



Measuring organizational play in small businesses

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Abstract

Although traditionally seen as antinomic to work, play has always existed in work organizations. Recently, as organizations increasingly and openly embrace play, research indicates the positive effects of play, such as on employees' well-being, attitude to work, and creativity. However, the difficulty in conceptualizing the different types of play in organizations and the absence of measurement tools have hindered large-scale study of play. In the present paper, we develop two measurement scales for two types of organizational play—diversionary and serious play. We use two datasets of French small businesses to develop and test the scales. We pre-test our initial set of items in a first dataset (N=78). We perform correlation, reliability, and exploratory factor analyses on a second dataset (N=278) using the items adjusted after the pre-test. Our final scales consist of ten items for diversionary play and seven for serious play. We assess construct validity by selecting a range of constructs pertaining to organizational members' attitude and perception, as well as to the characteristics of the organization. Our measurement scales demonstrate good reliability and validity. The scales developed in the present study aim to contribute to the literature on play at workplace, the changing nature of modern work and research in entrepreneurial health.

Keywords Play · Scale development · Serious play · Diversionary play · Small business (owners) · Entrepreneurship

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1 Introduction

In the field of management, play has been traditionally seen as antinomic to work. This opposition was also stated by Frederick Winslow Taylor: “It is a matter of ordinary common sense to plan working hours so that the workers can really “work while they work” and “play while they play,” and not mix the two” (Taylor 1911: 126). The logical conclusion was clear: the two should not be mixed.

However, in the last few decades, many organizations have started to encourage, even institutionalize play, with the belief that it has a positive consequence on workers’ well-being, performance, and creativity. At the same time, scholarly works have started to show the positive effect of play on the employees and on the organizations at large (Mainemelis and Ronson 2006; Hunter et al. 2010; Mukerjee and Metiu 2022). For instance, research indicates that play aids the creative work process in several ways. It helps to be open to ideas (Romero and Cruthirds 2006) and encourages divergent thinking and experimentation with novel ideas (Glynn 1994). Play helps engage in work tasks by stimulating intrinsic task motivation (Glynn 1994; Starbuck and Webster 1991); it acts as a diversion, a break from work monotony (Roy 1959).

Play can affect many of the task-related and collaborative processes required for group work (Dodgson et al. 2005; Mainemelis and Ronson 2006). Play helps create an enjoyable work climate (Deal and Key 1998), affords psychological safety (Mainemelis and Ronson 2006; Mukerjee and Metiu 2022), induces coordination among group members (Sandelands 2010), and develops a sense of collective identity that fosters group interaction and relationships (Statler et al. 2009).

Recently, play has also been compared with the way individuals organize their tasks and activities, i.e., individual work design (Scharp et al. 2023). This comparison conceptualizes play as a way of engaging with work, a specific way of organizing one’s cognition and behaviour in relation to an activity, “to attain positively valanced end-states” (Scharp et al. 2023: 11). Termed playful work design (PWD), such self-initiated, bottom-up work design has been conceptualized as having two dimensions—designing work for fun and for competition. Playful work design has been validated by a measurement scale (Playful work design scale), which measures how employees proactively restructure and design their work activities for fun and competition (Scharp et al. 2023).

However, despite considerable scholarly interest in play and an up-rise in playful practices in work organizations, research has not yet assessed and quantified play in work organizations through measurement scales. Empirical studies of play at work have by and large used case study or ethnographic methods (Hunter et al. 2010; Sørensen and Spoelstra 2011; Metiu and Mukerjee 2021). Qualitative studies are essential to understand and theorize about a new phenomenon (Pratt 2009), and these studies have contributed to the understanding of the phenomenon of play and its unfolding in work organizations. The value of such studies also lie in identifying the dominant dimensions of different types of play,

and enabling consistent assessment of the antecedents and outcomes of play for employees, their work, and the organization at large.¹

In the current research we take up the endeavour of advancing a measurement approach to the study of play in organizations. Thus, the objective of the current paper is to *develop measurement scales for the two types of play documented in work organizations, diversionary and serious play*. In the existing literature on play in organizations, diversionary play, consists of a host of enjoyable activities not related to work, provides respite and breaks from work (Roy 1959; Mainemelis and Ronson 2006). It has been set apart from serious play, which is playing with work tasks to come up with innovative ideas for improving work output (Schrage 2000; Statler and Oliver 2008). Serious play in the form of prototyping, hackathons, gamification, etc., to improve workers productivity seems to be on the rise in work organization, especially so in innovative work settings (Google corporation being the paradigmatic example). In the current paper, we conceptualize diversionary play at workplace as voluntary, non-work-related activity, which is enjoyable in nature. We conceptualize serious play at workplace as a playful way of engaging with work (i.e., involving work related activity), which may or may not be voluntary and enjoyable in nature.

We develop our scales using two datasets of French small business owners. Our motivation to focus on small business owners² rather than employees and managers of large firms is driven by several reasons. *First*, entrepreneurship as a process embodies initiative, spontaneity and imagination, for which it shares stark similarity with play (Hjorth et al. 2018; Hjorth 2005). However, surprisingly, while the popular press alludes that creating a company demands playful imagination, and entrepreneurs are people who ‘work hard and play hard’, the entrepreneurship literature has not yet taken an active interest to investigate the role of play in the entrepreneurial process. *Second*, unlike employees/managers working in large organizations, entrepreneurs have substantial freedom to create and shape their firm’s environment (Kauannui et al. 2010). This is especially so for owners of small businesses who are often the creator and gatekeeper of the firm’s culture. Thus, entrepreneurs are a good proxy for measuring the extent of play in their enterprise. *Third*, small businesses play a vital role in the modern economy (OECD 2017), representing more than 90% of businesses, and more than 50% of employment around the world. This makes small businesses an ideal context for studying how play coexists with work.

For the development of diversionary and serious play scales, we perform correlation, reliability, and factor analyses to select a final set of items. We do so in two stages using the first data set (N = 78) as a pre-test and the second data set (N = 278) as a test. The final sets of ten items for diversionary play and seven for serious play (see Table 6) show a fair level of construct validation using a wide variety of factors

¹ The first author’s doctoral dissertation was an ethnographic study on play in work organization (Mukerjee Nath, J. 2016. Work play and ride the storm: an ethnography of sustained innovation. Unpublished Doctoral dissertation. Aix Graduate School of Management, Aix-Marseille University, France). While presenting her work in conferences internationally, she often received comments from management scholars about the lack of measurement scales for conducting large scale systematic study on play at work.

² The terms ‘small business owner’ and ‘entrepreneur’ will be used as synonyms in the present paper.

that are expected to relate to the two concepts based on the literature. These factors pertain to the organizational members' attitude and perception like work satisfaction, work stress, and psychological safety. And also to characteristics pertaining to the organization like organizational creativity, organizational structure measured through centralization, formalization and interpersonal connectedness, age of the organization, number of employees, the industry/sector in which the company operates, relative performance and financial situation of the company, and number of days employees work from home.

In the following section of the present paper, we provide a brief review of play in work organizations. Subsequently, we provide a detailed description of our methodology using the two data sets to develop our play scales. English and French versions of our final sets of items are shown in Table 6. We end with a discussion on the potential use of our scales, some limitations of our study and our contribution to several literatures.

2 The ubiquity of play

The need to play is fundamental and universal (Huizinga 1950/2014). This recognition carries across several fields such as psychology, anthropology, and sociology.

