

Boosting playful work design: a test of a micro and modular e-intervention

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Abstract

Purpose – Playful work design (PWD) refers to approaching and performing work activities playfully to foster fun and challenge. In this study, we build on the idea that PWD stems from a malleable metacognitive competency that can be cultivated through intentional activities.

Design/methodology/approach – Accordingly, we developed and tested a micro (Study 1) and a modular PWD e-intervention (Study 2) aimed at nurturing the knowledge, skills and abilities central to PWD.

Findings – Results of Study 1 ($N = 74$ individuals, $n = 432$ days) revealed that actively completing exercises can promote designing competition but not designing fun. In Study 2, individuals who actively participated in the modular e-intervention increased in both designing fun and designing competition ($N = 127$ individuals; $n = 549$ weeks). In both studies, mere exposure to the e-intervention did not predict outcomes. Across both studies, PWD was positively related to creative performance through informal learning (Study 1) and self-efficacy (Study 2).

Originality/value – The findings highlight the promise of e-interventions in cultivating PWD, which can help to strengthen employees' creative performance.

Keywords Organizational behavior, Human resource development, Intervention, Playfulness, Playful work design, Job demands resources theory

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Careers unfold in an increasingly volatile and competitive global economic environment (Lawrence *et al.*, 2015). What was relevant yesterday may become obsolete tomorrow. As uncertainty and demands grow, traditional career models anchored in stability and organizational guidance are gradually replaced by considering what supports towards self-directed, sustainable career trajectories (De Vos *et al.*, 2020; Hall, 1976). Hall's (1976) concept of the protean career exemplifies these ideas. Rooted in the Greek god Proteus, who possessed the ability to transform their shape at will, the protean career describes a transformational process by the individual rather than the organization. In this view, career success emerges from the proactive alignment with values and the development of competencies (Hall *et al.*, 2018). When this proactivity stimulates learning and bolsters self-efficacy, individuals are better able to achieve sustainable careers and valuable organizational outcomes (De Vos *et al.*, 2020). Among these outcomes, creative performance is particularly important for individual career prospects and organizational effectiveness (Amabile, 1997; Harari *et al.*, 2016; Rodrigues and Rebelo, 2023; Schuh *et al.*, 2018).

We propose that small, everyday actions aimed at transforming experiences can support a positive career trajectory by promoting creativity (Scharp and Bakker, 2025). Such actions are exemplified by playful work design (PWD), which involves transforming work activities into more optimal experiences through proactive *play* (Bakker and Scharp, 2025; Scharp *et al.*, 2023). Creative performance is a fundamental way in which playful work design may contribute to a successful career trajectory (Scharp and Bakker, 2025). Novel and useful solutions are valuable to organizations because they can support a competitive advantage

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(Amabile, 1988). Accordingly, employees who generate creative solutions are more likely to be perceived as competent, valuable, and promotable, thereby strengthening their career prospects (Harari *et al.*, 2016; Rodrigues and Rebelo, 2023; Schuh *et al.*, 2018). Indeed, a growing body of research suggests that play can foster development and creativity by encouraging exploration, experimentation, and active involvement with activities (Mainemelis and Ronson, 2006; Pellegrini, 2009; Sutton-Smith, 2010). Through play, individuals often discover new information, refine skills, and expand their behavioral repertoire, which are fundamental to creativity (Burghardt, 2005; Csikszentmihalyi, 1997). It is when we develop our capacities, familiarize ourselves with ideas, and feel confident that we can begin to develop novel and useful solutions (Amabile, 1997; Staw *et al.*, 1981). In other words, PWD may contribute to positive career outcomes by strengthening the informal learning and self-efficacy needed for creative performance.

We further suggest that organizations may support this process by cultivating individuals' competency for play or their playfulness. Evidence for the motivational potential of PWD is burgeoning (Bakker *et al.*, 2025; Scharp *et al.*, 2021). Yet we know little about how to develop it (cf. Costantini *et al.*, 2025; Walsken *et al.*, 2025). We aim to address this gap by building on the idea that play is the manifestation of playfulness (Csikszentmihalyi, 1975). While playfulness is a quality of an individual, play often refers to its enactment and manifestation (Proyer and Sendatzki, 2025). We argue that playfulness constitutes a meta-cognitive competency that is significant to the Protean career because it enables individuals to learn continuously and develop self-efficacy, supporting creativity (Csikszentmihalyi, 1975; Scharp and Bakker, 2025). Importantly, playfulness is relevant to organizations because it is "open to cultivation, a skill one can perfect through training and discipline" (Csikszentmihalyi, 1975, p. 93; Proyer *et al.*, 2021). This suggests that organizations may actively foster PWD rather than merely selecting playful individuals.

In the present research, we build on these ideas to advance a developmental perspective of proactive play during work. We propose and test that training and deliberate practice are indeed key to cultivating play (Csikszentmihalyi, 1975) and, indirectly, creativity by promoting informal learning and self-efficacy. In two studies, we examine the extent to which active participation in an e-intervention supports this process. In Study 1, we examine a micro-intervention in which participants complete brief exercises each morning. In the second study, we build on the findings of Study 1 and investigate a modular e-intervention that comprises five distinct modules. In both studies, participants in the experimental group received information and instructions aimed at developing their play competence, whereas participants in the control group completed activities to improve their understanding of memory and identity (i.e., active control conditions). We propose that greater involvement in the PWD e-intervention in both studies will predict higher levels of designing fun and designing competition (i.e., PWD dimensions), which in turn will promote creative performance through informal learning (Study 1) and self-efficacy (Study 2; see Figure 1).

We make several theoretical contributions. First, we develop the perspective that PWD is rooted in the malleable meta-cognitive competency to discern and enact opportunities for play by selectively attending to, creating, and amplifying intrinsically rewarding aspects. In other words, that PWD is trainable. While various studies support the benefits of PWD (Bakker *et al.*, 2020), its utility remains limited if it cannot be cultivated. Namely, although intervention research has demonstrated that employees can cultivate designing competition, comparable evidence for boosting designing fun is lacking (Walsken *et al.*, 2025). We investigate whether individuals can learn PWD through e-interventions that target this competency (cf. Costantini *et al.*, 2025; Proyer *et al.*, 2021). Second, we advance a critical aspect in the evaluation of play interventions. We propose that the voluntary and enactive fundamental qualities of play (Scharp *et al.*, 2023) stipulate that play interventions are effective to the extent that individuals actively participate rather than merely being exposed to ideas. Finally, we contribute to the play at work literature by advancing a developmental perspective (Petelczyc *et al.*, 2018;

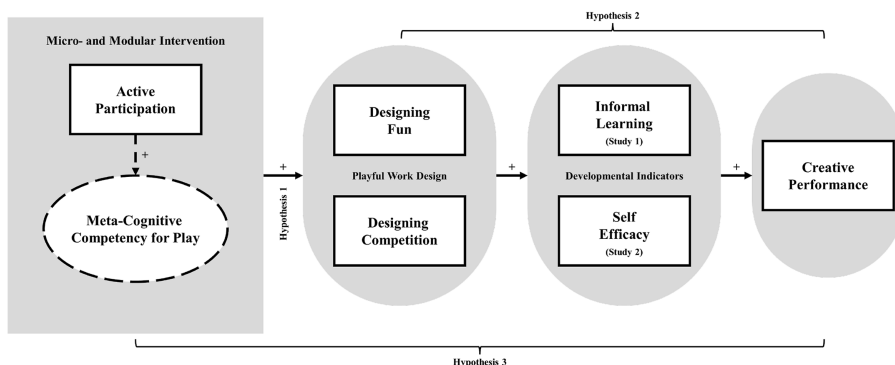


Figure 1. Conceptual model for the intervention studies. Note. The meta-cognitive competency for play is the proposed latent mechanism of the intervention. Dotted lines reflect unmeasured constructs and relationships. Source: Authors' own works

Proyer *et al.*, 2021). We find that PWD promotes creativity and identify informal learning and self-efficacy as meaningful mechanisms. These insights extend theory by highlighting outcomes beyond affective benefits (cf. Bakker and Scharp, 2025; Proyer and Sendatzki, 2025) and suggest that play may support beneficial career trajectories (Scharp and Bakker, 2025).

