

Flow at work and peak performance: a test of the self-determination model

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Abstract

Purpose – The self-determination model of flow states that employees can take personal initiative and self-regulate their behaviour at work. Likewise, career self-management suggests that it is expected that employees will be proactive in career decisions. The present study examines the effects of two specific self-determination strategies, namely (1) weekly self-leadership (goal setting, self-rewards and visualising successful performance) and (2) weekly strengths use (i.e. the use of various capabilities people are good at, such as creativity, empathy and gratitude) on flow and the subsequent in-role and extra-role performance.

Design/methodology/approach – Data were collected among 97 employees who completed a survey once a week for three consecutive weeks ($n = 291$ occasions).

Findings – Results of multilevel modelling revealed that weekly self-leadership and weekly strengths use were each uniquely positively related to flow. Moreover, both weekly self-leadership and strengths use had positive indirect relationships with weekly in-role performance and weekly extra-role performance, respectively, through flow, while controlling for previous levels of these outcomes.

Originality/value – These findings offer support for the self-determination model of flow and show how self-determined behaviour, self-regulation and motivation can shape work experiences at a week-level. Furthermore, this proactivity and career self-management research shows how employees may be inherently self-regulatory to produce work outcomes aligned with the individual but also has long-term benefits in career growth and development.

Keywords Flow, Job performance, Self-leadership, Self-regulation, Strengths use

Paper type Research article

Flow is associated with learning, mastery and sustained effort (Hancock *et al.*, 2019; Nakamura and Csikszentmihalyi, 2014). Research on work-related flow has indicated that when challenges meet skills, flow experiences are more likely to occur (Liu *et al.*, 2023b), thereby enabling capability growth and career development. While it is crucial for organisations to help



optimise work experiences for employees (see, e.g. Bakker *et al.*, 2023b), individual regulatory strategies are also required to improve work and career outcomes (Demerouti and Bakker, 2023; Hirschi and Koen, 2021). People are not passive receivers of their environments and actively invest effort in their work and career development. The self-determination model of flow posits that employees may use proactive strategies (e.g. self-leadership and strengths use) to influence flow and performance (Bakker and van Woerkom, 2017), while career self-management proposes that people proactively self-regulate to respond to career development needs (Sotto-Mayer *et al.*, 2025).

Self-leadership refers to the process by which people influence themselves to achieve self-direction and self-motivation required to perform in desirable ways (Houghton *et al.*, 2012), while strengths use the focused use of capabilities (van Woerkom *et al.*, 2022). Both proactive behaviours represent different parts of self-regulation, beneficial for work and career development. Self-leadership relies on using cognitive and behavioural regulation strategies that influence motivation (Neck *et al.*, 2019), reflecting *how* people self-regulate. It is viewed as a process of self-regulation, rather than a stable characteristic, applicable across tasks (Goldsby *et al.*, 2021). In contrast, strengths use is intentional use of natural capabilities for content-specific tasks (van Woerkom *et al.*, 2022), thus reflecting *which* skills are used at work, rather than behaviour regulation itself.

We hypothesise that when employees engage in self-leadership and strengths use, they will likely experience flow and consequently perform better. This is because these behaviours activate complementary self-regulation pathways. We use a sample of South African employees. The South African work context is known for inequality, producing a dual economy with high-skilled and high-paid workers along with underemployment and poor pay (Bhorat *et al.*, 2019). Research in the South African context consistently reports high job demands, low resources, burnout and compromised mental health (Naidoo and Schoeman, 2023; van der Vaart and de Beer, 2021). Understanding how self-leadership and strengths use can activate flow and performance when external resources are limited may benefit this population.

We aim to make the following contributions. First, we provide empirical support for the validity of the self-determination model of flow (Bakker and van Woerkom, 2017). Although research has tested the model using playful work design, creativity and flow (Liu *et al.*, 2023b) and self-leadership and need satisfaction (Bakker *et al.*, 2023a), this research focuses on individual self-regulatory processes, rather than changing factors in the work environment.

Second, we show that both self-leadership and strengths use (representing different parts of self-regulation) are positively related to both in-role and extra-role performance through work-related flow at a week-level. Indeed, self-leadership (Patterer *et al.*, 2024; Yu and Yu Kyung, 2017) and strengths use (Liu *et al.*, 2023b) have been researched before; we show the weekly process through which both these proactive behaviours affect flow and performance (see Figure 1).

Third, we employ a weekly diary method, which enables more contextualised and dynamic data collection (Bolger and Laurenceau, 2013) and we control for previous levels of flow and performance. Daily self-leadership (Patterer *et al.*, 2024), flow (Liu *et al.*, 2022), strengths use and performance (Moore *et al.*, 2022) have been researched before. Ohly *et al.* (2010) recommend matching the time interval with the expected change, as psychological states (e.g. mood) change faster than behaviours (e.g. performance). Therefore, a weekly design may capture the dynamics of weekly work demands and self-regulation. Weekly designs offer greater ecological validity, reflecting natural workplace rhythms (e.g. Zacher and Breevaart, 2022).