In the field of psychology play has been shown to benefit social, emotional, and cognitive development in children's growth and development (Piaget 1962; Vygotsky 1967; Gibson et al. 2017). Anthropologists claim that 'play is older than culture' (Huizinga 2014: 1). Man is essentially a player (*homo ludens*), and play is the central human experience immanent to human culture (Huizinga 2014) The nature of play is to be free, to experiment, explore, and discover (Bateson 1972; Huizinga 1950/2014).

In the field of management, play has been largely ignored for decades due to an enduring implicit duality between work and play in this field: work is good and auspicious, while play is quite the opposite (Taylor 1911; Fleming 2005). Thus, management scholars made it their business to focus only on work—with their capacity to position research in a way that conveys seriousness and austere scholarship, shaping their identity (Rehn 2008). Fun and play was been left in the hands of anthropologists, sociologist and psychologists—to make whatever sense they can of it.

However, such a stance has seen a shift in recent decades as more and more organizations have incorporated new forms of organizing (non-hierarchical, flexible structure, distributed work organizations, virtual collaboration, etc.), that challenge the rationally organized management structures. Infusing work with play, institutionalizing fun and play time at work for example, dedicating a part of employees' work hours to playing with new ideas on self-selected projects has been popularized by organizations like the Google Corporation. This sudden infusion of play in work organizations however demands conceptualizing the different types of play that

exists, understanding what are the factor that lead to their prevalence, and how they impact various important outcomes for the employees and the organization.

2.1 Diversionary play in work organization

An important issue in the study of play at workplace has been the difficulty to define play at work. In the existing literature, play in the organizational context includes humour (Filipowicz 2002), joking, including pranks (Abramis 1990; Holmes and Marra 2002), and the playing of games (that are focused on challenges, have certain rules, and could be competitive). Thus, joking and humour in the organizational context have been simultaneously and interchangeably referred to as ‘fun’ or ‘play/playful’ activities. A common element in all these is that they are ‘fun’ or enjoyable, which is also the “essence of play” (Huizinga 2014: 3). Yet, another commonality between these activities is that they are non-work related (i.e., not directly instrumental in nature). Based on previous works, we refer to this type of play at work organizations as ‘diversionary play’ (Mukerjee and Metiu 2022; Mainemelis and Ronson 2006), and conceptualize it as *voluntary, non-work-related activity, which is enjoyable in nature*.

Play as diversion from work tasks has many benefits. It provides respite to workers, alleviates cognitive exhaustion and has restorative function (Mainemelis and Ronson 2006). It also leads to positive affect, which has a positive influence on the individual’s well-being as well as on work. Diversionary play can reduce fatigue, stress and boredom (Roy 1959; Hunter et al. 2010), and can buffer individuals from stressors, which may lead to burnout (DesCamp and Thomas 1993). Diversionary play between colleagues create social bond, fosters collaboration among team members, which positively effects their work (West et al. 2013). When organizations embrace diversionary play, employees often feel free to express and exchange diverse ideas and varied perspectives. It allows employees to express their emotions and voice their grievances (Locke 1989; Sørensen and Spoelstra 2011) both of which is expected to have a positive effect on their sense of well-being and their work.

2.2 Serious play in work organization

Another type of play, labelled as serious play, has become popular in the past decades, especially in creative work settings (Schrage 2000). Serious play is essentially work that is performed in a playful imaginative way. Forms of such play which includes prototyping, gamification, role playing, playing with codes or with new ideas, is often set up in organizations with the deliberate intention to improve work tasks and to come up with innovative solutions to work problems. Serious play is squarely related to work and often touted as important for producing creative outputs in work organizations. It may be voluntary, promoted, or even mandated by management for positive work-related outcomes. Based on past works (Schrage 2000; Mainemelis and Ronson 2006), we conceptualize serious play at work organizations

as a *playful way of engaging with work, which may or may not be voluntary and enjoyable in nature.*

Play as a way of engaging with work has also been shown to have benefits for the employees as well as the organization. Serious play gives the player the freedom to experiment, explore with ideas (e.g., prototyping, brainstorming). By doing so, it enhances employees' motivation, learning, engagement, innovativeness (Vesa et al. 2017). It also fosters divergent thinking, innovative ideas and creativity, (Schulz et al. 2015; Schrage 2000). The positive relationship between serious play and creativity is largely driven by the positive affect that is experienced which has been linked to increased creativity (Isen et al. 1987).

Taken together, there are two kinds of play that have been documented in work organizations—diversionary play, i.e., play as a diversion from work, and serious play, i.e., play as a way of engaging with work (Mainemelis and Ronson 2006). Research indicates that play—both as a diversion and as a way of engaging with work—have a multitude of effects or outcomes on the employees, their work, and the organization at large.

3 Scale development

While play is increasingly used in workplace settings, the prevalence and effect of play is often not measured, making it hard to determine the effectiveness of play at work. One current obstacle of measuring play at work is the lack of a reliable and valid scale. In the current paper, we sought to develop scales to measure play. We developed two scales that allow for distinguishing between diversionary and serious play in work organizations (Mainemelis and Ronson 2006). With these two scales, organisations can examine how much diversionary and serious play occurs within their organization. This would also allow for future studies to measure the effect of play on a variety of outcome variables that are of importance to both organizations and employees: organizational productivity, cooperation and collaboration, well-being of employees, just to name a few.

In the sections below we describe the steps we took to develop the two scales. We started by identifying the domain and developing a large set of items (Sect. 3.1), which was followed by a pre-test of this initial set of items in a sample of French small business owners (Study 1, pre-test, described in Sect. 3.2). Subsequently, we tested a set of 12 and 13 items for serious and diversionary play respectively, in a second data set of 278 business owners (study 2, described in Sect. 3.3). In this step, we identified our final set of items. Having obtained an internally consistent set of items (see Sect. 3.4) with content and face validity, we assessed construct validity of the two scales (see Sect. 3.5). For this assessment we used factors pertaining to the organizational members' attitude and perception, and organizational factors (See "Appendix 4", Table 10 for a full list). We confirmed construct validity and ended up with two final scales consisting of ten items for serious play and seven items for diversionary play.

3.1 Domain identification and item development

Based on the review of the literature on play in organization (Mainemelis and Ronson 2006; Schrage 2000) and the conceptualization of diversionary and serious play developed in Sect. 2, the authors created a large pool of potential scale items. Following the recommendation of Boateng et al. (2018) of initially starting with a broad set of items, we developed two sets of 15 items related to both diversionary play and serious play (see “Appendix 1”), with the aim to create two scales with smaller number of items. After the initial item generation, each item was assessed for face and content validity by two organizational play scholars (‘expert judges’), and revised based on their comments. Moreover, we asked two non-experts of the subject to judge the items by checking for simple and unambiguous wording and made changes accordingly.

Items were generated as statements of behaviours pertaining to our conceptualization of diversionary and serious play, for which, participants had to indicate to what extent they agree or disagree that these behaviours are present in their company on a 7-point Likert scale ranging from Completely disagree (1) to Completely agree (7). We chose the 7-point Likert scale because it is suited for assessing a bipolar concept (agree versus disagree), and, items with 7-point Likert scale without strong ceiling or floor effects can more readily be treated as continuous variables in further analyses (Boateng et al. 2018; Rhemtulla et al. 2012).

This first set of items can be found in “Appendix 1”.

