

QUANTITATIVE STUDY

Building employee resilience through wellbeing in organizations

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The resilience of employees has been recently identified as essential to organizational adaptability in uncertain and dynamic business environments. Yet little is known about how the resilience of employees can be developed. The present study investigated the effect of a wellbeing intervention on two forms of individual resilience: employees' stress-coping ability (personal resilience) and resilient workplace behaviors (employee resilience). All participants ($n = 209$) completed an online wellbeing and resilience survey, and a subset of 145 participants took part in a workplace wellbeing intervention for a period of one month, followed by a second survey. The results indicated that personal and employee resilience are two related, but distinct, constructs. Further, following the wellbeing intervention, personal resilience remained stable, but small increases were noted in levels of employee resilience and aspects of wellbeing. Theoretical and practical implications of this research to employee resilience development are discussed.

KEYWORDS

ANOVA, applied HRD, employee wellbeing, occupational safety, quasi-experiment, repeated measures, scholar-practitioner, survey, workforce development

1 | INTRODUCTION

To remain viable, organizations must respond to resource scarcity, external pressures from customers and suppliers, technological advances, changes in government policy, and emerging ethical issues of production or supply (Dunphy, Benn, & Griffiths, 2014). These demands are exacerbated by events such as natural disasters and financial and humanitarian crises, highlighting the often unpredictable and changing environment in which organizations operate (Dunphy et al., 2014). Employees play a central role in their organization's ability to be agile through their attitudes and behaviors, including openness to organizational change (Griffith & West, 2013) and the ability to sustain high performance through change and uncertainty (Neubert & Cady, 2001). When faced with change, individuals who are deemed to be *resilient* present with more positivity in both their thinking (Cooper, Flint-Taylor, &

Pearn, 2013) and work attitudes in general (Youssef & Luthans, 2007), and experience lower levels of psychological distress (Min et al., 2013). Resilient employees recover better and more quickly from disruptions than non-resilient employees, and are more adaptive and responsive to organizational changes necessary for organizational success (Shin, Taylor, & Seo, 2012).

Advancing this theme, contemporary researchers increasingly argue that organizations need to emphasize employees' ability to cope with the emotional upheaval caused by continuous change, but also make a deliberate investment in approaches that target the *development* of resilience in employees (Kuntz, Näswall, & Malinen, 2016; Luthans, Vogelgesang, & Lester, 2006). This view underscores that individuals and organizations share responsibility for demonstrating effective responses to change, and organizations can develop the resilience of employees through the availability of workplace resources and interventions (Bardoel, Pettit, De Cieri, & McMillan, 2014; Luthans, Avey, Avolio, & Peterson, 2010). Wellbeing interventions represent an underexplored avenue for developing resilience in the workplace. Indeed, organizational researchers (Page & Vella-Brodrick, 2013; Pipe et al., 2012) have begun discussing the organizational benefits of employee wellbeing, highlighting its reciprocal relationship with personal resilience and employee productivity (Wood & De Menezes, 2010). However, interventions that target resilience in the workplace involve considerable time and costs (Vanhove, Herian, Perez, Harms, & Lester, 2015), and their effect on intended individual and organizational outcomes is seldom evaluated. Hence, there is a need to provide further empirical evidence for the impact of interventions aimed at promoting wellbeing at work on the resilience of employees.

The purpose of this study is to investigate whether supporting the wellbeing of employees at work promotes resilience among employees. To that end, the effects of a wellbeing intervention will be tested on two individual-level resilience constructs: employees' stress-coping ability (personal resilience) and adaptive employee behaviors (employee resilience). In addition, we sought to understand the nature of the relationship between employee and personal resilience.

2 | DEFINING RESILIENCE

The following section introduces the concepts of personal and employee resilience.

2.1 | Personal resilience

A growing body of research has challenged the traditional view that personal resilience is a stable trait (Block & Block, 1980; Connor & Davidson, 2003; Linley & Joseph, 2005; Luthans et al., 2006; Luthar & Cicchetti, 2000; Masten & Obradovic, 2006). This research suggests that resilience is an outcome of the processes that underlie effective human responses to adversity, including gene and environment interaction (Rutter, 2006). Proponents of this ecological perspective of resilience argue that individuals' social and physical environments should be considered when trying to understand the protective factors that contribute to resilience in the face of adversity (Schoon, 2006; Ungar, 2012). The authors of two extensive literature reviews (Fletcher & Sarkar, 2013; Windle, 2011) of over 270 resilience research articles share a common view of resilience: Resilience is a combination of assets and resources within the individual and their environment that facilitate the individual's capacity to adapt in the face of adversity. This definition acknowledges psychological mechanisms and contextual factors that contribute to resilience.