Theoretical background

Self-determination theory (SDT; Deci *et al.*, 2017) is a theory of human motivation proposing that three basic psychological needs must be fulfilled to motivate employees, namely autonomy (being an agent of one's own behaviour), competence (showing mastery, being effective) and relatedness (having meaningful connections with others). While SDT is often

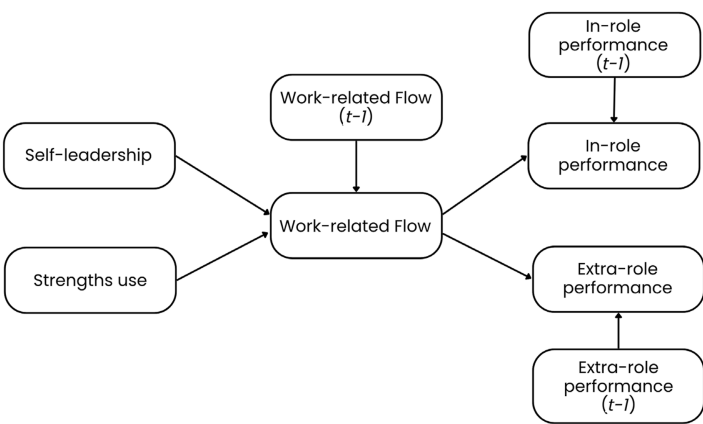


Figure 1. The proposed self-determination model of flow, based on Bakker and van Woerkom (2017)

used to explain how organisations may influence employee motivation (Forner *et al.*, 2020), it proposes that people are inherently proactive, seek growth and development and can make their own choices and control their own lives (Deci *et al.*, 2017). This is also evident in career self-management perspectives that emphasise intentional, self-initiated and strategic self-regulated behaviour in achieving career growth and positive outcomes (Hirschi and Koen, 2021; Sotto-Mayor *et al.*, 2025).

In the context of the flow, SDT considers the *why* of intrinsic motivation, while flow theory helps us assess job tasks in terms of skills and challenge at the individual and contextual level (see Liu *et al.*, 2023a, b). Research supports that employees are proactive in their work environment and will self-initiate change (Parker *et al.*, 2010; Parker and Bindl, 2017), while also managing their own physical and mental energy (Op den Kamp *et al.*, 2018). This study uses the self-determination model of flow (Bakker and van Woerkom, 2017) to argue that self-leadership and strengths use facilitate job performance through the peak flow experience at work. As argued by these authors, when employees are purposeful and self-determined at work, they will experience autonomy, control over work and have positive relationships, which may facilitate flow experiences. From a career development perspective, these experiences represent intermediate indicators of growth, as they enable employees to effectively apply and extend their capabilities beyond work tasks.

Flow was originally defined by Csikszentmihalyi as a state of being totally immersed in an activity and enjoying it passionately (Csikszentmihalyi, 1997). Bakker (2008) defined work-related flow is characterised by absorption (i.e. deep focus and full engagement), work enjoyment (i.e. loving what one does) and intrinsic work motivation (i.e. a strong desire to continue a task). Flow is an interconnected and complex experience, more than simply work engagement (Yan and Donaldson, 2022), characterised as a highly activated positive state, rather than a low-activated state, such as job satisfaction (Bakker and Oerlemans, 2011).

In the present study, we examine how employees can foster their own weekly flow and two types of performance. In-role performance refers to the effectiveness and efficiency with which an individual fulfils role duties (Motowidlo and Van Scotter, 1994). Extra-role performance is the discretionary behaviours that directly promote the effective organisational functioning without affecting personal productivity (Podsakoff and MacKenzie, 1994).

Flow is highly dynamic, often fluctuating at a day level (Debus *et al.*, 2014), while intentional self-regulatory behaviours (e.g. self-leadership and strengths use) may unfold over longer temporal cycles. Werner and Berkman (2024) posit that when people pursue work goals, self-regulatory efforts vary across time and context. The nature of motivation, goal

attainment and self-regulation is time- and context-dependent, often monitored over weeks (Wang *et al.*, 2022). Therefore, the time and context nature of self-regulation may impact flow at a week level, which is supported by research (Hohnemann *et al.*, 2024; Jia *et al.*, 2024).

Self-leadership, flow and performance

Self-leadership is a proactive strategy through which employees influence their own thoughts, emotions and behaviours at work (Harari *et al.*, 2021). Self-leadership theory posits that individuals can self-regulate and self-influence and enhancing motivation and performance (Neck *et al.*, 2019). It comprises *behaviour-focused* strategies (e.g. self-goal setting or self-reward), *natural reward* strategies (e.g. creating enjoyable work experiences) and *constructive thought* pattern strategies (e.g. positive self-talk or replacing dysfunctional beliefs) (Neck *et al.*, 2019). For example, setting self-goals or self-rewards helps employees clarify work goals and stay focused (Harari *et al.*, 2021). Flow relies on goal clarity and feedback (Quinn, 2005; Locke and Latham, 1990), while goal setting directs energy and concentration (Locke and Latham, 1990; Quinn, 2005). Goal clarity, unambiguous feedback and concentration are key antecedents of flow (Csikszentmihalyi, 1997).