3.2 Study 1 (pre-test)

3.2.1 Study design, respondents and methodology

In June 2022, we sent out our survey to 200 French SME owners through Amarak France.³ The survey consisted of our initial 15 items each for serious play and diversionary play. In total we collected survey data from 123 SME owners, 80 participants reported complete responses on the serious play items, while 78 finished the diversionary play items. Our final data sample of 78 was used as a pilot to pre-test the items and make adjustments where needed. We checked whether any of our items were problematic, i.e., showing ceiling or floor effects (skewed distributions), or, extremely low inter-item and corrected item-total correlation (< 0.30 are less desirable) (Boateng et al. 2018; Cristobal et al. 2007). Based on these outcomes some items were deleted or revised, resulting in a second version of two sets of scale items, that we used in Study 2.

3.2.2 Results

Serious Play: None of the 15 items showed strong ceiling or floor effects, which means that they were able to capture variation in the behaviour studied. Item 5, 13,

³ Amarak is a research institute specialized in small business owners’ and entrepreneurs’ health. See <http://www.observatoire-amarok.net/fr>.

and 14 showed low inter-item and a low item-total correlation (<0.30) and were therefore removed as items of the scale. All three of these items were reversely phrased which may have led in these low correlations due to enhanced complexity to answer these items correctly. Past research shows that respondents' difficulty in interpreting items increase with reverse items, especially so if the described state is not in accordance with the respondent's actual state (Swain et al. 2008; Sonderen et al. 2013). This is because the meaning can often substantially change in reverse items. Research also suggests that the cognitive processing of these two types of items (regular versus reversed) is not necessarily the same, and reverse items can be more problematic when respondents' reading skills are poor (Marsh 1996). Thus, we removed these three reverse items. Thus, the set of serious play items which we assessed in Study 2 consisted of 12 items.

Diversionary Play: Items 6 and 7 did not perform very well in several aspects: they were both negatively skewed (showing ceiling effects), showed low inter-item correlation and low item-total correlations. Both these items were reversely phrased, Item 6, a reverse question, asked if people discuss only work-related issues; the idea behind this item was that if people discuss only work-related issues, then it would not be possible for diversionary play to unfold in the organization. Similarly, item 7, a reversely phrased question, asked if there was an absence of interaction on non-work-related matters; the idea behind this item was that in such a case it would not be possible for diversionary play to unfold. These items were removed from the item list.

After scoring the remaining items, we found that several items showed negative skewness and ceiling effects. This indicated that these items were too generic and not able to capture distinct levels of diversionary play within organizations in the way they were formulated in the initial survey. We therefore decided to rephrase these items in a more 'extreme' way to get rid of ceiling effects and make them more differentiating, as follows:

Item 2: we added the word 'often': 'People often initiate non-work-related activities to have fun together'.

Item 3: we added the word 'regularly': 'It is not acceptable to regularly engage in non-work-related activities while at work' (R).

Item 8: we removed 'a lot of' and added 'all the time': 'People crack (a lot of) jokes with each other all the time'.

Item 10: we removed 'no room' and added 'little opportunity': 'There is (no room) little opportunity for having fun during work hours'.

Item 12: we removed 'to' and added 'that people constantly': 'It is acceptable (to) that people constantly fool around at work'.

3.3 Study 2

3.3.1 Study design, respondents and methodology

Between September and December 2022, we collected data from a larger sample of French SME owners through five organizations in the domain of prevention and

occupational health service, in order to make reliable judgements (Boateng et al. 2018). These organizations included CMIST, PRESTAL, Masanté Pro, EnSanté, and Prévention et Santé. The total number of surveys sent out was 46,017. In total 575 people participated in the survey, of which 278 respondents fully completed the survey. The low response rate for voluntary surveys is common for this kind of organizations which are involved in regulatory or administrative tasks. For our analyses, we used these 278 complete responses. Response to the survey was on purely voluntary basis and did not entail any reward for the respondents. We ensured full confidentiality and anonymity of the respondents, which we communicated to them.

The survey contained the updated set of serious and diversionary play items (see “Appendix 2”), questions related to demographic information, and measures that would be used to assess construct validity at a later stage (Sect. 3.5).

We used descriptive statistics to evaluate our sample. For item-reduction and quality assessment we started by assessing inter-item correlations, corrected-item total correlations, skewness and Kurtosis, floor- and ceiling effects. Based on this first step, we deleted items with item-total correlations (and inter-item correlations) below 0.30 (Boateng et al. 2018) and items with Skewness and Kurtosis values outside the acceptable range of $+2/-2$ (Barry et al. 2011). Moreover, while there is no consensus on what constitutes as serious skewness, one selection criteria is that ceiling or floor effects—as measured by the percentage of participants that select the lowest or highest value respectively—are present when values are above 15% (McHorney and Tarlov 1995) or above 20% (Andresen et al. 1998). In our study, we followed the more lenient cut-off (i.e., above 20%) to make sure content validity remains high.

In the second step, we estimated Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett’s test of sphericity to assess the suitability of the data for factor analysis. We conducted exploratory factor analysis (EFA), using maximum likelihood extraction and eigenvalues in excess of one. To decide on the factor structure, we also conducted parallel analysis (Horn 1965) based on O’Connor’s (2000) syntax, estimated with Monte Carlo simulation and 100 iterations. Finally, we assessed the composite reliability of the retained items.

3.3.2 Descriptive statistics

Descriptive statistics of the full sample are presented in Table 1. Mean age of participants was 48.86 years ($SD=10.41$). More than half of the participants was female (61.9%), and 87.4% of the participants had completed Baccalaureate exam (high school exam) or had pursued higher education.

3.3.3 Serious play

Table 2 presents means, standard deviations, corrected item-total correlations, skewness, kurtosis values and floor- and ceiling effects of all serious Play items. Table 8 in “Appendix 3” presents Pearson’s correlations between all serious Play items.

Table 1 Some descriptive statistics of the total sample (N=278)

		%/Mean	SD
Sample size		278	
Sex	Female	61.9	
	Male	38.1	
Age (years)		48.9	10.4
Education	Self-taught	2.9	
	Professional studies certificate	9.7	
	Baccalaureate	13.7	
	Undergraduate degree	33.5	
	Postgraduate degree or higher	29.9	
	Doctorate degree or higher	10.4	
Company sector	Manufacturing, mining, quarrying and others	6.5	
	Construction	6.5	
	Trade, transport and hospitality (accommodation and food services activities)	28.8	
	Information and communication	2.2	
	Financial and insurance activities	4.3	
	Real-estate activities	1.8	
	Professional, scientific and technical activities, Administrative and support service activities	4	
	Education, human health and social work activities	19.8	
	Other service activities	26.3	
Company age (years)		24.6	24.4
Number of days employees work from home	0 days	74.1	
	1 day	8.6	
	2 days	6.8	
	3 days	1.8	
	4 days	1.8	
	5 days	6.8	
Percentage of capital in company owned		47.5	44.7

All items showed sufficient values on the inter-item correlations and corrected item-total correlations, with all values (well) above the required 0.30 level (Boateng et al. 2018). Moreover, all Skewness and Kurtosis values were within the acceptable range of $+2/-2$ (Barry et al. 2011). None of the items showed ceiling or floor effects (using the cut-off of $>20\%$). Therefore, no serious play items were excluded for further psychometric analysis executed in the second step.