Theoretical background

Playful work design and playfulness

Playful work design (PWD) constitutes the “proactive cognitive-behavioral orientation aimed at fostering fun and challenge during work activities through creating, seeking, and resolving surprises and complexities” (Scharp *et al.*, 2023, p. 515). Two complementary dimensions define PWD (Bakker and Scharp, 2025). *Designing fun* involves ludic play during work activities, such as using humor and imagination to promote entertainment, cheerfulness, and fun. Agonistic play during work activities is referred to as *designing competition*. Examples include using micro-objectives and self-competition to promote a sense of drive, challenge, and achievement. This conceptualization integrates the literature on playfulness with that of work design (Bakker *et al.*, 2023; Csikszentmihalyi, 1975; Lieberman, 1977). The work design literature is foundational because it explicitly acknowledges the role of employees in organizing task content (Parker, 2014). In this sense, PWD concerns the *enactment* of playfulness during work activities as a bottom-up work design strategy (Bakker *et al.*, 2023). Thus, playful work design constitutes a form of proactive behavior.

Consistent with other play scholars, we propose that playfulness is a meta-cognitive competency anyone can cultivate (Csikszentmihalyi, 1975; Lieberman, 1977; Proyer *et al.*, 2021). We argue that this meta-cognitive competency comprises knowledge, skills, and abilities central to initiating play in activities. Knowledge refers to awareness of both the self and the environment, as well as potential strategies (Flavell, 1979). It involves knowing which playful actions are personally relevant and which activity structures support them. Skill refers to proficiency in iteratively adjusting actions and goals to find the “sweet spot” of surprises and complexities (Andersen *et al.*, 2023; Csikszentmihalyi, 1975). Skills enable individuals to sustain play episodes. Finally, ability comprises the capacities that enable the recognition of, and (re)framing, of activities as opportunities for play (Lieberman, 1977; Proyer, 2017). This ability is rooted in the cognitive capacity and flexibility necessary to switch between frames, as well as the acuity to detect play opportunities. Consequently, this enables individuals to

selectively attend to, create, and amplify intrinsically rewarding aspects of activities. We consider this competency to develop primarily from experiential learning rather than from mere exposure to ideas. These ideas are fundamental to developing and assessing the present PWD e-interventions.

The micro and modular playful work design E-intervention

Characteristics that enable individuals to feel, think, and behave in an authentic and energizing way, thereby supporting optimal functioning, development, and effectiveness, are referred to as strengths (Bakker and van Woerkom, 2018; Wood *et al.*, 2011). From this perspective, playfulness as a meta-cognitive competency constitutes a strength (Bakker and Van Woerkom, 2017). This is important because strengths are not fixed across settings and time; instead, context, values, and interests shape their expression (Biswas-Diener *et al.*, 2011). From this perspective, playfulness may be latent or dormant in many individuals, but can be nurtured and inspired through intentional activities (Meyers *et al.*, 2013). Various conditions, such as pre-existing beliefs, and past experiences, may prevent individuals from realizing they could approach and perform tasks playfully (Glynn, 1994). To illustrate, for individuals who endorse values such as the Protestant work ethic, play lies outside the realm of considered action during a work task. Therefore, we expect that intentional activities aimed at changing pre-existing beliefs and developing the knowledge, skills, and abilities that are central to initiating play during activities will boost PWD. The exercises and modules involved reading and writing. We adopt micro-level approach to cultivating PWD in Study 1, and building on its findings, develop a more comprehensive approach in Study 2 (*between-person differences*).

While Study 1 investigates a micro e-intervention, Study 2 examines a modular e-intervention. The “micro” e-intervention consisted of brief, repeated exercises in which within-person differences in participation were assessed daily, whereas the “modular” e-intervention focused on sequenced modules that were longer and included a variety of texts and exercises, where between-person differences in overall participation were assessed. Hence, Study 1 aims to examine whether small efforts are sufficient to spark the urge to play, whereas Study 2 investigates the extent to which more extensive training cultivates play during work activities. In developing the e-interventions, we build on principles derived from experiential learning theory (Kolb *et al.*, 2000). This theory posits that learning and behavioral change stem from the grasping of knowledge and the transformation of experience. The grasping of knowledge concerns the processing and consolidation of information through immersion (*concrete experiences*) and through thinking, analyzing, and systematically planning (*abstract conceptualization*), whereas the transformation of experience refers to developing an understanding through considering examples and reflections (*reflective observation*) or through testing and applying newly learned concepts (*active experimentation*). To stimulate these processes, the micro- and modular e-interventions developed in the present study included participants discussing theory, introducing concepts, using illustrative examples, and instructing in goal-setting (Demerouti *et al.*, 2021; Latham and Locke, 2007; Wang *et al.*, 2020).

The micro-intervention (*Study 1*) consisted of brief, daily exercises (see Appendix 1). This exercise began by addressing the potential internalization of pre-existing beliefs that confine play to a specific set of activities, excluding work (Glynn, 1994; Mainemelis and Ronson, 2006; Webster and Martocchio, 1993). The exercise emphasized that any activity, including work, can be approached and carried out playfully (Scharp *et al.*, 2023). After explaining and illustrating the differences between designing fun and designing competition, participants were instructed to develop at least two specific implementation goals. They were instructed to specify the exact work activity and how they will perform it playfully. In addition, the exercise encouraged reflection on how play would change experiential qualities, stimulated iterative experimentation with play strategies, and stressed the importance of active participation and deliberate practice to develop playfulness.

The modular e-intervention (*Study 2*) comprised five consecutive daily modules. Across modules, concrete experiences, reflections, abstract conceptualization, and active experimentation were cultivated (see [Appendix 2](#)). Each module concluded with a summary and progressively became more focused on implementation. The opening module introduced the conceptualization and core dimensions of play, which extended to explain PWD. Importantly, PWD was emphasized to be self-initiated and embedded in existing tasks. Subsequently, Modules 2 and 3 focused on designing fun and designing competition, respectively. For both, core principles were explained and illustrated, emphasizing that play should facilitate engagement with tasks rather than divert attention, and that it should fit the situation and person ([Mainemelis and Ronson, 2006](#); [Scharp et al., 2019, 2021](#)). Building on the preceding modules, participants learned about how play strategies can be bundled, merged, and alternated in the fourth module ([Bakker and Scharp, 2025](#)). The final module integrated prior insights and focused on developing specific implementation plans, anticipating experiential changes, and articulating takeaways.

In addition to experiential learning theory, the online context and content of the interventions stipulate that the degree of active participation is essential for developing designing fun and designing competition. Active and voluntary participation is essential for any intervention aimed at behavioral change ([Nielsen and Miraglia, 2017](#)). Yet this is even more important for interventions that are administered online and on participants' own accord (cf. [Donkin et al., 2011](#)). Unlike on-site training, e-interventions lack an instructor who can facilitate engagement. For e-interventions, research suggests that adherence is vital for effectiveness, and intervention completion is often used as a proxy indicator ([Carolan et al., 2017](#)). Finally, the nature of play requires active participation ([Scharp et al., 2023](#)). Play is inherently enactive and voluntary. Meaning and experiential qualities are superimposed during play and dissipate when involvement declines. Moreover, play is difficult to force (e.g. [Fleming, 2005](#)). Hence, mere exposure to ideas is not expected to stimulate PWD. Instead, the repeated, volitional enactment of play is what is most essential for cultivating playfulness (cf. [Proyer et al., 2021](#)). Therefore, we expect:

- H1.* Active participation in the playful work design e-intervention positively predicts (a) designing fun and (b) designing competition.