Employees can also focus on the positive features of work to create meaning and enjoyment, and use cognitive strategies, such as envisioning success and positive self-talk (Neck *et al.*, 2019). These constructive thoughts and natural reward strategies help promote positive perception about work (Harari *et al.*, 2021) and help challenge negative or intrusive thinking (Neck *et al.*, 2019). They enable employees to align action and awareness, supporting immersive task engagement and reducing cognitive interference (Maeran and Cangiano, 2013).

Research shows that self-leadership is particularly important under demanding conditions, such as during crisis-related rumination (Bakker *et al.*, 2023a), while van Dorssen-Boog *et al.* (2021) used a training intervention to show that self-leadership has a positive impact on work engagement and performance. We argue that self-leadership facilitates motivation, enjoyment and absorption at work by increasing control over key components of flow. Imagining successful performance enhances perceived personal control (Harari *et al.*, 2021) and develops self-efficacy (Stewart *et al.*, 2011), which can be used to manage job demands and facilitate flow (Bakker and van Woerkom, 2017).

H1a. Weekly self-leadership is positively related to weekly flow.

When employees experience flow, they have low self-awareness and are completely focused on their task (Hancock *et al.*, 2019; Nakamura and Csikszentmihalyi, 2014). Flow is associated with top-down attentional control (Van der Linden *et al.*, 2021), when in flow, individuals use all the available cognitive resources to execute their task. Research has indeed corroborated this active relationship between flow and performance at work (Bakker, 2008). In the South African context, self-leadership was shown to relate positively to psychological capital, work engagement and performance (see Pillay *et al.*, 2020; Schultz, 2021) while other research shows that self-leadership is applicable to the context (Mahembe *et al.*, 2013).

We argue that self-leadership is positively related to job performance through flow. Employees create meaning and become motivated (Neck *et al.*, 2019) and task-focused (Harari *et al.*, 2021) with self-leadership. Employees who use self-leadership strategies to control their environment (Harari *et al.*, 2017). Having control over a task (and how it should be completed) enables flow (Maeran and Cangiano, 2013) and improves task performance (Deci *et al.*, 2017).

Additionally, self-leadership increases the enjoyment component of flow. The intense pleasure an employee experiences by doing a task indicates a high-quality work life (Maeran and Cangiano, 2013). Positive emotions such as happiness and pride have been shown to increase prosocial behaviours (Aknin *et al.*, 2018) and doing work for the value it brings creates positive attitudes (Manz, 2015).

- H2a. Weekly self-leadership is positively related to weekly in-role performance through work-related flow.
- H2b. Weekly self-leadership is positively related to weekly extra-role performance through work-related flow.

Strengths use, flow and performance

Character strengths are defined as those specific individual characteristics, traits and abilities that, when employed, are invigorating and enable a person to perform at their personal best (Wood *et al.*, 2011). While knowing our strengths develops a healthy and positive view of who we are, Keenan and Mostert (2013) have pointed out knowing how and when strengths are used in the workplace is far more valuable. Strengths use is purposeful (van Woerkom *et al.*, 2016) and aligned to value add to optimise personal capabilities (Park, 2009). Employees who use their strengths at work immerse themselves at work (Liu *et al.*, 2022), which means they also work purposefully and engage easily in their work. When strengths use is supported and is proactive, it supports work engagement and organisational wellbeing (Mphahlele *et al.*, 2018; Meyers *et al.*, 2019), while strengths awareness and self-regulation are linked to flow (Liu *et al.*, 2022).

Doing what people do naturally best, energises and intrinsically motivates people (Moore *et al.*, 2022). Because strengths use can align work activities and tasks with personal capabilities and values, it promotes authenticity, autonomy and intrinsic motivation. Employees who use their strengths at work can be authentic and are more likely to experience flow (Moore *et al.*, 2022; Rudolph *et al.*, 2025). Having a balance or a match between the demands of the job and the skills necessary to do the work facilitates flow (Maeran and Cangiano, 2013; Quinn, 2005). Using strengths strategically enables a person to match the requirements of their job, which includes working individually and in teams, with their own capabilities, leading to a peak experience.

- H1b. Weekly strengths use is positively related to work-related flow.