The KMO measure of sampling adequacy ($KMO=0.92$) and Bartlett's test of Sphericity ($X^2=2647.21$, $p<0.001$) confirmed the suitability of the items for factor analysis. Eigenvalues indicated a clear one-factor structure, with the first factor (7.39) being almost 8 times as large as the second factor (0.82). Both are based on the rule of thumb of Eigenvalues above 1 and using parallel analysis the one-factor structure was confirmed. Based on these Eigenvalues the first factor explained

Table 2 Descriptive statistics and item-total correlation of the serious play scale items

	Mean	SD	Corrected item- total correlation	Skewness	Kurtosis	Floor effect (%)	Ceiling effect (%)	Item exclusion or retention
1. People try to approach their tasks in novel ways	3.97	1.66	0.67	-0.16	-0.82	9.4	5.0	Retained
2. People approach their task in an enjoyable way which makes them fully immersed in it	3.88	1.64	0.80	-0.10	-0.80	9.7	4.7	Retained
3. People are encouraged to solve work-related problems in a playful way	3.87	1.69	0.80	-0.06	-0.97	9.7	4.7	Retained
4. People play with ideas to solve problems	3.67	1.71	0.80	0.01	-1.01	12.9	4.0	Retained
5. People are encouraged to engage with work in a playful way to improve output	3.92	1.77	0.79	0.004	-1.06	9.0	7.2	Retained
6. It is common that people look for fun ways of working that make them deeply engaged and absorbed with their tasks	4.75	1.46	0.68	-0.77	0.16	3.6	7.2	Retained
7. People play around with work-related problems to come up with new ideas and solutions	3.84	1.70	0.76	0.03	-1.01	8.3	5.4	Retained
8. People approach work-related tasks in non-conventional ways	3.26	1.66	0.62	0.32	-0.82	16.9	3.2	Retained
9. People approach work in a way that makes them feel like it is not work	3.42	1.66	0.74	0.15	-0.89	15.8	3.6	Retained
10. People are encouraged to brainstorm for coming up with novel solutions	4.95	1.72	0.50	-0.83	-0.11	6.8	18.3	Retained
11. People approach work-related tasks in such a way that it almost feels like a game	3.28	1.69	0.81	0.29	-0.80	19.4	3.6	Retained
12. People are encouraged to adopt a way of working that makes it feel like fun	3.55	1.71	0.85	0.13	-0.89	15.5	4.3	Retained

Table 3 Factor loadings and communalities of the serious play scale items

	Factor loading ^a	h^2	Item exclusion or retention
1. People try to approach their tasks in novel ways	0.67	0.45	Retained
2. People approach their task in an enjoyable way which makes them fully immersed in it	0.81	0.65	Retained
3. People are encouraged to solve work-related problems in a playful way	0.84	0.71	Retained
4. People play with ideas to solve problems	0.82	0.68	Retained
5. People are encouraged to engage with work in a playful way to improve output	0.84	0.71	Retained
6. It is common that people look for fun ways of working that make them deeply engaged and absorbed with their tasks	0.68	0.47	Retained
7. People play around with work-related problems to come up with new ideas and solutions	0.77	0.60	Retained
8. People approach work-related tasks in non-conventional ways	0.62	0.39	Excluded
9. People approach work in a way that makes them feel like it is not work	0.76	0.57	Retained
10. People are encouraged to brainstorm for coming up with novel solutions	0.51	0.26	Excluded
11. People approach work-related tasks in such a way that it almost feels like a game	0.85	0.73	Retained
12. People are encouraged to adopt a way of working that makes it feel like fun	0.88	0.78	Retained

^aExtraction method: Maximum Likelihood, h^2 = communalities

Table 4 Descriptive statistics and item-total correlation of the diversionary play scale items

	Mean	SD	Corrected item- total correlation	Skewness	Kurtosis	Floor effect (%)	Ceiling effect (%)	Item exclusion or retention
1. People engage in enjoyable non-work-related activities together during work hours	3.53	1.88	0.65	0.07	- 1.20	21.9	5.0	Excluded
2. People often initiate non-work-related activities to have fun together	3.53	1.83	0.64	0.07	- 1.17	19.8	4.0	Retained
3. It is not acceptable to regularly engage in non-work-related activities while at work (R)	5.21	1.78	0.28	- 0.71	- 0.52	4.3	34.2	Excluded
4. Fun at work is valued	3.76	1.75	0.71	- 0.07	- 0.99	14.4	5.0	Retained
5. People engage in playful conversations with each other	5.17	1.60	0.63	- 0.87	0.13	3.6	22.3	Excluded
6. People crack jokes with each other all the time	4.70	1.71	0.68	- 0.63	- 0.42	6.5	14.0	Retained
7. People play around	3.87	1.77	0.76	- 0.11	- 0.91	13.7	6.8	Retained
8. There is little opportunity for having fun during work hours (R)	4.28	1.90	0.28	- 0.11	- 1.21	7.6	15.5	Excluded
9. People have a good time together	4.97	1.54	0.59	- 0.80	0.22	4.0	15.1	Retained
10. It is acceptable that people constantly fool around at work	4.69	1.68	0.52	- 0.48	- 0.48	5.8	15.8	Retained
11. People engage in fun activities together as a diversion from work	3.46	1.72	0.74	0.24	- 0.87	15.1	4.7	Retained
12. People play games with each other	2.90	1.74	0.70	0.69	- 0.54	26.3	2.6	Excluded
13. It is allowed to spend time away from work tasks for enjoyment	3.49	1.84	0.70	0.10	- 1.09	21.9	5.4	Excluded

Table 5 Factor loadings and communalities of diversionary play scale items

	Factor loading ^a	h^2	Item exclusion or retention
2. People often initiate non-work related activities to have fun together	0.59	0.35	Retained
4. Fun at work is valued	0.70	0.50	Retained
6. People crack jokes with each other all the time	0.77	0.59	Retained
7. People play around	0.83	0.70	Retained
9. People have a good time together	0.64	0.41	Retained
10. It is acceptable that people constantly fool around at work	0.61	0.37	Retained
11. People engage in fun activities together as a diversion from work	0.78	0.60	Retained

^aExtraction method: Maximum Likelihood, h^2 = communalities

61.57% of the variance. Moreover, based on the Sums of Squared Loadings, this factor explained 58.23% of the variance. In Table 3, communalities and factor loadings are presented. All communalities of the items were above the threshold of 0.20 as suggested by Child (2006) and all factor loadings were above 0.40 as suggested by Guadagnoli and Velicer (1988).

As suggested by the literature on scale development, we started with a number of items higher than desired for the scales (Boateng et al. 2018). Since our objective was to create a parsimonious scale, preferred for survey research, we decided to exclude item 8 and item 10 based on their relatively lower factor loadings and communalities to shorten the scale to ten items.

This ten-item scale had a high internal consistency as reflected by a Cronbach's alpha of 0.94.

3.3.4 Diversionary play

Table 4 presents mean, SD's, corrected item—total correlations, skewness, kurtosis values and floor and ceiling effects of all diversionary play items. Table 9 in “Appendix 3” presents Pearson's correlations between the individual diversionary play items. All items showed sufficient values on the inter-item correlations and corrected item-total correlations (>0.30 , Boateng et al. 2018), except for the two reversed items: item 3 and item 8, which were excluded. All Skewness and Kurtosis values were within the acceptable range of $+2/-2$ (Barry et al. 2011). There were five items with serious floor- or ceiling effects with more than 20% of responses in the upper or lower category (Andresen et al. 1998). For this reason, we excluded item 1, 3, 5, 12, and 13 from further psychometric analyses and continued with seven items.