From playful work design to creative performance

Play is widely considered a significant driver of creativity because it involves exploration, experimentation, and reconfiguration of elements ([Csikszentmihalyi, 1997](#); [Kolb and Kolb, 2010](#)). We expect playful work design to support creative performance through informal learning (i.e., learning from actions through self-reflection; [Noe et al., 2013](#)) and self-efficacy (i.e., expectations of effectively executing behaviors to produce outcomes; [Bandura, 1977](#)). Playful work design involves the (re)structuring of activities to transform experiential qualities ([Scharp et al., 2023](#)). By actively seeking, creating, and resolving surprises and complexities, individuals proactively shape and familiarize themselves with the design of an activity. This process optimizes the likelihood of discovering novel information, reducing prediction errors, and refining skills ([Andersen et al., 2023](#); [Mainemelis and Ronson, 2006](#)). Moreover, play often involves finding the “sweet spot” of complexity ([Andersen et al., 2023](#); [Csikszentmihalyi, 1997](#); [Vygotsky, 1978](#)). This refers to deliberately seeking and creating situations that balance action capabilities (*skills*) with action opportunities (*challenges*), facilitating increasing levels of mastery ([Andersen et al., 2023](#); [Csikszentmihalyi, 1997](#); [Vygotsky, 1978](#)).

Several studies support the idea that playful work design may promote informal learning and self-efficacy. In a study among banking employees in Vietnam, individuals who playfully designed their work were higher in ambidexterity and uncertainty adaptability ([Hoang and Le, 2024](#)). This suggests PWD fostered continuous improvement in alignment and adaptation to

the environment by balancing flexibility and efficiency (Kobarg *et al.*, 2017) and a sense of competence in dealing with uncertainty (Ployhart and Bliese, 2006). Similarly, Elsayed *et al.* (2025) found that teaching assistants in Egypt who designed fun and competition also reported more learning. In a daily diary study among a heterogeneous sample of employees in the Netherlands, Scharp *et al.* (2022) found that on days when individuals designed fun and designed competition, they experienced more competence, confidence, and mastery in their work.

Several studies also link PWD with creativity (Liu *et al.*, 2023; Scharp *et al.*, 2019). In a heterogeneous sample of employees in China (Zhu and Wen, 2025), individuals who designed their work playfully also reported higher creative performance. Similarly, Chen and Choi (2025) focused on green creativity – the development of novel and useful ideas about environmentally friendly products, services, processes, and practices (Chen and Chang, 2013). In a heterogeneous sample of employees in Taiwan, the authors found that designing fun and designing competition positively predicted supervisor evaluations of green creativity two weeks later. Finally, in a heterogeneous sample of workers, individuals who habitually designed fun and competition were evaluated by colleagues as learning more informally and being more creative than their less playful counterparts (Scharp *et al.*, 2023). Therefore, taken together, we expect:

- H2. (a) designing fun and (b) designing competition are positively related to creativity through informal learning (Study 1) and self-efficacy (Study 2).
- H3. Active participation in the PWD e-interventions promotes creative performance through sequential indirect effects, in such a way that changes in (a) designing fun and (b) designing competition positively predict informal learning (Study 1) and self-efficacy (Study 2), which in turn enhance creative performance.

Study 1: playful work design micro-intervention

Research design and procedure

Participants were recruited by master students as part of their theses, which improves the external validity of our findings by increasing sample heterogeneity (Demerouti and Rispons, 2014). Individuals who provided informed consent completed a general survey that included demographic questions. Participants were randomly assigned to either the online playful work design or the childhood memories intervention. Participants were instructed to strive to return at least 5 surveys in total. In the following week, participants in each condition received daily exercises each morning at 06:00 (available until 12:00) and daily questionnaires at 16:00 (available until 01:00). In the subsequent two weeks, they again received daily questionnaires at 16:00 (available until 01:00). We constrained the availability of the surveys and exercises to minimize overlap. Individuals were invited to complete surveys and exercises online through email. As an incentive, participants were entered into a raffle for a chance to win one of five €20 gift vouchers. The study was approved by the ethics committee (ETH2122-035).

Because we were interested in developing playfulness from a meta-cognitive competency perspective, we drew inspiration from the online intervention conducted by Proyer *et al.* (2021) that focused on cultivating playfulness as a quality of individuals based on the other-directed, lighthearted, intellectual, and whimsical (OLIW) personality model of adult playfulness (Proyer, 2017). We changed the descriptions of OLIW playfulness to our understanding of PWD. We adapted this exercise based on the literature on PWD and our perspective on playfulness as a metacognitive competency comprising knowledge, skills, and abilities. Specifically, we briefly discussed key principles from the play literature, including that (1) play is independent from activities, (2) builds on the ability to reframe and enact activities through a playful mindset, and (3) constitutes a skill that is developed through practice. Participants also received information about the difference between designing fun

and designing competition, with several examples of what each may look like in practice. Finally, they were instructed to write down which work activities they wanted to approach and perform playfully, and how ([Appendix 1](#)).

Individuals in the control group were instructed to write about early childhood memories each day ([Seligman et al., 2005](#)). This exercise is commonly used in positive psychology intervention research as a plausible placebo control. The content was adapted to match the length of the playful work design exercise (see [Appendix 1](#)). The exercise discussed how memories form and their significance in navigating the world and shaping personal identities. We briefly discussed the differences among sensory, short-term, and long-term memory, as well as the recognition and retrieval of information. Participants were instructed to retrieve and write about childhood memories. Finally, to develop their self-understanding and train their retrieval processes, participants were encouraged to identify similarities and patterns in their memories.

Participants

In total, 74 participants ($n = 35$ in the control group; $n = 39$ in the intervention group) completed at least 2 daily surveys ($n = 432$ days; $\bar{x} = 5.84$ days). This constitutes a low response rate relative to the initial sample that filled out the general survey ($N = 178$ individuals; response rate = 41.6%). Several complaints regarding the deadlines suggest this was due to participant burden. The final sample was, on average, 41.0 years of age ($SD = 13.2$), had 18.3 years of work experience ($SD = 12.7$), and was estimated to work 39.8 h per week ($SD = 8.08$). The majority was female ($n = 48$; 60.8%). Thirty individuals were male (38.0%), and one individual identified differently (1.3%). The sample was highly educated, with participants having completed university degrees ($n = 42$; 53.2%), higher vocational training ($n = 21$; 26.6%), or a PhD ($n = 3$; 3.8%). Participants came from a wide variety of sectors, including education, business, finance, government, and healthcare.

Given the low response rate, we conducted a drop-out analysis to assess potential selection bias. We compared the final sample ($N = 74$) with individuals who dropped out ($N = 104$). While work experience ($F(1,176) = 11.38, p < 0.01$) and weekly hours ($F(1,176) = 5.65, p < 0.05$), were higher in the final sample than in the dropouts, there were no differences between the distribution across experimental groups ($\chi^2(1) = 0.08, p = 0.781$), age ($F(1,176) = 3.69, p = 0.056$), gender ($\chi^2(2) = 1.49, p = 0.475$), education level ($U = 3,366, p = 0.116$), and sector ($\chi^2(11) = 7.94, p = 0.719$). Thus, there was no evidence of differential attrition across the intervention groups. Given that the research focused on work, the results suggest that dropouts may have perceived the research as less relevant to their context.

Measures

We used short versions of each instrument, which have been validated and frequently employed in daily diary research ([Ohly et al., 2010](#)). To assess reliability, we calculated multilevel omega estimates since they tend to be more accurate than traditional Cronbach's alpha estimates of internal consistency ([Dunn et al., 2014](#)). Namely, the latter assumes normally distributed items and equal factor loadings across items, which is often violated. Each instrument was reliable (see [Table 1](#)).