Strengths use is positively related to self- and other ratings of task (e.g. in-role) performance (van Woerkom *et al.*, 2016). Beyond in-role, strengths use may be particularly relevant for extra-role performance. Empirical research recognises organisational citizenship behaviour as discretionary behaviour that an employee may choose to exhibit, not mandated by job duties (Fan *et al.*, 2023), like strengths use is. With the intrinsic motivation foundation that underpins extra-role behaviours (Bolino *et al.*, 2024), it is expected that strengths use and flow would enable extra-role performance. Flow experiences are characterised by high intrinsic motivation, positive activation and available cognitive and emotional resources (Liu *et al.*, 2023b), which are important qualities linked to prosocial behaviour and discretionary work activities (Oh and Roh, 2022). Research has linked intrinsic motivation to extra-role performance (Hoxha and Ramadan, 2024) and flow has been linked to organisational citizenship behaviour (Kasa and Hassan, 2016). Employees experiencing flow is also likely to invest additional effort, assist colleagues and make contributions beyond their own duties (Liu *et al.*, 2023b).

Strengths use is grounded in autonomy and competence satisfaction (Bakker and van Woerkom, 2017), while flow represents an experiential state of optimal intrinsic motivation (Bakker, 2008). By enabling employees to act authentically and competently, strengths use generates motivational and energetic resources that increase the likelihood of engaging in behaviours that exceed prescribed job requirements.

- H3a. Weekly strengths use is positively related to weekly in-role performance through work-related flow.
- H3b. Weekly strengths use is positively related to weekly extra-role performance through work-related flow.

While it is possible that high performance may strengthen people's ability to self-regulate, due to competence feedback (Deci *et al.*, 2017), reciprocal relationships between self-leadership and strengths use, respectively and performance may exist. This research, however, sought to understand how self-regulation can impact work outcomes (Bakker and van Woerkom, 2017). For this reason, we strengthen our hypothesis by accounting for the lagged effects of both in-role and extra-role performance. A longitudinal meta-analysis suggests that time lag matters when considering proactive behaviour and performance to help account for (Silapurem *et al.*, 2024).

Method

Procedure and participants

We collected data from 97 employees from various organisations in South Africa, resulting in 291 data points. Simulation studies reveal that samples of between 80 and 100 at level 2 offer acceptable power for multilevel models (Krull and Mackinnon, 2001; McNeish and Stapleton, 2016). Both electronic and hard copy surveys were used to collect data over a four-week period. This research received institutional ethics approval and adhered to ethical standards for human participation. Informed consent was obtained from all participants. Due to the nature of the week-level design, personal information (e.g. names and contacts) was collected. Confidentiality was maintained, participation was voluntary and participants could withdraw at any time. For those participants participating electronically, the link was sent every week on Friday and remained open for 24 h. For the paper and pencil version, weekly questionnaires were also distributed every week on Friday and collected 24 h later.

The sample consisted of 35 men (36.1%) and 57 women (58.8%). Most participants were married ($n = 52$; 53.6%), while 27 were single (27.8%), and 11 were divorced/widowed (11.3%). Most of the participants were White (54; 55.7%), while 22 were Black (22.7%), five were mixed race (5.2%) and 14 were Indian (14.4%). Regarding age, 26.8% of the sample were between 46 and 55 years, 23.7% were aged 26 to 35, 21 were aged between 36 and 45, 11.3% were younger than 25 (11.3%) and 13 were older than 56. Regarding home language, 44 participants (45.4%) spoke Afrikaans, 33 participants spoke English (34%) and 18 spoke an African home language (18.7%). Regarding education, 39 employees had a postgraduate degree (43.2%), 31 employees had a bachelor's degree (32%), while 21 employees had a school certificate (21.6%). Employees held different positions, namely, 14 admin roles, 18 managers, 12 in human resources, 7 in finance, 6 in information technology (IT) and 14 worked in legal and marketing. Data were collected from participants working in the private sector, and all participants were from corporate work contexts [1].

Measures

All study variables were measured with validated questionnaires that were, in some cases, shortened to avoid questionnaire fatigue. In addition, all items were slightly adapted so that they referred to the past week (cf. Ohly *et al.*, 2010). Our study relies on self-report measures. While this may lead to common method bias, the variable in this study is inherently subjective and experience-based. To reduce common method bias, the research objectives and instructions were clearly outlined, made use of valid and reliable measures that are easy to understand questions and used varying response formats (Podsakoff *et al.*, 2012).

Weekly Strengths use. The six items measuring *Strengths Use Behaviour* (one dimension of the *Strengths Use and Deficit Correction* questionnaire) developed by van Woerkom *et al.* (2016) were used to measure how often employees *used* their strengths at work. Example items are, "This week, I used my strengths at work" and "This week, I have conducted tasks that suit my strengths well". Participants could respond to these statements using a seven-point scale, ranging from 1 (totally disagree) to 7 (totally agree). The internal consistency of the responses was good; the Cronbach's alpha was 0.92.

Weekly Self-leadership was measured by adapting the nine-item Abbreviated Self-Leadership questionnaire (Houghton *et al.*, 2012). Example items are, “This week, I worked toward specific goals I have set for myself,” and “This week, I visualized myself successfully performing a task before I do it” (1 = strongly disagree, 5 = strongly agree). The items were summed to form one overall index of self-leadership (cf. Nel and Van Zyl, 2015). Cronbach’s alpha for self-leadership was 0.86.