The KMO measure of sampling adequacy ($KMO=0.87$) and Bartlett's test of Sphericity ($X^2=866.82$, $p<0.001$) confirmed the suitability of the items for factor analysis. Eigenvalues indicated a clear one-factor structure, with the first factor

Table 6 (continued)

Serious play		Diverstionary play	
New item nr	Item English	Item French	New item nr Item English Item French
9	People approach work-related tasks in such a way that it almost feels like a game	Les employés sont encouragés à réaliser les tâches liées au travail de telle manière que cela ressemble presque à un jeu	
10	People are encouraged to adopt a way of working that makes it feel like fun	Les employés sont encouragés à adopter un mode de travail qui le rend amusant	

(3.99) being almost five times as large as the second factor (0.82). Both based on the rule of thumb of Eigenvalue's above 1 and using parallel analysis, the one-factor structure was confirmed. Based on the Initial Eigenvalue's this factor explained 57.04% of the variance and based on the Sums of Squared Loadings it explained 50.23% of the variance. In Table 5, communalities and factor loadings are presented. All communalities of the items were above the threshold of 0.20 as suggested by Child (2006) and all factor loadings were above 0.40 as suggested by Guadagnoli and Velicer (1988).

The seven-item scale had a high internal consistency as reflected by a Cronbach's alpha of 0.87.

3.4 Serious and diversionary play scales

The final scales are presented in Table 6. For all the participants, we calculated mean scores of all included items. The mean value in the sample for serious play was 3.82 (SD=1.37) and for diversionary play was 4.14 (SD=1.29).

The two play scales were strongly correlated to each other ($r=0.545$, $p<0.001$). A maximum likelihood factor analysis with Oblimin rotation with Kaiser normalization including the items presented in Table 6 confirms a two-factor structure with the related items loading (>0.30) on the factors representing diversionary and serious play.

3.5 Construct validation

Our initial analyses led to an internally consistent set of items with content and face validity (see Table 6). To assess construct validity, we selected several factors that we expect to be related to diversionary and serious play. These included a set of factors pertaining to the organizational members' attitude and perception like work satisfaction, work stress, and psychological safety. We also included a set of organizational factors like organizational creativity, organizational structure measured through centralization, formalization and connectedness, age of the organization, number of employees, the industry/sector in which the company operates, relative performance and financial situation of the company, and number of days employees work from home. Below we delineate our expectations regarding the relationship between the two types of play and these factors, with justifications. See Table 10 of "Appendix 4" for an overview of scales and their sources.

Based on the literature on play in work organization, we expect diversionary play to be positively correlated to higher level of work satisfaction (Roy 1959). Serious play, which helps people engage playfully with their work tasks (Schrage 2000) is also expected to be positively related to work satisfaction.

We expect diversionary play to be correlated with lower level of work stress (Abel and Maxwell 2002). Past work indicates that engaging in diversionary play could be related to improved interpersonal relationship between colleagues (Filipowicz 2002). Similarly, serious play increases intrinsic motivation, creative thinking with

work tasks, and leads to positive emotions (Statler Roos and Victor 2009). Positive emotions broaden one's thought–action repertoire (Fredricksons 2003) and builds resilience, which can act as a buffer against the negative impacts of work stress (Howard 2008). Thus, despite lack of clear previous research to show the direct relationship between serious play and work stress, we expect that serious play would be correlated to lower levels of work stress.

We expect both diversionary play and serious play to be correlated to a higher level of psychological safety. Diversionary play can free people from their expected role in an organization and allow them to relate and connect personally with others, thus creating trust and a sense of belongingness (Mainemelis and Ronson 2006). This allows for a general trusting and psychologically safe environment in the organization. Serious play in the form of brainstorming, experimenting, suggesting new ideas, may reduce fear of negative evaluation, which can subsequently lead to increases psychological safety. This is one of the reasons why serious play has been associated with higher levels of creativity and innovativeness in organizations (Schrage 2000).

Based on literature we expect both diversionary and serious play to be positively correlated to organizational creativity. Diversionary play leads to a psychologically safe environment in the organization. Research has identified that an interpersonal climate characterized by psychological safety is conducive to interpersonal risk taking, which leads to creativity and innovation (Edmondson 1999; Edmondson and Mogelof 2004; West and Farr 1990; Mukerjee and Metiu 2022). The association between serious play and creativity and innovation has already been established (Statler et al. 2009; Schrage 2000).

Organizational structure plays a role in whether play emerges in the first place. The structure of an organization influences how people interact, communicate, and collaborate with each other (Minzberg 1992). We consider three elements of organizational structure: centralization, formalization, and the structural dimension of social interactions measured through connectedness, to be important for the purpose of validation of our play scales.

We expect centralization of decision making in organizations to be negatively correlated to both diversionary and serious play. Organizations with centralized decision-making narrow communication channels and decrease individuals' sense of control over their work (Jansen et al. 2006). It also reduces organizational members' sense of autonomy and is hence likely to lessen flexibility, inhibit experimentation with work tasks, which would not be conducive for serious play to emerge. Such an environment would also act as a constraint for free, enjoyable, diversionary play to emerge (Caillois 2001; Dansky 1999).

A formalized organizational structure, heavy on rules and procedures, is also unfavourable for both diversionary and serious play. For both these kinds of play to unfold, rules and other pressure for consistency and efficiency should be, at the least, temporarily suspended (March 1976; Mainemelis and Ronson 2006; Nemeth 1997). Thus, we expect formalization to be negatively correlated to both diversionary and serious play.

We expect both diversionary and serious play to be positively correlated to higher level of social connectedness in organizations. Not only does social connection in

the form of informal talks in the corridor and in front of the water cooler makes it easy for diversionary play to emerge, different forms of diversionary play like celebrations and humour also creates social bond and intimacy between organizational members, thus strengthening social connectedness (Dumas et al. 2013; Filipowicz 2002; Abel and Maxwell 2002). Serious play—when colleagues brainstorm and experiment together in order to find solutions to work problems—improves collaboration, and builds social relationships between colleagues.

We expect age of the company to be negatively correlated to both the types of play. Younger organizations (versus older) would be more open to both diversionary and serious play due to the changing nature of work, and their millennial workforce (Wey et al. 2002). Millennials, who grew up in a gaming culture, often demand more freedom at work in the form of play (Metiu and Mukerjee 2021).

The size of the company (number of employees) is also likely to have a relationship with diversionary play. We expect number of employees to be negatively correlated to diversionary play, since with the increase in size, organizations tend to get more formalized, and informality, necessary for diversionary play, reduces (Marlow et al. 2010). We do not have any clear assumption regarding the relationship between serious play and the number of employees.

Despite a lack of convincing evidence or solid justifications, we expect that organizations operating in manufacturing sectors, which are likely to be more hierarchical and formalized in structure, would provide less scope for both kinds of play as compared to organizations operating in service sectors.

We expect organizations that engage in serious play to have higher relative performance compared to other organizations (Schrage 2000). We also expect diversionary play to be positively related to relative performance of the company. Such type of play positively influences collaboration and cooperation at work via social bonds. By creating a psychologically safe environment, it also positively impacts work, which would lead to higher firm performance.

Since we expect diversionary and serious play to be positively linked to the relative performance of the company, we expect that higher performance would also lead to better financial situation of the company. Hence, we expect a positive link between the two types of play and the financial situation of the company.