Playful work design: We measured designing fun and designing competition each day with the 12-item daily version ([Scharp et al., 2019](#)) of the PWD instrument ([Scharp et al., 2023](#)). Participants evaluated statements, including “Today, I looked for ways to make my work more fun” (designing fun) and “Today, I pushed myself to do better even when it wasn't expected” (designing competition) on a 7-point scale (1 = never, 7 = always).

Informal learning: To assess daily informal learning, we used the 3-item Learning from Oneself Scale developed by [Noe et al. \(2013\)](#). Individuals were asked to evaluate statements on a seven-point scale (1 = very little, 7 = very much) following the stem “How much new learning, knowledge, skill, competencies, or expertise have you gained through each of the

Table 1. Descriptives, Omega reliabilities, and intercorrelations of the variables of Study 1 ($N = 74$ individuals, $n = 432$ days)

	Mean	SD	ICC	ω_{L2}	ω_{L1}	1	2	3	5
1. Daily Designing Fun	3.86	1.26	0.66	0.98	0.88		0.72*	0.63*	0.58*
2. Daily Designing Competition	3.45	1.15	0.64	0.90	0.79	0.71*		0.55*	0.50*
3. Daily Informal Learning	3.91	1.37	0.61	0.96	0.78	0.33*	0.34*		0.56*
4. Daily Creative Performance	4.36	1.24	0.48	0.96	0.83	0.43*	0.38*	0.32*	

Note(s): *Two-tailed $p < 0.05$

following actions today?” An example statement is “Today, I actively sought and experienced new assignments, situations, or tasks.”

Creative performance: We measured daily creativity performance with a four-item creativity scale (Baer and Oldham, 2006; Zhou and George, 2001). Individuals evaluated their agreement with statements including “Today, I came up with creative solutions to problems at work” on a 7-point scale (1 = strongly disagree, 7 = strongly agree).

Playful work design e-intervention. Completion of the daily PWD exercise each morning was coded as a dichotomous variable (0 = not completed, 1 = completed). To capture cumulative intervention engagement, we calculated cumulative PWD exercise scores by summing the number of exercises completed thus far. That is, this score did not count the completion of the PWD exercise of that day. Group assignment was quantified as a between-person dichotomous variable (1 = control, 2 = intervention).

Strategy of analysis. Daily observations of the study variables were nested in individuals. To account for this hierarchical structure, we specified a multilevel structural indirect effects model in Mplus (Muthén and Muthén, 2017). Justifying multilevel modeling, the intraclass coefficients indicated that a substantial proportion of the variation was attributable to differences within individuals (34.5%–52.4%). Considering the small sample size, we assessed construct validity using confirmatory factor analyses with structured item parcels for constructs with more than five items (for a similar approach, see Sonnentag and Schiffrer, 2019, or Scharp et al., 2022). We evaluated model fit using the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and the Standardized Root Mean Square Residual (SRMR). RMSEA values up to 0.08, CFI values above 0.90, and SRMR values below 0.10 indicate acceptable fit (Schweizer, 2010). The structural model was examined in a single structural model, which avoids biases associated with piecemeal testing (Preacher et al., 2007). We used Bayesian estimation with default priors to calculate coefficients because it is robust against nonnormality, reduces sample bias, and requires fewer clusters than maximum likelihood estimation (Muthén and Asparouhov, 2012; Van De Schoot et al., 2014).

The structural model specified the within-person and between-person associations for observed variables (i.e. mean scores of constructs). In addition to specifying the indirect effects model at the within-person level as presented in Figure 2, we specified the same model at the between-person level, excluding the accumulated PWD exercise variable and including the group assignment variable (see online Appendices for the full model specification and the structural model output). Therefore, PWD exercise accumulation was constrained to the within-person level of analysis, whereas group assignment was constrained to the between-person level of analysis. The non-intervention daily variables were person-centered (i.e. lagged designing fun and designing competition), whereas the intervention variables, group assignment, completion of the PWD exercise, and the cumulative number of completed PWD exercises, were grand-mean centered (for a similar approach, see Fritz and Sonnentag, 2009). Namely, in contrast to daily designing fun and designing competition, the daily intervention

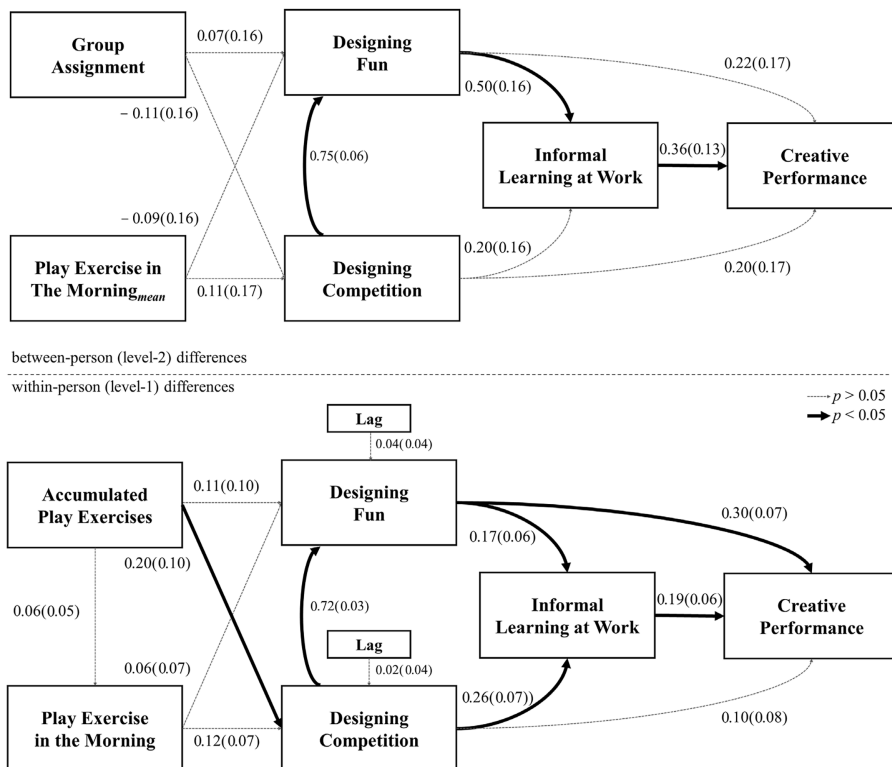


Figure 2. Standardized estimates of the micro-intervention (Study 1). Source: Authors' own work

variables are more meaningfully interpreted as deviations from the sample mean (Enders and Tofghi, 2007). Finally, by including lagged PWD dimensions, we examined whether the number of completed PWD exercises on the preceding day predicted changes in designing fun and designing competition (Wilkins, 2018). We use the cumulative number of PWD exercises to quantify active participation when testing the hypothesized indirect effects.

Results and discussion

The means, standard deviations, ICCs, multilevel reliabilities, and correlations are presented in Table 1. Confirmatory factor analysis demonstrated that the four-factor model comprising designing fun (3 parcels), designing competition (3 parcels), learning (3 items), and creative performance (4 items) fit the data well (χ^2 (118) = 291.13, $p < 0.01$, RMSEA = 0.058, CFI = 0.935, SRMR_B = 0.074, SRMR_W = 0.039). In total, participants in the intervention group ($N = 39$) completed 97 PWD exercises ($\bar{x} = 2.49$, $SD = 1.60$) out of 195 (completion rate = 49.74%). However, it is important to note that participants were instructed to ignore surveys on days they did not work. The cumulative number of completed PWD exercises across the 247 daily observations in the intervention group approximated a normal distribution, ranging from none ($k = 31$; 12.6%) to one ($k = 54$; 21.9%), two ($k = 40$; 16.2%), three ($k = 48$; 19.4%), four ($k = 42$; 17.0%) and five exercises ($k = 32$; 13.0%).