Weekly Flow was assessed with the *work-related flow scale* (WOLF; Bakker, 2008). Examples of items include: “This week, my job made me feel good”; and “This week, I got carried away by my work.” The responses ranged from 1 = never to 7 = always for each question. The items were summed to create one overall index of flow. The Cronbach’s alpha was 0.95.

Weekly job performance was assessed with the scales developed by Goodman and Svyantek (1999). Two subscales were included to measure in-role and extra-role performance. Examples are, “This week, I met all the requirements of the position” (in-role performance) and “This week, I helped other colleagues who were under high work pressure or who had other problems” (extra-role performance). Cronbach’s alpha was 0.86 for in-role performance and 0.70 for extra-role performance.

Control variables

We cannot fully exclude reverse causality, and therefore, we controlled for the lagged effects of the outcome variables (flow, in-role performance, extra-role performance) as proposed by Bolger and Laurenceau (2013). These authors argue that this procedure strengthens the hypothesised directions of the model.

Statistical analysis

The statistical analysis was conducted using the lme4 package in R Studio, specifically utilising the Linear Mixed Effects Regression (LMER) function (Bates, 2018). Variables were analysed based on the between-person (level 2) as the individual level, and the within-person level (level 1) as the week-level. Prior to running the analyses, we person-mean centred the independent variables (e.g. self-leadership and strengths use) as well as the mediator (flow), which was used to predict performance. We used the recommended fit statistics, namely, LogLik scores, deviance scores and variance were applied. We applied Multilevel Mediation Analysis on the lower level to determine the indirect path analysis of weekly self-leadership, strengths-use and in-role and extra-role performance (cf. Kenny *et al.*, 2003) with the MEDIATION function (see Preacher and Hayes, 2008) and a quasi-Bayesian Monte Carlo simulation to determine confidence (Tingley *et al.*, 2014). Because Lme4 package for LMER only allows regression models with one outcome at a time, we tested separate models and combined them to infer the indirect effects.

Results

The data was suitable for multilevel analysis due to the variance that occurred on the within - and between-levels with Interclass Correlation Coefficients (ICC) values of 0.36, 0.25, 0.28, 0.36 and 0.43 for self-leadership, strengths use, in-role performance, extra-role performance and flow. Descriptive statistics and correlation coefficients at the between and within-person level are reported in Table 1.

We tested the measurement model consisting of self-leadership, strengths use, flow, in-role performance and extra-role performance (hypothesised five-factor measurement model). To determine the best fitting model, we used the Chi-Square Coefficient (χ^2), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Fit (TLI) and the Standardized Root Mean Residual (SRMR). The five-factor model fit well to the data, $\chi^2_{(1097)} = 2225.60$; $p < 0.001$; CFI = 0.92; TLI = 0.94; RMSEA = 0.05; SRMR_{within} = 0.07;

Table 1. Descriptive statistics and correlations

Variable	Mean	SD	1	2	3	4	5
1. Self-leadership	3.70	0.71	–	0.66**	0.28**	0.44**	0.47**
2. Strengths-use	5.14	1.25	0.33**	–	0.39**	0.47**	0.60**
3. In-role performance	5.50	1.01	0.20*	0.37**	–	0.46**	0.42**
4. Extra-role performance	4.84	1.37	0.39**	0.46**	0.49**	–	0.46**
5. Flow	4.55	1.19	0.40**	0.48*	0.39**	0.45*	–

Note(s): ** $p < 0.001$; * $p < 0.05$. $N = 92$ persons, $N = 276$ observations. Below the diagonal are between-level (level 2) correlations. Above the diagonal are within-level (level 1) correlations

SRMR_{between} = 0.06. Moreover, the fit of the five-factor model was substantially better than the fit of an alternative four-factor model (self-leadership, strengths use, flow and performance [with items meant to assess in-role and extra-role performance were combined]), $\chi^2_{(1106)} = 2915.64$; $p < 0.001$; CFI = 0.74; TLI = 0.73; RMSEA = 0.08; SRMR_{within} = 0.10; SRMR_{between} = 0.44 and a two-factor model (self-determination strategies [items meant to assess self-leadership and strengths use were combined] and flow-performance [items meant to assess flow, in-role and extra-role performance were combined]) $\chi^2_{(1118)} = 3704.46$; $p < 0.001$; CFI = 0.60; TLI = 0.60; RMSEA = 0.11; SRMR_{within} = 0.14; SRMR_{between} = 0.54. These findings clearly indicate that the five theoretical constructs can be empirically distinguished.