Finally, we expect that organizations where employees work from home would have less of diversionary and serious play, given that for both these types of play to unfold members need to be engaged in close interactions (work-related or social in nature). It would be more complex for such interactions to occur when people work from home and are not present in the company as a collective.

In Table 7 below we report our expectations based on the literature and the correlations that we found. See Table 10 of “Appendix 4” for an overview of scales and their sources and the factors presumably associated with serious and diversionary play.

Our results confirm our expected positive relationship between both diversionary play ($r=0.201$, $p<0.001$) and serious play ($r=0.235$, $p<0.001$) and work satisfaction.

Our results confirm our expected negative relationship between both diversionary play ($r = -0.081, p = 0.176$) and serious play ($r = -0.207, p < 0.001$) and work stress. However, for diversionary play this relationship is not significant.

Our results confirm our expected positive relationship between both diversionary play ($r = 0.291, p < 0.001$) and serious play ($r = 0.32, p < 0.001$) and psychological safety.

Our results confirm our expected positive relationship between both diversionary play ($r = 0.376, p < 0.001$) and serious play ($r = 0.459, p < 0.001$) and organizational creativity.

Our results confirm our expected negative relationship between diversionary play and organizational centralization ($r = -0.14, p = 0.019$) but only at the 5% level. However, our expected negative relationship between serious play and centralization is not confirmed ($r = 0.028, p = 0.638$).

Our results do not confirm our expectation that both diversionary play ($r = 0.008, p = 0.897$) and serious play ($r = 0.053; p = 0.376$) are negatively related to formalization.

Our results confirm the expected positive relationship between both diversionary play ($r = 0.371, p < 0.001$) and serious play ($r = 0.138, p = 0.022$) and connectedness. However, for serious play the relationship is only significant at the 5% level.

Our results confirm the expected negative relationship between both diversionary play ($r = -0.103, p = 0.087$) and serious play ($r = -0.168, p = 0.005$) and age of the company. However, for serious play the relationship is only significant at the 10% level.

Our results confirm the expected negative relationship between diversionary play and number of employees ($r = -0.025, p = 0.679$), although this relationship is not significant. While we could not make any clear expectation regarding the relationship between serious play and the number of employees, our results show that this relationship is also negative ($r = -0.145, p = 0.016$) but only significant at the 5% level.

We expected that organizations operating in manufacturing sectors would have less diversionary and serious play compared to those operating in service sectors. Our results confirm this expected negative relationship for diversionary play ($r = -0.101, p = 0.093$) but only at the 10% level while our results confirm this expected negative relationship for serious play ($r = -0.171, p = 0.004$).

Our results confirm the expected positive relationship between diversionary play ($r = 0.145, p = 0.016$) and serious play ($r = 0.043, p = 0.472$) and relative performance of company. However, the result is only significant at the 5% level for diversionary play and not significant for serious play.

Our results contradict our expected positive relationship between diversionary play ($r = -0.184, p = 0.002$) and serious play ($r = -0.091, p = 0.129$) and the financial situation of company. However, only the relationship with diversionary play is significant.

Our results contradict the expected negative relationship between diversionary play ($r = 0.055, p = 0.36$) and serious play ($r = 0.087, p = 0.148$) and the average days of working from home for employees. However, both relationships are only significant

at the 10% level. Our results may be influenced specifically by the COVID-19 effects.

Taken together, we note that in seven out of 25 cases the sign of the Pearson's correlation is not in line with our expectation while only significantly so in one case. In one case we had no prior expectation (number of employees and serious play). Of the 18 cases where the Pearson's correlation is in line with our expectation, eight are significant at $p < 0.001$, six at $p < 0.10$ and four are not significant.

We conclude that we arrive at a fairly high level of construct validation using a wide variety of factors pertaining to the organizational members' attitude and perception like work satisfaction, work stress, and psychological safety. Moreover, we included characteristics pertaining to the organization like organizational creativity, organizational structure measured through centralization, formalization and connectedness, age of the organization, number of employees, the industry/sector in which the company operates, relative performance and financial situation of the company, and number of days employees work from home.

We came across two surprising findings which deserve further investigation. *First* the relationship between diversionary play ($r = -0.184$, $p = 0.002$) and serious play ($r = -0.091$, $p = 0.129$) on the one hand, and financial situation of the company on the other, is negative (although both types of play are positively linked with the relative performance of the company). We speculate that this relationship could be due to the fact that our data was collected just after the COVID-19 pandemic, which led to financial problems for many small businesses, both in the short term as well as in mid-long term (Belitski et al. 2022).

Second, with regards to the relationship between serious play and size of the company, we had no a priori expectations. We found that serious play decreases with the size of the company (number of employees; $p = 0.004$). An explanation for this could be that as the size of the company increases, the work processes get more formalized ($r = 0.114$, $p = 0.057$), which may deter individuals and groups to engage in serious play.

4 Conclusion

Many organizations have started to encourage, even institutionalize play. They do so due grounded on the belief that play has a positive effect on workers' well-being, creativity, and performance. And indeed, research indicates this positive effect of play on workers, as well as on the organizations (Mainemelis and Ronson 2006; Hunter et al. 2010; Mukerjee Nath and Metiu 2016). However, the difficulty in conceptualizing the different types of play in organizations and the absence of measurement tools have hindered large scale systematic study of play.

While the existing literature on play in organizations make the distinction between diversionary and serious play (Roy 1959; Mainemelis and Ronson 2006; Statler and Oliver 2008; Schrage 2000), a clear conceptual definition still alludes. In the present paper, we conceptualize both diversionary and serious play and develop psychometrically sound and valid instruments to measure and thereby quantify

these two types of play. We do so by using two data sets of French small businesses ($N=78$ for a pre-test and $N=278$ for a test). We start with a set of fifteen items for each type of play. The final sets of ten items for diversionary play and seven for serious play are the result of a meticulous analysis of content and face validity. Moreover, they show a fair level of construct validation using a wide variety of factors pertaining to organizational members' attitude and perception, as well as to the characteristics of the organization. Finally, our study shows that the two scales have high levels of internal consistency with a Cronbach alpha of 0.94 and 0.87, respectively. Moreover, a factor analysis on all the items retained confirms that both types of play—though related—are distinct concepts. However, as expected, the two play scales are strongly correlated to each other ($r=0.545$, $p<0.001$). The English as well as the French versions of the final scales are reported in Table 6.

The development of these two play scales open up avenues for investigating the effects of play on a variety of important employee and organizational outcome variables (e.g., employee learning, employee well-being, organization innovativeness, and organization performance). These scales would also encourage more nuanced investigation of the effect of play, for example, can excessive diversionary play lead to distractions, decreased concentration, and a lack of prioritization, ultimately negatively impacting overall work outcomes? One could argue that excessive play at work can undermine an employee's credibility, diminish the trust and respect s/he would receive from colleagues and superiors. In fact, scholars have pointed out that when employees engage in playful activities at work, such as games or humor, they are often perceived as less serious or committed to their work (Collins and Amabile 1999). We see the development of these two measurement scales as a novel first step in the systematic study of these two different types of play in work organizations.⁴

Like any study, the present one suffers from shortcomings. Our second data set is somewhat smaller ($N=278$) than we aimed for. This is compensated by the clear results of our item selection procedure, the two-factor structure as shown by the maximum likelihood factor analysis and the fair results of the validation procedure using thirteen factors. The current questionnaire was developed and tested in French. A logical next step would be to validate the English translation in an English sample. The next step would also be to use these two scales to investigate how these two types of play effect organization's and/or workers' well-being, creativity, and performance.