We predicted that active engagement in the playful work design interventions positively predicts changes in (a) designing fun and (b) designing competition (Hypothesis 1). The results revealed that assignment to the intervention group did not predict designing fun ($\beta = 0.07$,

SD = 0.16, one-tailed $p = 0.360$, 95% CI = $[-0.29, 0.40]$) or designing competition ($\beta = -0.11$, SD = 0.16, one-tailed $p = 0.260$, 95% CI = $[-0.41, 0.23]$). In other words, mere exposure to the intervention did not lead individuals to design fun and design competition more often (See Figure 2). Moreover, on the day when individuals completed the PWD exercise, designing fun ($\beta = 0.06$, SD = 0.07, one-tailed $p = 0.245$, 95% CI = $[-0.09, 0.19]$) and designing competition did not increase ($\beta = 0.12$, SD = 0.07, one-tailed $p = 0.055$, 95% CI = $[-0.03, 0.24]$). Similarly, accumulated daily exercises did not predict designing fun ($\beta = 0.11$, SD = 0.10, one-tailed $p = 0.135$, 95% CI = $[-0.07, 0.31]$). However, the accumulated daily exercises positively predicted designing competition ($\beta = 0.20$, SD = 0.10, one-tailed $p = 0.005$, 95% CI = $[0.03, 0.39]$). Thus, active engagement in the intervention positively predicted changes in designing competition (supporting Hypothesis 1b), but not designing fun (no support for Hypothesis 1a).

The second hypothesis stated that changes in designing fun and designing competition promote creative performance through informal learning. The results presented in Table 2 indicated that on days when employees designed fun ($\beta = 0.17$, SD = 0.07, one-tailed $p = 0.005$, 95% CI = $[0.03, 0.30]$) and designed competition ($\beta = 0.26$, SD = 0.07, one-tailed $p < 0.001$, 95% CI = $[0.12, 0.39]$; See Table 2 and Figure 2), their informal learning was higher. In support of Hypothesis 2, changes in designing fun ($ab = 0.034$, SD = 0.020, one-tailed $p = 0.005$, 95% CI = $[0.007, 0.080]$), and designing competition ($ab = 0.055$, SD = 0.025, one-tailed $p < 0.001$, 95% CI = $[0.019, 0.112]$), were indirectly associated with creative performance through informal learning (see Table 2). However, it is important to note that when we consider between-person differences (see Table 2), only designing fun related to informal learning directly ($\beta = 0.50$, SD = 0.16, one-tailed $p = 0.005$, 95% CI = $[0.15, 0.76]$) and indirectly to creativity through informal learning ($ab = 0.14$, SD = 0.08, one-tailed $p = 0.010$, 95% CI = $[0.02, 0.32]$), whereas between-person differences in designing competition did not relate to creativity, directly ($\beta = 0.20$, SD = 0.17, one-tailed $p = 0.145$, 95% CI = $[-0.16, 0.46]$) or indirectly ($ab = 0.05$, SD = 0.06, one-tailed $p = 0.115$, 95% CI = $[-0.04, 0.20]$).

Hypothesis 3 stated that the number of completed PWD exercises promotes creative performance by stimulating informal learning through (a) designing fun and (b) designing competition. As expected, the number of completed PWD exercises was associated with higher daily creative performance because it stimulated informal learning through designing competition ($ab = 0.004$, SD = 0.003, one-tailed $p = 0.005$, 95% CI = $[0.001, 0.014]$), whereas there was no indirect pathway through designing fun ($ab = 0.001$, SD = 0.002, one-tailed $p = 0.140$, 95% CI = $[-0.001, 0.008]$; see Table 2). In other words, on days when individuals had accumulated more completed PWD exercises, their creative performance

Table 2. Unstandardized indirect effects of the completed playful work design exercises

Within-person indirect effect analyses	Creative performance		
	ab(SD)	One-tailed p -value	95% CI
Designing fun (DF) → informal learning	0.034(0.020)*	0.010	0.007, 0.080
Designing competition (DC) → informal learning	0.055(0.025)*	<0.001	0.019, 0.112
Completed exercises → DF → informal learning	0.001(0.002)	0.140	−0.001, 0.008
Completed exercises → DC → informal learning	0.004(0.003)*	0.005	0.001, 0.014
<i>Supplemental Between-person Indirect Effect Analyses</i>			
Designing fun (DF) → informal learning	0.144(0.083)*	0.010	0.019, 0.316
Designing competition (DC) → informal learning	0.052(0.060)	0.115	−0.044, 0.203
Note(s): *significant based on 95% CI. p -values are one-tailed posterior p -values. ab = unstandardized indirect effect			

improved because they designed competition more often, thereby fostering informal learning. Thus, the results only support [Hypothesis 3b](#). The results indicated that active participation in the micro-intervention cultivated designing competition and, indirectly, creative performance, but suggested that designing fun may require a more extensive intervention. Therefore, we developed a modular intervention that provided participants with more in-depth training.

Study 2: playful work design modular e-intervention

Research design and procedure

The recruitment procedure was similar to the micro-intervention. The study was approved by the ethics committee (TSB_RP868). The study period was seven weeks. As in Study 1, we randomly assigned participants to either the PWD or childhood memories module. In the first week, participants received the general survey, which included questions about demographics and their pre-existing PWD levels. During the second week, participants received different e-intervention modules each day. Each module was expected to take approximately 20 min. Finally, during the third to seventh weeks, they participated in a weekly diary study that measured playful work design, self-efficacy, and creativity. As in Study 1, participants were invited to complete surveys and modules online via email.

The modular PWD e-intervention addressed the core components of knowledge, skill, and ability across five modules, spread over five days (see [Appendix 2](#)). Each module started and ended with a recap. The first module introduced the core ideas about play and playfulness, including differences and distinctions, core ingredients, examples, and questions based on the review by [Scharp et al. \(2023\)](#). Module 2 contained a recap and focused on the principles and manifestations of designing fun. Subsequently, participants were instructed to select three tasks to create designing fun ideas for. The third module was similar to Module 2 but instead focused on designing competition. The fourth module built on the ideas of [Bakker and Scharp \(2025\)](#) about how designing fun and designing competition can be blended. Participants were instructed to select tasks and develop ideas for bundling (e.g. using humor and imagination or striving with competition), merging (e.g. combining humor with striving), and alternating between strategies (e.g. selecting when to initiate play and when not). The final module instructed participants to develop PWD plans for three different activities.

The control group received a modular e-intervention about memories (see [Appendix 2](#)). The content of each module was designed to be meaningful and of similar length and structure to the modular PWD e-intervention. The first module described how sensory, short-term, and long-term memory operate together to encode, store, and retrieve information ([Goldstein, 2008](#)). Module 2 discussed how memories differ in specificity ([Nelson and Fivush, 2004](#)). Participants were instructed to remember and reflect on why certain life periods, general events, and specific events were meaningful to them ([Bluck, 2003](#); [Conway and Lance, 2010](#); [Conway and Rubin, 2019](#)). The third module explained how autobiographical memories are intertwined with our identity ([Dunlop, 2017](#); [McAdams, 2011](#)). Specifically, participants were asked to reflect on the themes of their personal stories. Module 4 focused on how identities may fluctuate between domains and roles ([Habermas and Bluck, 2000](#)). The final module instructed individuals to describe how their stories, by role and domain, are meaningful to their identity and how they see themselves.

In total, 270 individuals completed the general survey, but only 127 completed at least 2 weekly surveys (response rate = 46.7%; $n = 66$ participants in the control group; $n = 61$ participants in the intervention group). The final sample returned 549 weekly surveys, had a mean age of 40.5 years ($SD = 14.2$), 18.9 years of work experience ($SD = 14.1$), 8.7 years of organizational tenure ($SD = 10.4$), and a workweek of 32.4 h ($SD = 9.3$). Most identified as female (57.5%; male: 42.5%) and were highly educated (university degree: 36.2%; higher vocational training: 32.3%; lower vocational training: 20.5%). Participants worked in a variety of sectors, including healthcare, trade, business, education, and construction.