In the context of work-related resilience, the resilience conceptualizations have best been summarised by Connor and Davidson (2003) who state that "it is possible to perform well in one area in the face of adversity (e.g., work) but to function poorly in another (e.g., interpersonal relationships)" (p. 81). Resilience falls on a continuum, can be exhibited at differing degrees across multiple life domains (Gillespie, Chaboyer, & Wallis, 2007; Pietrzak & Southwick, 2011), and should be viewed as context dependent (Southwick, Bonanno, Masten,

Panter-Brick, & Yehuda, 2014). It is therefore possible that personal resilience—a person's stress-coping ability (Connor & Davidson, 2003)—may be enhanced by the presence of resources and support in an occupational context. In essence, an individual's resources may be improved by, for example, workplace interventions, and these resources may in turn improve their personal resilience. Another aspect is that the enactment of personal resilience is thought to require a challenging context to be fully expressed. This is explained by trait activation theory, which posits that contextual forces determine the extent of expression of a trait (Tett & Guterman, 2000), suggesting that personal resilience is more clearly expressed in trying circumstances.

2.2 | Employee resilience

The concept of *employee resilience* was developed in an attempt to focus the empirical inquiry of resilience away from internal indicators of coping with stress, to the context of demonstrating resilience behavior at work (Kuntz et al., 2016). In line with the ecological perspective on resilience, employee resilience can be enabled by the organization and is defined as "employee capability, facilitated and supported by the organization, to utilise resources to continually adapt and flourish at work, even when faced with challenging circumstances" (Kuntz et al., 2016, p. 460).

The employee resilience construct presented here is distinct from other conceptualizations of resilience in three ways. First, unlike personal resilience, employee resilience is operationalized in terms of workplace behaviors, rather than a set of dispositions or beliefs about one's ability to cope with adversity. These behaviors include effective collaboration on work challenges and learning from mistakes. Second, the extent to which the organization provides work-related resources influences the enactment of resilient workplace behaviors, beyond its effect on positive coping at work. Third, resilient employee behaviors can be developed and enacted in any work environment, even in the absence of significant adversity (Kuntz et al., 2016). Overall, the definition of employee resilience reflects a behavioral construct, which is different from, but related to, existing constructs that describe the capacity to cope with stress and pressure.

Thus far, resilient employee behaviors have been found to be influenced by three organizational enablers: leadership (supportive supervision), learning culture, and a supportive work environment (supportive team and organization) (Kuntz et al., 2016; Näswall, Kuntz, Hodliffe & Malinen, 2015). Research suggests that support from the organization is by far the most important contributor to employee resilience (Kuntz et al., 2016), indicating that a supportive organization is an essential enabling factor to the enactment of resilient employee behaviors (Nilakant et al., 2016).

3 | BUILDING RESILIENCE

This section discusses how resilience and wellbeing can be enhanced in the workplace.

3.1 | Workplace interventions to increase resilience

In contrast to the suggestion that organizations should build a resilient workforce by simply hiring resilient individuals (Britt, Shen, Sinclair, Grossman, & Klieger, 2016; Shin et al., 2012), recent research supports the notion that leaders can play an active role in building resilience among employees. For instance, evidence suggests that organizations should provide interventions to build existing employees' individual resources prior to any change initiative in order to reduce the strains experienced during organizational change (Shin et al., 2012). Given the evidence suggesting that resilient behaviors can be facilitated through organizational practices (Kuntz et al., 2016) further research is required to understand how employee resilience may be promoted through organizational interventions.