Hypothesis testing

Hypothesis 1a stated that weekly self-leadership will be positively related to weekly flow. The results of this study showed that when employees set specific goals for themselves, kept track of how well they were doing, and rewarded themselves, they were more likely to experience flow at work ($\gamma = 0.81$; $p = 0.00$; $t = 4.30$; see [Table 2](#)). **Hypothesis 1b** stated that weekly strengths use would be positively related to weekly flow experiences. The results also supported this hypothesis ($\gamma = 1.01$; $p = 0.00$; $t = 8.20$; see [Table 2](#)). In these analyses, we controlled for the lagged effects of flow ($\gamma = 0.13$; $p < 0.001$; $t = 2.84$; see [Table 2](#)). Both **Hypotheses 1a** and **1b** were therefore accepted.

Hypothesis 2a proposed that weekly self-leadership is positively related to weekly in-role performance through work-related flow. The results reported in [Table 3](#) shows that weekly

Table 2. Direct effects of weekly self-leadership and strengths use on flow (mediator)

Variable	Dependent: Flow		Main effects model	
	Null model β	SE	β	SE
Intercept	2.74	4.74	4.24**	6.98
Lag of flow			0.13**	0.04
Strengths use			1.01**	0.12
Self-leadership			0.81**	0.19
LogLik		–664.90		–635.9**
–2 Log Likelihood [deviance (χ^2)]		1329.7		1271.8**
Variance level 2 (person level)	0.43 (47%)	0.46 (Std.)	0.19	0.19 (Std.)
Variance level 1 (week level)	0.56 (70%)	0.52 (Std.)	0.80	0.43 (Std.)

Note(s): AIC = Akaike information criterion; BIC = Bayesian information criterion; ** $p < 0.001$, * $p < 0.05$. Variance level 2 and variance level 1. Estimate scores = variance partition coefficient. Percentages in brackets = total variance (R^2)

Table 3. Main effects of weekly self-leadership, strengths use and flow on performance

Variable	Dependent: In-role performance				Dependent: Extra-role performance			
	Null model		Main effects model		Null model		Main effects model	
	β	SE	β	SE	β	SE	β	SE
Intercept	9.14	1.14	7.93	1.43	2.57	1.29	1.85	1.20
Lag of in-role performance			−0.06	0.06				
Strengths use			0.14**	0.04				
Self-leadership			0.07	0.04				
Flow			0.05*	0.02				
Lag of extra-role performance							−0.05	0.06
Strengths use							0.09*	0.04
Self-leadership							0.18**	0.05
Flow							0.06**	0.03
−2 Log Likelihood [deviance (χ^2)]		816.9		806.5**		862.7		850.4**
Variance level 2 (person level)	0.28 (36%)	0.06 (Std.)	0.52 (Std.)	0.34 (Std.)	0.36 (24%)	0.20 (Std.)	0.49 (Std.)	0.12 (Std.)
Variance level 1 (week level)	0.72 (59%)	0.13 (Std.)	0.42 (Std.)	0.10 (Std.)	0.64 (45%)	0.13 (Std.)	0.51 (Std.)	0.12 (Std.)

	Indirect effect		Indirect effect	
	β	CI _U CI _L	β	CI _U CI _L
Strengths use → Flow → In-role performance	0.90*	1.23 0.74		
Self-leadership → Flow → In-role performance	0.85*	1.25 0.45		
Strengths use → Flow → Extra-role performance			0.89*	1.23 0.74
Self-leadership → Flow → Extra-role performance			0.85*	1.26 0.45

Note(s): AIC = Akaike information criterion; BIC = Bayesian information criterion; CIU = Confidence Interval Upper; CIL = Confidence Interval Lower. ** $p < 0.001$, * $p < 0.05$
Variance level 2 and variance level 1. Estimate scores = variance patrician coefficient (VPC). Percentages in brackets = total variance (R^2)

flow ($\gamma = 0.05$; $p = 0.03$; $t = 2.10$) had a unique positive direct relationship with in-role performance, while self-leadership did not ($\gamma = 0.007$; $p = 0.06$; $t = 1.64$). Furthermore, the results indicated that weekly self-leadership ($\gamma = 0.85$; CI_U = 1.25 | CI_L = 0.45; $p = 0.00$) had a positive indirect relationship with in-role performance through weekly work-related flow. Thus, [Hypothesis 2a](#) is supported.

[Hypothesis 2b](#) stated that weekly self-leadership is positively related to weekly extra-role performance through work-related flow. The results reported in [Table 3](#) show that weekly self-leadership ($\gamma = 0.18$; $p = 0.003$; $t = 3.39$) and weekly flow ($\gamma = 0.06$; $p = 0.008$; $t = 2.80$) had positive direct relationships with extra-role performance, while controlling for the lagged effect of extra-role performance. Self-leadership indirectly affected extra-role performance through flow ($\gamma = 0.86$; CI_U = 1.26 | CI_L = 0.46; $p = 0.000$). This means that [Hypothesis 2b](#) is supported.

