Hobföll, 1989). This explanation further fits with homeostasis preservation theories of physical fatigue (e.g. Evans, Boggero, & Segerstrom, 2016) which propose that the brain dynamically and subconsciously regulates motor activity based on metabolic and physiological reserves.

5.2. Limitations and suggestions for future research

The study has some limitations. First, while the ratings of self-control demands of each activity were taken from an independent sample and the reports of work activities and their timings can be considered semi-factual in nature, a role for common method variance cannot be ruled out in the estimation of the relationship between state self-control capacity and work-to-nonwork conflict. However, we consider this risk small given the MCFA findings and that these variables are not highly correlated nor have similar correlations with other variables. Also, because the variables are all measured only once per day, we should be cautious about inferring a strict unidirectional temporal order for some of the relationships examined. It is feasible, for example, that work-to-nonwork conflict occurring during the day can influence how people respond to the state self-control capacity measure at the end of the day. The additional analyses, based on a subset of the diaries completed only during the evening, offers reassurance of the theorized temporal direction within the relationships studied, and perhaps most importantly in the relationship between the self-controlled activities during the day and work-to-nonwork conflict reported at the end of the work day.

Second, while the objective weightings used as part of the measure of self-control can be viewed as a methodological strength of the research, this fixes the weighting values of the activities for each participant and does not allow for individual differences in self-control demands of each activity to be taken into account. For example, for some people a certain activity (e.g. public speaking) requires significant self-control, but for others less so. Indeed, the level of expert inter-rater reliability was modest, which perhaps reflects this. Accordingly, we might have produced a more sensitive measure of self-controlled work activities had we collected ratings linked to each individual. As the effect of using objective weightings is likely to have attenuated the effects of self-control, we remain confident in the pattern of effects observed. Nevertheless, it would have also been advantageous to cross-validate our self-control activities measure with an established measure of self-control demands (e.g. Schmidt & Diestel, 2015) to enhance the validity of the findings.

A further potential concern is the external validity of the results, given the unique occupational nature of church ministers, who

often have an intense calling to their work, long daily hours, and have high permeability in their work-nonwork boundary given that their home and workplace are often similarly located (Clinton, Conway, & Sturges, 2017; Peyton & Gatrell, 2013). It is also worth noting that the role of church ministers shares characteristics with many other occupations, including the management of others, team-working, attending and chairing meetings, public speaking, and having accountability for performance standards (Conway, Clinton, Sturges, & Budjanovcanin, 2015). However, as work-to-nonwork conflict has been linked to occupational callings (Duffy, Dik, Douglass, England, & Velez, 2018), long working hours (Amstad et al., 2011) and work-nonwork boundary permeability (Ashforth, Kreiner, & Fugate, 2000), and that the management of highly permeable work-nonwork boundaries may require considerable self-control, the role of these sample factors is worth testing in research replicating and extending our findings.

We can also see two ways in which our model could be extended with respect to work-nonwork outcomes. Our model and measure of the work-nonwork interface firstly focused only on a resource depletion perspective and did not account for a simultaneous resource gain perspective (e.g. Sturges, 2013; Valcour, 2007). If daily work experiences equip people with resources to be better able to regulate their behavior towards meeting nonwork performance standards, this would reflect a form of work-to-nonwork enrichment (Greenhaus & Powell, 2006). Indeed, several of the daily activities measured in this study (e.g. prayer) may have had an enriching rather than depleting effect on self-control resources. Future work should examine how the nature of work activities can contribute positively to self-control resources in both work and nonwork domains. For example, we might expect daily self-control resources to be enhanced or restored by experiences that activate self-efficacy (Bandura, 1991), tasks involving more autonomous regulation (Moller et al., 2006), within-day recovery behaviors (Troughakos et al., 2014) and activities that enhance trait level self-control capacity (Diestel et al., 2015). Indeed, such work may also offer insights for potential interventions to reduce the negative effects of self-controlled work activities on work-to-nonwork conflict.

Secondly, the measure of work-to-nonwork conflict adopted did not differentiate between time, strain, and behavior dimensions of work-to-nonwork conflict (Greenhaus & Beutell, 1985) and it would be theoretically useful to understand how self-regulatory processes operate across these dimensions. Additionally, examining discrete work-to-nonwork conflict episodes, rather than general daily experiences, may shed more light on how employees psychologically perceive and process work-to-nonwork conflicts from a self-regulation perspective (Maertz & Boyar, 2011). Shockley and Allen (2015) note that, because conflicts between work and nonwork domains transpire at specific times and provoke in-the-moment responses, focusing on discrete episodes offers new insights, and we believe that self-regulation and episodic approaches to work-to-nonwork conflict are highly compatible.

In conclusion, we have presented findings in support of a self-regulation perspective of work-to-nonwork conflict and believe this offers new and interesting theoretical lens for the topic. This approach emphasizes the need for people to retain self-control resources across the whole day in order to avoid occurrences of work-to-nonwork conflict. We hope this framework will offer additional insights into the work-nonwork interface as it is further examined and researched.

CRedit authorship contribution statement

Michael E. Clinton: Conceptualization, Methodology, Investigation, Writing - original draft, Formal analysis. **Neil Conway:** Conceptualization, Methodology, Investigation, Writing - original draft. **Jane Sturges:** Conceptualization, Methodology, Investigation, Writing - original draft. **Rebecca Hewett:** Conceptualization, Writing - review & editing.

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