We conducted a drop-out analysis to examine potential selection bias. We compared the final sample ($N = 143$) with the dropouts ($N = 104$). Similar to Study 1, participants in the final sample were older ($F = 11.15, p < 0.01$), had more work experience ($F = 15.79, p < 0.01$), and reported higher organizational tenure ($F = 9.54, p < 0.01$). In addition, fewer people in the intervention group worked in communication, and more people worked in trade and healthcare ($\chi^2 = 22.54, p < 0.05$). Yet, the groups did not differ in terms of distribution across experimental groups ($\chi^2 = 2.00, p = 0.157$), gender ($\chi^2 = 0.90, p = 0.639$), education level ($U = 8,388, p = 0.254$). Most importantly, the final sample did not differ from the group that dropped out in their baseline designing fun ($F(1,268) = 0.01, p = 0.913$) and designing competition ($F(1,268) = 0.21, p = 0.647$). Thus, as in Study 1, attrition was similar across the intervention groups and may have been due to the research focus being perceived as less relevant to participants.

Measures

Playful work design: We measured designing fun and designing competition each week by adapting the 12-item daily version (Scharp et al., 2019, 2023). Thus, statements such as “This week, I looked for humor in the things I needed to do” (designing fun) and “This week, I tried to set time records in my work tasks” (designing competition) were evaluated by participants on a 5-point scale (1 = never, 5 = very often). Similarly, to assess baseline designing fun and designing competition, we used the general PWD instrument (Scharp et al., 2023).

Self-efficacy: To assess weekly beliefs in one’s capabilities, we adapted the 8-item general self-efficacy scale (Chen et al., 2001). Participants evaluated statements, such as “When facing difficult tasks this week, I was certain that I would accomplish them”, on a 5-point scale (1 = strongly disagree, 5 = strongly agree).

Creative performance: Creative performance was measured by adapting the 4-item creativity scale (Baer and Oldham, 2006; Zhou and George, 2001). Statements including “This week, I was a good source of creative ideas” were evaluated by participants on a 5-point scale (1 = strongly disagree, 5 = strongly agree).

Playful work design E-intervention: Active engagement was quantified by summing participation scores for each module (0 = no participation, 5 = full participation). Participation in the first module was quantified as the proportion of correct answers to PWD test questions (0–1.0). For Modules 2 to 5, participation was measured as the proportion of ideas developed (e.g., 0 = no ideas, 1.0 = all ideas developed). To enhance interpretation, we then divided the score by five. Group assignment was captured as a between-person dichotomous variable (0 = control, 1 = intervention).

Strategy of analysis

In our second study, weekly observations were nested in individuals. The substantial variance across levels of analysis justified multilevel analyses (i.e., 28.9%–46.0%). Given the small sample size and multilevel structure, we evaluated the factor structure similarly to Study 1, using parcels (Little et al., 2002). In addition to the model specified at the between-person level of analysis, we also specified a model including designing fun, designing competition, self-efficacy, and creative performance at the within-person level of analysis. For the structural model, we used observed variables (i.e., mean scores; see Figure 3). The intervention and baseline variables were grand-mean centered and constrained to the between-person level of analysis. These variables refer to group assignment, active participation, baseline designing fun, and designing competition. The within-person variables were left uncentered since they are outcomes (Muthén and Muthén, 2017). Active participation, as measured by completing exercises across modules, was used to test the indirect effects.

Results and discussion

Table 3 includes the means, standard deviations, ICCs, multilevel reliabilities, and correlations. We specified a six-factor model consisting of baseline designing fun (3

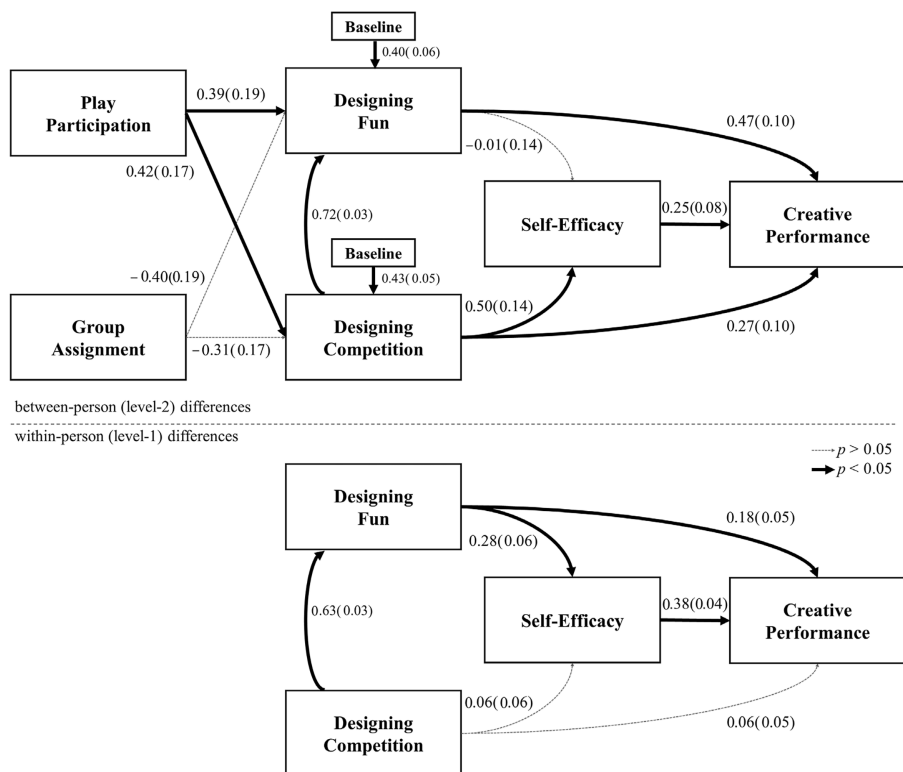


Figure 3. Standardized estimates of the modular E-intervention (Study 2). Source: Authors' own work

Table 3. Descriptives, Omega reliabilities, and intercorrelations of the variables of Study 2 ($N = 127$ individuals, $n = 549$ weeks)

Variable	Mean	SD	ICC	ω_{L2}	ω_{L1}	2	3	4	5	8
1. Baseline Designing Fun	3.34	0.65		0.81		0.56*	0.49*	0.34*	0.19	0.50*
2. Baseline Designing Competition	3.26	0.66		0.80			0.40*	0.56*	0.26*	0.48*
3. Weekly Designing Fun	2.84	0.81	0.71	0.98	0.76			0.82*	0.39*	0.78*
4. Weekly Designing Competition	2.83	0.83	0.69	0.96	0.71		0.62*		0.49*	0.77*
5. Weekly Self-Efficacy	3.65	0.58	0.54	0.98	0.85		0.32*	0.23*		0.56*
6. Weekly Creative Performance	3.16	0.78	0.57	0.96	0.71		0.34*	0.26*	0.46*	

Note(s): *two-tailed $p < 0.05$

parcels), baseline designing competition (3 parcels), designing fun (3 parcels), designing competition (3 parcels), self-efficacy (4 parcels), and creative performance (4 items). The baseline variables were constrained to the between-person level of analysis. The fit indices suggest that the model had an acceptable fit to the data ($\chi^2(226) = 525.75$, $p < 0.01$, RMSEA = 0.048, CFI = 0.935, SRMR_B = 0.052, SRMR_W = 0.046).