[Hypothesis 3a](#) stated that weekly strengths use is positively related to weekly in-role performance through work-related flow. The results reported in [Table 3](#) show that weekly strengths use ($\gamma = 0.12$; $p = 0.004$; $t = 3.20$) and weekly flow ($\gamma = 0.05$; $p = 0.003$; $t = 2.10$) had positive direct links with in-role performance. Furthermore, the results in [Table 3](#), indicated that weekly strengths use ($\gamma = 0.90$; CI_U = 1.23 | CI_L = 0.74; $p = 0.001$) had a positive indirect effect on in-role performance through weekly work-related flow. Finally, [Hypothesis 3b](#) stated that weekly strengths use is positively related to weekly extra-role performance through work-related flow. Weekly strengths use ($\gamma = 0.09$; $p = 0.01$; $t = 2.42$) and weekly flow ($\gamma = 0.06$;

$p < 0.02$; $t = 2.32$) had positive direct relationships with extra-role performance, while controlling for the lagged effect of extra-role performance. We also found that weekly strengths use indirectly affected extra-role performance through flow ($\gamma = 0.89$; $CI_U = 1.23$ | $CI_L = 0.75$; $p = 0.004$). This means that [Hypotheses 3a](#) and [3b](#) were supported as well.

Discussion

The aim of the present weekly diary study was to test the self-determination model of flow ([Bakker and van Woerkom, 2017](#)). Our findings showed that in the week employees used self-leadership (e.g. set goals, rewarded themselves) and personal strengths (e.g. used creativity, social intelligence), they also experienced flow and consequently they performed better and were more likely to provide help to their colleagues. In what follows, we discuss the theoretical contributions of this research, followed by practical implications for organisations.

Self-determination and flow

The present study found support for the validity of the self-determination model of flow, suggesting that employees will be self-determined at work and continuously use proactive strategies (i.e. self-leadership and strengths use) to experience work-related flow ([Bakker and van Woerkom, 2017](#)). This is in line with SDT, flow theory and self-leadership theory because by creating one's own flow experiences through self-determined action (i.e. self-leadership and strengths use), employees are being persistent, show effort and are motivated to grow as individuals at work ([Deci et al., 2017](#)). Previous research has shown that self-determination strategies such as daily playful work design ([Liu et al., 2023](#)) and strengths use ([Liu et al., 2022](#)) are positively related to flow at the day level.

Furthermore, employees are likely to invest in these self-determination behaviours because of specific needs, values and identity alignment across work ([Deci et al., 2017](#)) and for career growth ([Hirschi and Koen, 2021](#)). It is expected that self-leadership, such as self-observation, self-goal setting and self-reward practices ([Neck et al., 2019](#)), and strengths use, for example, individual talents or abilities such as creativity, may be beneficial for work/task and overall career management. Thinking about how these self-determination behaviours link to flow experiences to enable performance, flow becomes a mechanism through which self-leadership and strengths use is linked to flow ([Bakker and Van Woerkom, 2017](#)) that will possibly support a dynamic and process-oriented view of career development ([Hirschi and Koen, 2021](#)).

Self-leadership, flow and performance

The results show a significant weekly process of self-leadership, flow and different types of job performance (i.e. in-role and extra-role). Previous research has indicated that self-leadership may have positive implications for both the organisation and the employee (see [Neck et al., 2019](#); [Yu and Yu Kyung, 2017](#)); however, the underlying process or mechanism through which self-leadership has its effects on different types of performance was less clear. Our findings show that self-leadership indirectly influences job performance through cultivating the peak experience of flow. In the week, employees used self-leadership strategies such as self-goal setting and self-reward, they were more likely to show improved in-role performance as well as extra-role performance due to cultivating work-related flow. A similar relationship was found by [Bakker et al. \(2022\)](#), showing that daily self-leadership was positively related to in-role performance through the satisfaction of daily psychological needs.

The positive link between changes in flow and changes in in-role performance is due to the increased effort and persistence characteristic of flow. In contrast, the link between flow and extra-role performance may be attributed to the positive emotions experienced *after* flow episodes. Research shows that during flow, people are fully immersed in their activities

(Nakamura and Csikszentmihalyi, 2014) and the perception of time gets distorted (Hancock *et al.*, 2019). Likewise, employees experience positive emotions (happiness, interest, excitement) which provide psychological resources they to help others. The positive relationship between flow and extra-role performance aligns with research showing that positive emotions increase prosocial behaviours (Aknin *et al.*, 2018), while self-leadership and both individual and team performance are related (Inam *et al.*, 2021).