Organizational life is no longer narrowly defined as being just about work. The notion of organizational life now represents “a site for the search for ‘personal well-being’, a place and time where ‘well-being’ is defined, where self-expression is actively encouraged, and where ‘happiness’ is sought through a proliferation of techniques celebrating the self” (Costea et al. 2005: 141). As a result, the use of play in organizational settings, as a way to harbour workers' well-being and creativity, has received increasing

⁴ It is worth mentioning that our serious play scale, although seemingly similar to the recently developed Playful Work Design scale (Scharp et al. 2023), is quite different from it. The PWD scale measures restructuring and designing of work by the employees themselves to make it playful. This is different from our conceptualization of serious play. Serious play, as we conceptualize it, may not always be self-initiated by the employees (i.e., serious play could be promoted or even mandated by management). Moreover, while the PWD scale has an individual unit of analysis, the unit of analysis for our serious play scale is the organization.

interest. Furthermore, with the millennials' desire to balance work with the freedom to play (Smola and Sutton 2002) and their penchant for a gaming culture, play is progressively becoming an organizational reality that is hard to overlook and begs for serious research enquiry.

By developing scales to measure the two most frequent kind of play observed in work organizations, our study makes three predominant contributions. *First*, it contributes to the literature on play in work organizations through the development of two valid measurement tools, which will allow for systematic large-scale study of play in work organizations. *Second*, such systematic large-scale study of play at work would also contribute to one of central research agenda of organizational studies—understanding the changing context and nature of work (Barley et al. 2017). *Third*, our work also has the potential to contribute to the study of health in entrepreneurship. Entrepreneurs play a crucial role not only in their own firms, but also to their industries and networks (i.e., their ecosystem), for which their health is a subject of considerable research and practical interest (Stephan 2018; Torrès and Thurik 2019). We can contend that play is salutogenic for entrepreneurial health, amidst many pathogenic elements of the entrepreneurial existence. Thus, investigating organizational play in the entrepreneurial environment will undoubtedly contribute to a deeper understanding of factors contributing to entrepreneurial health and well-being.

At a time when there are speculations around how artificial intelligence (AI) can compete with human intelligence, it is perhaps worthy to reflect on the role of play in future work organizations. While AI can simulate and engage in activities that resemble play, it is important to note that these behaviours are ultimately programmed and lack the subjective experience and intrinsic motivation that typically drive human playfulness. AI can indeed be programmed to play games, engage in simulations, or generate creative outputs, but it does not have the same capacity for joy, imagination, or the emotional fulfilment that humans derive from play. As it stands now, the experience of play in humans will always stand apart, as it involves a range of complex emotions, physical sensations, and social interactions that are deeply ingrained in our nature as social beings.

Appendix 1

First set of items for the serious play scale

These questions relate to the way employees in your organization work, and specifically to how they approach work-related tasks and problems. Please indicate to what extent you agree or disagree that the following statements apply to your organization in general:

1. Completely Disagree; 2. Moderately Disagree; 3. Slightly Disagree; 4. Neutral;
5. Slightly Agree; 6. Moderately Agree; 7. Completely Agree.

In my organization:

1. People try to approach their tasks in novel ways
2. People approach their task in an enjoyable way which makes them fully immersed in it
3. People are encouraged to solve work-related problems in a playful way
4. People play with ideas to solve problems
5. People are encouraged to engage with work in a playful way to improve output.
6. People don't play around with work-related tasks or ideas to make it fun—(R)
7. It is common that people look for fun ways of working that make them deeply engaged and absorbed with their tasks
8. People play around with work-related problems to come up with new ideas and solutions
9. People approach work-related tasks in non-conventional ways
10. People approach work in a way that makes them feel like it is not work
11. People are encouraged to brainstorm for coming up with novel solutions
12. People approach work-related tasks in such a way that it almost feels like a game
13. People are expected to approach similar tasks in the same way—(R)
14. The way of working is not experienced as fun—(R)
15. People are encouraged to adopt a way of working that makes it feel like fun

First set of items for the diversionary play scale

These questions relate to the non-work-related behaviors and interactions during work hours in your organization. These statements do not relate to what colleagues do together outside of work hours. Please indicate to what extent you agree or disagree that the following statements apply to your organization in general:

1. Completely Disagree; 2. Moderately Disagree; 3. Slightly Disagree; 4. Neutral; 5. Slightly Agree; 6. Moderately Agree; 7. Completely Agree.

In my organization:

1. People engage in enjoyable non-work-related activities together during work hours
2. People initiate non-work-related activities to have fun together
3. It is not acceptable to engage in non-work-related activities while at work (R)
4. Fun at work is valued
5. People engage in playful conversations with each other
6. Only work-related issues are discussed (R)
7. People rarely interact with others about non-work-related matters (R)
8. People crack a lot of jokes with each other
9. People play around
10. There is no room for having fun during work hours (R)
11. People have a good time together
12. It is acceptable to fool around at work

13. People engage in fun activities together as a diversion from work
14. People play games with each other
15. It is allowed to spend time away from work tasks for enjoyment

Appendix 2

Second set of items for the serious play scale

These questions relate to the way employees in your organization work, and specifically to how they approach work-related tasks and problems. Please indicate to what extent you agree or disagree that the following statements apply to your organization in general:

1. Completely Disagree; 2. Moderately Disagree; 3. Slightly Disagree; 4. Neutral;
5. Slightly Agree; 6. Moderately Agree; 7. Completely Agree.

In my organization:

1. People try to approach their tasks in novel ways
2. People approach their task in an enjoyable way which makes them fully immersed in it
3. People are encouraged to solve work-related problems in a playful way
4. People play with ideas to solve problems
5. People are encouraged to engage with work in a playful way to improve output.
6. It is common that people look for fun ways of working that make them deeply engaged and absorbed with their tasks
7. People play around with work-related problems to come up with new ideas and solutions
8. People approach work-related tasks in non-conventional ways
9. People approach work in a way that makes them feel like it is not work
10. People are encouraged to brainstorm for coming up with novel solutions
11. People approach work-related tasks in such a way that it almost feels like a game
12. People are encouraged to adopt a way of working that makes it feel like fun

Second set of items for the diversionary play scale

These questions relate to the non-work-related behaviors and interactions during work hours in your organization. These statements do not relate to what colleagues

do together outside of work hours. Please indicate to what extent you agree or disagree that the following statements apply to your organization in general:

1. Completely Disagree; 2. Moderately Disagree; 3. Slightly Disagree; 4. Neutral; 5. Slightly Agree; 6. Moderately Agree; 7. Completely Agree.

In my organization:

1. People engage in enjoyable non-work-related activities together during work hours
2. People often initiate non-work-related activities to have fun together
3. It is not acceptable to regularly engage in non-work-related activities while at work (R)
4. Fun at work is valued
5. People engage in playful conversations with each other
6. People crack jokes with each other all the time
7. People play around
8. There is little opportunity for having fun during work hours (R)
9. People have a good time together
10. It is acceptable that people constantly fool around at work
11. People engage in fun activities together as a diversion from work
12. People play games with each other
13. It is allowed to spend time away from work tasks for enjoyment

Appendix 3

See Tables [8](#), [9](#).