We conducted analyses of variance to assess whether the intervention ($N = 61$) and control group ($N = 66$) differed in the playful work design dimension prior to the intervention. A one-way ANOVA ($F(1,125) = 0.19, p = 0.667$) revealed that the intervention ($M = 3.36, SD = 0.61$) and control group ($M = 3.31, SD = 0.69$) did not differ in baseline designing fun. Likewise, the results from a one-way ANOVA ($F(1,125) = 0.30, p = 0.584$) demonstrated that the intervention ($M = 3.22, SD = 0.65$) and the control group ($M = 3.28, SD = 0.68$) were similar at baseline in designing competition. In the intervention group ($N = 61$), the completion rate for most modules exceeded 50% (Module 1: 81.97%, Module 2: 83.33%, Module 3: 77.32%, Module 4: 64.48%, Module 5: 45.63%). The overall average completion rate of the PWD modules was 70.55% ($SD = 0.25$).

Hypothesis 1 suggests that active participation in the modular PWD intervention positively predicts designing fun and designing competition. Group assignment did not relate to designing fun ($\beta = -0.40, SD = 0.19$, one-tailed $p = 0.030$, 95% $CI = [-0.74, 0.03]$) or designing competition ($\beta = -0.31, SD = 0.17$, one-tailed $p = 0.060$, 95% $CI = [-0.62, 0.04]$; see [Figure 3](#)). In other words, mere exposure to the modular PWD intervention did not stimulate play during work activities. However, as expected, and controlling for baseline designing fun and baseline designing competition, individuals who actively participated in the modular PWD intervention in terms of the number of completed exercises increased more in designing fun ($\beta = 0.39, SD = 0.19$, one-tailed $p = 0.010$, 95% $CI = [0.01, 0.79]$) and designing competition ($\beta = 0.42, SD = 0.17$, one-tailed $p < 0.001$, 95% $CI = [0.10, 0.77]$). Therefore, **Hypothesis 1** was supported.

The second hypothesis posits that (a) designing fun and (b) designing competition promote creativity through self-efficacy. Between-person differences in designing competition were directly ($\beta = 0.27, SD = 0.10$, one-tailed $p < 0.001$, 95% $CI = [0.05, 0.47]$) and indirectly related to creative performance through self-efficacy ($ab = 0.16, SD = 0.05$, one-tailed $p < 0.001$, 95% $CI = [0.07, 0.26]$; see [Table 4](#)), whereas designing fun only had a direct association with creative performance ($\beta = 0.47, SD = 0.10$, one-tailed $p < 0.001$, 95% $CI = [0.25, 0.65]$). Thus, individuals who designed fun were more creative but not due to increases in self-efficacy. A similar positive effect on creativity was observed for designing competition, although in this case, the relationship was partially explained by self-efficacy. Therefore, **Hypothesis 2b** was supported, whereas **Hypothesis 2a** was only partially supported. It is important to note that, on the within-person level of analysis, only designing fun related to creative performance, directly ($\beta = 0.18, SD = 0.06$, one-tailed $p < 0.001$, 95% $CI = [0.09, 0.33]$) and indirectly through self-efficacy ($ab = 0.13, SD = 0.03$, one-tailed $p < 0.001$, 95%

Table 4. Unstandardized indirect effects of the modular playful work design e-intervention

Creative performance			
Between-person Indirect Effect Analyses	ab(SD)	One-tailed <i>p</i> -value	95% CI
Designing fun (DF) → self-efficacy	−0.003(0.046)	0.480	−0.098, 0.075
Designing competition (DC) → self-efficacy	0.159(0.049)*	<0.001	0.067, 0.258
Completed exercises → DF → self-efficacy	0.001(0.005)	0.500	−0.014, 0.013
Completed exercises → DC → self-efficacy	0.014(0.011)*	0.010	0.003, 0.039
Completed exercises → DF	0.053(0.026)*	0.010	0.002, 0.104
Completed exercises → DC	0.029(0.022)*	<0.001	0.005, 0.086
<i>Supplemental Within-person Indirect Effect Analyses</i>			
Designing fun (DF) → self-efficacy	0.129(0.030)*	<0.001	0.070, 0.189
Designing competition (DC) → self-efficacy	0.025(0.026)	0.180	−0.022, 0.069
Note(s): *significant based on 95% CI. <i>p</i> -values are one-tailed posterior <i>p</i> -values. <i>ab</i> = unstandardized indirect effect			

CI = [0.07, 0.19]), whereas designing competition did not directly relate to self-efficacy ($\beta = 0.06$, SD = 0.05, one-tailed $p = 0.180$, 95% CI = [-0.05, 0.15]) and creativity ($\beta = 0.06$, SD = 0.05, one-tailed $p = 0.080$, 95% CI = [-0.02, 0.17]), or indirectly to creativity through self-efficacy (ab = 0.03, SD = 0.03, one-tailed $p = 0.180$, 95% CI = [-0.02, 0.07]).

Hypothesis 3 states that active participation in the PWD intervention predicts creativity by stimulating self-efficacy through (a) designing fun and (b) designing competition. As expected, active participation indirectly promoted creativity by stimulating self-efficacy through designing competition (ab = 0.014, SD = 0.011, one-tailed $p = 0.010$, 95% CI = [0.003, 0.039]; see [Table 4](#)). However, there was no indirect association through designing fun and self-efficacy (ab = 0.001, SD = 0.005, one-tailed $p = 0.500$, 95% CI = [-0.014, 0.013]). Instead, we found that individuals who actively participated were more creative because they designed fun (ab = 0.05, SD = 0.03, one-tailed $p = 0.010$, 95% CI = [0.002, 0.104]) and designed competition more often (ab = 0.03, SD = 0.02, one-tailed $p < 0.001$, 95% CI = [0.005, 0.086]). In other words, while active participation in the PWD intervention, in terms of completing exercises, promoted creativity through designing fun and designing competition, self-efficacy was only a relevant mechanism for the indirect effect through designing competition. Thus, [Hypothesis 3b](#) was supported, but [Hypothesis 3a](#) was not.

General discussion

Creative performance supports positive career trajectories ([Harari et al., 2016](#); [Rodrigues and Rebelo, 2023](#); [Schuh et al., 2018](#)). In the present study, we argued that play during work activities may contribute to such trajectories by promoting creativity. We built on the idea that playfulness constitutes a meta-cognitive competency that can be developed through intentional activities. Supporting this perspective, we demonstrated that PWD, and consequently creative performance, can be cultivated by participation in short online interventions. Importantly, informal learning and self-efficacy were identified as underlying mechanisms. We discuss the most important implications of research.

Theoretical contributions

We make several contributions to the literature. First, we advance insights on PWD. There is limited research on the direct cultivation of PWD ([Costantini et al., 2025](#); [Walsken et al., 2025](#)). Although a growing body of research highlights the benefits of PWD ([Bakker et al., 2020](#); [Bakker and Scharp, 2025](#)), its practical value is constrained if it cannot be effectively fostered. Thus far, only designing competition has been shown to increase as a result of an intervention ([Walsken et al., 2025](#)). Our research complements these findings by demonstrating how to cultivate both dimensions. This is important because it reveals that PWD is malleable rather than static. The micro-intervention revealed that completing brief exercises can stimulate employees to design competition, whereas designing fun appeared more resistant to change through brief activities. The modular e-intervention of Study 2 contained a more in-depth training that cultivated both dimensions of PWD. Thus, both dimensions of PWD can be developed by completing exercises, but changing designing fun requires more attention – a stronger “dose” of the e-intervention. This asymmetry may reflect differences in the relative importance of thinking processes and spontaneity. Designing fun relies more on divergent thinking and spontaneity, whereas designing competition involves more convergent thinking and structure. Therefore, designing fun may require more extensive practice before it becomes habitual. These findings complement existing research on other organizational factors that can promote PWD, such as leadership and climate ([Bakker et al., 2025](#); [Khan, 2023](#); [Pap et al., 2025](#); [Peral and Weitz, 2025](#); [Swanzy et al., 2025](#)).