Strengths use, flow and performance

The findings show the weekly process of strengths use, flow and different types of job performance (i.e. in-role and extra-role). Previous research has shown that strengths use is positively related to flow (Liu *et al.*, 2022) and enhances in-role performance (Moore *et al.*, 2022; Moore *et al.*, 2022; Rudolph *et al.*, 2025). We can therefore expect similar relationships between strengths use, flow and extra-role performance. For example, Liu *et al.* (2023) found that strengths use had an indirect relationship with attentional performance through flow, while Harris *et al.* (2017) showed that flow is positively related to different types of performance. Employees are motivated to align their own personal self-image with their work role and connect with others (see Deci *et al.*, 2017), and helping colleagues is one of doing so. Using strengths at work relies on supportive workplaces (Demerouti, 2006) and self-awareness (Moore *et al.*, 2022). This aligns with SDT, which suggests people are capable of self-regulation (see Deci and Ryan, 2000) and will use their skills to manage work demands (see Bakker, 2008).

Strengths and limitations

This study yielded important results; however, it is not without limitations. As mentioned, this research relied on self-report measures. It is, however, possible that employees may over- or underestimate their own performance (see Tims *et al.*, 2012). Future research should include alternative ratings or observations of different types of performance.

While this study used two self-determination strategies, focussing on individual self-regulatory processes, rather than changing work environments (e.g. playful work design), the self-determination model of flow proposes that different strategies can influence flow and performance (Bakker and Van Woerkom, 2017). For the generalisability of the model, it is recommended that future research also test the role of all the proactive employee behaviours.

Similarly, the self-determination framework of flow posits that people facilitate flow to satisfy basic psychological needs. Although psychological need satisfaction is central to SDT (Deci and Ryan, 2000), our study's aim was to examine more proximal behavioural pathways through which self-regulation strategies may relate to flow and performance. Furthermore, research has already established the link between these variables (Bakker *et al.*, 2023a).

As noted, possible reverse causality cannot be excluded. Likely reciprocal relationships exist between self-regulatory behaviour and performance (Silapurem *et al.*, 2024; van Woerkom *et al.*, 2016). This research controlled for the lagged effects of performance to reduce concerns about reverse causality (Bolger and Laurenceau, 2013). It is recommended that future research explicitly test reciprocal dynamics between self-determination strategies, flow and performance across longer time spans or test a training intervention study to determine the causal ordering of the variables.

Although the sample was deemed to have adequate power for multilevel analysis (McNeish and Stapleton, 2016) across the two levels (Bolger and Laurenceau, 2013), we recommend future studies utilise a bigger sample and more time points to enhance robustness and generalisability. It can be harder to detect indirect effects within multilevel models. Our research provides a solid baseline with the deemed adequate sample between 80 and 100 (McNeish and Stapleton, 2016), stronger effects may be detected with more samples.

Implications

A key theme of this research is that employees are self-determined and motivated to influence their work experiences (see [Deci et al., 2017](#)). From a career self-management perspective ([Hirschi and Koen, 2021](#)), self-leadership and strengths use can be viewed as proactive strategies to regulate behaviour and mobilise job resources to support work and career development ([Li et al., 2024](#)). Research views strengths use as a developmental mechanism ([Li et al., 2024](#)) that evolves across the career lifespan ([Van Woerkom et al., 2022](#)). Studies show that job crafting interventions may increase proactivity (see [Gordon et al., 2017](#)), while self-leadership interventions may enhance work engagement and performance ([van Dorssen-Boog et al., 2021](#)). Organisations can implement similar interventions and coaching to build autonomy and self-regulation skills. At an individual level, employees may benefit from targeted performance and career discussions that identify strengths, use and self-leadership strategies aligned with employee personal values.

There are often high job demands placed on employees, which makes having enough resources to support high demands in jobs necessary ([Bakker et al., 2023b](#)). Having sufficient challenging demands that match the skills of the employee, together with sufficient resources facilitate flow experiences ([Liu et al., 2023b](#)). Research by [Bartholomeyczik et al. \(2023\)](#) suggests that flow interventions should be clear on their aim and target (e.g. context, individual, or group). Lastly, the low cost and scalability that the self-determination framework of flow presents offer support for interventions that can include reflection prompts, peer coaching and strengths-based activities feasible for low-resourced settings (see [Meyer and van Woerkom, 2017](#)).

Organisations can incorporate training and development programs that teach practical self-leadership skills, such as goal setting, visualisation and self-reward to support optimal functioning at work. Likewise, working with employees to identify and apply individual strengths (e.g. through strengths profiling or strengths-based coaching) can help employees align their tasks with their natural capabilities, creating more opportunities for flow. Strengths use allows employees to match personal skills with work demands ([Bakker, 2008](#); [Tadic et al., 2015](#)) and greater autonomy, with strength use support, enables effective self-management. Organisational support for strengths use enhances psychological resources linked to flow ([Bai et al., 2025](#)). Organisations should therefore actively promote self-leadership and strengths use.

Conclusion

Our findings indicate that employees do not respond passively to their work environment. Instead, they seem to actively use self-leadership and character strengths to optimise their own job performance through work-related flow. Our findings support the self-determination model of flow and suggest that employees are likely to become intrinsically motivated and absorbed in their work when they take the lead and use their strengths.

Note

1. The data supporting the findings of this study are not publicly available as it contains information that could compromise the privacy of participants.

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