Table 8 Pearson's Correlations for the items of serious play scale (N = 278), French version

	1	2	3	4	5	6	7	8	9	10	11	12
1. Les employés essaient de réaliser leurs tâches de manière originale	–											
2. Les employés abordent leurs tâches d'une manière amusante, sans perdre de vue le but de celles-ci	.73**	–										
3. Les employés sont encouragés à résoudre les problèmes liés au travail d'une manière ludique	.53**	.69**	–									
4. Les employés jouent avec des idées pour résoudre des problèmes	.62**	.69**	.71**	–								
5. Les employés sont encouragés à s'engager dans le travail d'une manière ludique afin d'améliorer les résultats	.51**	.65**	.84**	.73**	–							
6. Les employés abordent leur travail d'une manière agréable qui les absorbe	.53**	.61**	.59**	.55**	.54**	–						
7. Les employés jouent avec des problèmes liés au travail afin de trouver des nouvelles idées et solutions	.56**	.60**	.66**	.71**	.65**	.58**	–					
8. Les employés abordent les tâches liées au travail de manière non-conventionnelles	.51**	.52**	.44**	.51**	.43**	.41**	.46**	–				
9. Les employés abordent le travail d'une manière qui leur donne l'impression que ce n'est pas du travail	.47**	.62**	.57**	.59**	.56**	.55**	.55**	.66**	–			
10. Les employés sont encouragés à se réunir pour faire émerger des nouvelles idées	.30**	.38**	.38**	.41**	.41**	.45**	.43**	.33**	.35**	–		
11. Les employés sont encouragés à réaliser les tâches liées au travail de telle manière que cela ressemble presque à un jeu	.49**	.67**	.67**	.65**	.70**	.50**	.63**	.56**	.70**	.46**	–	
12. Les employés sont encouragés à adopter un mode de travail qui le rend amusant	.53**	.65**	.72**	.68**	.75**	.56**	.65**	.55**	.73**	.48**	.87**	–

** $p < .01$; * $p < .05$, see "Appendix 2" for the English version of the questions

Table 9 Pearson's Correlations for the items of diversionary play scale (N = 278), French version

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Les employés s'engagent ensemble dans des activités agréables non-liées au travail pendant le temps de travail	–												
2. Les employés initient souvent des activités non-liées au travail pour s'amuser ensemble	.73**	–											
3. Il n'est pas acceptable de se livrer régulièrement à autre chose qu'au travail. (R)	.20**	.20**	–										
4. L'amusement au travail est valorisé	.54**	.51**	.22**	–									
5. Les employés participent à des conversations amusantes les uns avec les autres	.41**	.40**	.14*	.48**	–								
6. Les employés font tout le temps des blagues entre eux	.38**	.37**	.14*	.47**	.70**	–							
7. Les employés s'amuse sur leur lieu de travail	.50**	.46**	.17**	.62**	.57**	.68**	–						
8. Il y a peu de place pour s'amuser pendant les heures de travail. (R)	.19**	.19**	.33**	.25**	.14*	.20**	.33**	–					
9. Les employés passent du bon temps ensemble	.42**	.42**	.14*	.45**	.61**	.58**	.48**	0.1	–				
10. Il est acceptable que les employés plaisantent constamment au travail	.26**	.25**	.16**	.41**	.40**	.52**	.49**	0.08	.41**	–			
11. Les employés s'adonnent à des activités amusantes afin de se distraire au travail	.58**	.55**	.13*	.55**	.47**	.57**	.64**	.17**	.47**	.49**	–		
12. Les employés jouent à des jeux entre eux	.54**	.60**	.19**	.56**	.39**	.49**	.57**	.15*	.42**	.38**	.67**	–	
13. Il est autorisé de passer du temps pour s'amuser pendant le travail	.48**	.48**	.30**	.63**	.43**	.44**	.58**	.25**	.34**	.46**	.60**	.62**	–

***p* < .01; **p* < .05, see Appendix 2 for the English version of the questions

Appendix 4

See Table 10.

Table 10 Overview of scales and their sources used for validation of play scales

Concept	Measure	Number of items	Source
Work satisfaction	Job satisfaction subscale	3	Cammann et al. (1979) The Michigan organizational assessment questionnaire. Unpublished manuscript, University of Michigan, Ann Arbor
Work stress	Job stress scale	4	Motowidlo et al. (1986) Occupational stress: Its causes and consequences for job performance. <i>Journal of Applied Psychology</i> 71:618–629
Psychological safety	Team psychological safety scale	7	Edmondson (1999) Psychological safety and learning behavior in work teams. <i>Administrative Science Quarterly</i> 44(2):350–383
Organizational creativity	Organizational creativity, from the Organizational Innovativeness Scale	5	Ruvio et al. (2014) Organizational innovativeness: Construct development and cross-cultural validation. <i>Journal of Product Innovation Management</i> 31(5):1004–1022
OT: centralization	Centralization from the Exploratory and Exploitative Innovation Scale	5	Jansen et al. (2006) Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. <i>Management Science</i> 52(11):1661–1674
OT: formalization	Formalization from the Exploratory and Exploitative Innovation Scale	5	Jansen et al. (2006) Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. <i>Management Science</i> 52(11):1661–1674

Table 10 (continued)

Concept	Measure	Number of items	Source
OT: connectedness	Connectedness from the Exploratory and Exploitative Innovation Scale	4	Jansen et al. (2006) Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. <i>Management Science</i> 52(11):1661–1674
Age of company	“What is the age of your company in terms of years (number of years since the creation of your company)?” / Quel est l’âge de votre entreprise en nombre d’années ? (En nombre d’années depuis sa création)	1	
Number of employees	“How many people work in your company, you included?” / Combien de personnes travaillent dans votre entreprise, vous y compris ?	1	
Sector (manufacturing vs services)	“What is your company’s sector of activity?” / Quel est le secteur d’activité de votre entreprise ?	1	Martin and Rignols (2020) <i>Tableaux de l’économie française</i> . Collection Insee Références Édition
Relative performance of company	“Currently, your company’s performance compared to your main competitors is: (1) Much worse; (2) Worse; (3) Neither better nor worse; (4) Better; (5) Much better” / Actuellement, la performance de votre entreprise en comparaison avec vos principaux concurrents est: (1) Bien pire; (2) Pire; (3) Ni meilleure, ni pire; (4) Meilleure; (5) Bien meilleure	1	Khedhaouria et al. (2015) Creativity, self-efficacy, and small-firm performance: the mediating role of entrepreneurial orientation. <i>Small Business Economics</i> 44(3): 485–504
Financial situation of company	“Currently your company is financially running: (1) Highly deficit; (2) Deficit; (3) In balance; (4) In profit; (5) High Profitability” / Actuellement votre entreprise est: (1) Fortement déficitaire; (2) Déficitaire; (3) À l’équilibre; (4) Bénéficiaire; (5) Fortement bénéficiaire	5	Khedhaouria et al. (2015) Creativity, self-efficacy, and small-firm performance: the mediating role of entrepreneurial orientation. <i>Small Business Economics</i> 44(3): 485–504
Average days working from home	“On average, how many days per week do employees at your company work from home?” / En moyenne, combien de jours par semaine les employés de votre entreprise travaillent-ils à domicile ?	1	

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Data availability Upon request from Olivier Torrès.

Declarations

Conflict of interest The authors have not disclosed any competing interests.

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