Second, we advance insights regarding how play interventions should be evaluated. Our results demonstrate that assessing active participation, rather than mere exposure to intervention materials, is essential. The voluntary and enactive qualities of play

(Scharp *et al.*, 2023) stipulate that developing PWD necessitates experiential learning rather than the passive reception of ideas. Consequently, play interventions are effective to the extent to which individuals actively participate. Neither designing fun nor designing competition was predicted by mere exposure to the intervention materials (i.e. no intent-to-treat effect). Instead, our findings suggest that it was the degree of participation that predicted PWD (i.e. per-protocol-effect). This aligns with prior research on digital interventions, which suggests that adherence is a key predictor of outcomes (Carolan *et al.*, 2017; Donkin *et al.*, 2011). Thus, individuals must repeatedly engage with intervention materials before benefits emerge. This principle most likely extends to other organizational play interventions, such as gamification. These initiatives are unlikely to yield benefits unless they facilitate active involvement in play. Therefore, future research should strive to increase adherence to play interventions.

Third, we contribute to the literature on play at work by advancing a developmental perspective. Although learning and self-efficacy are frequently suggested as key benefits of play, empirical evidence for these links is scarce (Celestine and Yeo, 2021; Jarkko *et al.*, 2026; Petelczyc *et al.*, 2018; Proyer and Sendatzki, 2025). Our findings reveal that designing work playfully promotes creativity and demonstrate that informal learning and self-efficacy are meaningful mechanisms that partially explain this association. These findings are significant because they suggest that PWD can promote development and thereby contribute to career success over time. In addition, because the findings suggest that PWD is malleable, both organizations and individuals may capitalize on the power of play (Bakker and Scharp, 2025). Yet, there is a need for longitudinal research to investigate how PWD relates to career success over time. Yet, its effects may not be unequivocal. PWD may especially support sustainable career trajectories in organizations with a receptive social context, as such contexts may prompt more positive inferences from evaluators (Guo *et al.*, 2025), whereas designing work playfully that is irrelevant for career objectives might obscure misalignment and lead to opportunity costs.

Several discrepancies in the relationships between PWD, learning, or self-efficacy and creativity, relative to our expectations, merit consideration. In Study 1, which focused on within-person differences, we observed that between-person differences in designing competition were unrelated to informal learning and creativity. Theoretically, this may reflect that the habitual enactment of agonistic play is less conducive to learning and creativity than ludic play. That is, when considering enduring patterns, ludic play might be more important for learning and creativity, possibly because designing for competition involves more convergent thinking, whereas designing for fun involves more divergent thinking. For learning, the latter might be more important. Statistically, however, this finding may reflect insufficient power to detect the effect due to the limited level-2 sample size ($N = 74$ individuals) and the substantial intercorrelation between the PWD dimensions at the between-person level ($r = 0.75$).

In Study 2, which focused on between-person differences, we found that individuals who designed competition felt more efficacious, whereas designing fun was unrelated to self-efficacy. This pattern was reversed at the within-person level. While designing competition was not related to self-efficacy, designing fun was. Although a potential explanation is the substantial intercorrelation of the PWD dimensions at the between-person ($r = 0.82$) and within-person ($r = 0.62$) levels of analysis, another reason may be their theoretical differences. When tackling tasks, the lighthearted attitude and creative processes involved in designing fun can foster confidence in completing them successfully. Designing competition introduces personal evaluation and objectives, which may inadvertently introduce negative self-evaluations. For instance, an employee striving to set a time record for a task may fail to achieve it. Over time, however, the accumulation of achievement experiences from consistent goal striving may outweigh the importance of lightheartedness or creativity. Therefore, designing competition may contribute more to general self-evaluations that emerge over time than designing fun.

Limitations and future research directions

Several limitations merit consideration. First, the response rates were low. This might be due to the online format and intensive design, resulting in participant burden, which can exhaust participants and reduce their willingness to comply ([van Zoonen and Scharp, 2025](#)). This intensive design yielded a smaller sample size than we envisioned. Thus, while the e-intervention successfully cultivated playful work design when people actively participated, future research should aim to improve adherence. Therefore, to reduce participant burden and support active participation, we suggest that researchers and practitioners adapt and gamify the materials (see [Appendices 1 and 2](#)) for on-site sessions and optimize intensity and adherence ([van Woerkom, 2021](#)).

Second, we did not employ a within-person constrained matrix for the exercises and modules (see [Lanaj et al., 2019](#) for example). Specifically, participants in the control group received a constant score of zero for the number of completed PWD exercises. Consequently, for Study 1, this also implies that the accumulated exercise score is relatively stable across days, on the days when individuals did not receive or complete exercises. For example, when participants stopped receiving exercises, those who had completed three exercises retained a score of three for each daily observation. We aimed to capture the enduring effects of repeated practice with this approach. However, this introduces a methodological concern: it inflates within-person variance due to limited variability in the control group. Therefore, we recommend that future research adopt a within-person-constrained matrix to distribute exercises across the entire study period.

Third, common method variance may have biased our results. Although this issue was partially addressed by our use of separate Likert scales for each construct ([Podsakoff et al., 2003](#)), we recommend that future research employ multi-source data, such as evaluations from colleagues or supervisors.

Fourth, an important limitation constitutes the “non-playful” design of the e-intervention. Participants clicked through pages of text to learn about play. Research demonstrates that playful framing and signals are essential for instigating play ([West et al., 2016](#)). Hence, we recommend future research to adapt the current interventions to make the materials more playful.

Fifth, future research may combine insights from the micro and modular e-interventions. That is, daily exercises (within-person) after a more general intervention (between-person) may further contribute to transfer and growth over time. Participants may especially benefit from a face-to-face general intervention combined with daily online exercises.

Finally, future research may also conduct a retrospective survey of participants about how they implemented fun and competition in design (see [Walsken et al., 2025](#), for an example). This may clarify why designing fun and designing competition predicted certain outcomes, as well as which type of exercise completion leads to more “successful” implementation. That is, more successful forms of playful work design are characterized by volition, cognitive categorization, autotelic orientation, process focus, and interactive involvement ([Scharp et al., 2023](#)).

Practical implications

Our findings suggest that providing PWD training is worthwhile. Complementing other organizational initiatives, PWD trainings can cultivate an important metacognitive competency that individuals can use to manage their experiences at work and other domains, such as sports ([de Vries et al., 2025](#); [Verwijmeren et al., 2024](#)), study ([Costantini et al., 2025](#)), and leisure ([Wang et al., 2020](#)). Organizations and practitioners can adapt the materials to provide workshops and brief exercises to personnel. This is especially important because our research demonstrates that adherence was the most important predictor of outcomes. Therefore, we argue that organizations should avoid one-off interventions and instead provide structured training targeted at individuals and groups ([van Woerkom, 2021](#); [Costantini et al., 2025](#)). We suggest that PWD interventions are most effective when a supportive and receptive social context exists. To tailor the intervention to the organization and specific jobs, practitioners may administer the PWD instrument to

employees to identify and interview “star-players” – people who score high on designing fun and/or designing competition (Scharp *et al.*, 2023). Their examples may especially inspire PWD in other participants during workshops. Similarly, individuals may use the materials to cultivate PWD themselves.

Conclusion

In an increasingly dynamic and unpredictable environment, careers increasingly rely on individuals’ ability to self-direct, learn, and perform sustainably. This study identified playful work design as a strategy that can support these outcomes. Importantly, our research demonstrates how to cultivate playful work design. While a modular e-intervention can encourage individuals to design fun and design competition more often, brief exercises can stimulate daily design competition (but not designing fun). By demonstrating that playful work design is malleable and how to cultivate it, our research offers concrete, actionable insights. Our findings confirm that small, everyday actions that transform experiences are trainable. Play is something we can all learn with practice.

Supplementary material

The supplementary material for this article can be found online.

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