A small number of resilience interventions in the workplace, both in military (Griffith & West, 2013) and in civilian contexts (Sood, Prasad, Schroeder, & Varkey, 2011) have shown promising impact on personal resilience (Vanhove et al., 2015). However, the time commitment required by employees and their supervisors, along with financial costs for trained intervention facilitators, and high attrition rates, are strong deterrents for many organizations looking to invest in resiliency training (Abbott, Klein, Hamilton, & Rosenthal, 2009; Meyers, Woerkmom, & Bakker, 2013). For example, results of a meta-analysis of 37 organization-sponsored resilience-building programs (Vanhove et al., 2015) revealed that to achieve the greatest effect, programs should target individuals with low levels of personal resilience and employ a one-on-one delivery format. The stigma attached to being singled out as *not resilient*, and the financial cost to employers of tailored one-on-one sessions, has the potential to make these programs difficult to sell to both the employer and employee. Further, there is currently no definitive evidence to inform what the most effective training content or format is for resilience training in the workplace (Robertson, Cooper, Sarkar, & Curran, 2015).

3.2 | Resilience building through wellbeing

There are multiple pathways to achieving resilience in people (Southwick et al., 2014). Recent research suggests that, although trait-like characteristics of individuals may be the source of their psychological resources, it is the individuals' positive affect that converts those resources into positive change-related attitudes (Shin et al., 2012). Positive thinking habits help to maintain a sense of wellbeing, which can be defined as a combination of feeling good and functioning well (Aked, Marks, Cordon, & Thompson, 2008) and also contributes to strengthening resilience (Cooper et al., 2013). The terms *wellbeing* and *resilience* are consistently associated with each other in the organizational psychology literature and often used interchangeably. For example, sustainable wellbeing involves both a characteristically positive style of thinking and responding and resilience (Fredrickson, Tugade, Waugh, & Larkin, 2003). In this study, we rely on evidence linking resilience and wellbeing through positive affect and emotions to propose that these constructs are distinct yet reciprocally related. Resilience is characterized by positive emotions (Bonanno, 2004); favorable outcomes linked to an individual's resilience stem mostly from the individual's positive affect (Fredrickson et al., 2003); facilitating positive emotions can create personal resources (resilience), which in turn lead to increased positive emotions (Fredrickson et al., 2003).

Focusing on increasing employee wellbeing is likely a fruitful approach to building employee resilience (Cooper et al., 2013). It is an important one due to health and safety legislation and the well-documented rising stress levels in the workplace (BusinessNZ & Southern Cross Healthcare Society, 2017). For example, in many countries who are members of the Organisation for Economic Co-operation and Development, there is a legal obligation to provide psychologically and physically safe working conditions under occupational health and safety laws (e.g., the 2015 Health and Safety at Work Act). Yet in a recent workplace survey covering a 12-month period, 30.5% of the sample surveyed said they *often* or *always* felt stressed at work, and over 40% said they felt compelled to turn up for work when sick, showing potential lack of psychological safety at work (BusinessNZ & Southern Cross Healthcare Society, 2017).

The way individuals appraise and give meaning to their experiences at work is a trigger to their psychological wellbeing (Lazarus & Folkman, 1984). Positive psychology interventions (training, exercises, or therapy) are aimed at building employees' individual resources prior to organizational change by raising positive cognitions, positive mood, or positive behavior, which leads to increased wellbeing (Sin & Lyubomirsky, 2009). Positive psychology workplace wellbeing interventions are gaining traction from employers and employees alike as a more preferable alternative to costly reactive interventions designed to improve employee wellbeing (Meyers et al., 2013). Indeed, a meta-analysis of 39 randomized controlled studies with both clinical and nonclinical samples has demonstrated that organization-led positive psychology interventions significantly enhanced psychological wellbeing (Haverman et al., 2013). Wellbeing interventions strengthen the reciprocal relationship between wellbeing and employee resilience by increasing positive emotions and cognitions (Aikens et al., 2014), and providing the necessary resources to prompt resilient behaviors.

The more commonly cited positive psychology workplace interventions focus on employees experiencing gratitude (an orientation toward appreciating the positive in one's work life) (Kaplan et al., 2014), connectedness (social interaction and coworker relations) (Chiaburu & Harrison, 2008) and mindfulness (activities designed to raise awareness of breathing, physical sensation, thoughts, and intentional connection with the present moment) (Kabat-Zinn, 2005). Drawing on these concepts, a new and practical approach for a positive psychology workplace wellbeing intervention is the Wellbeing Game (the Game) (Mental Health Foundation, 2014).

3.3 | The Wellbeing Game

The Wellbeing Game is a free online tool, developed and run by the Mental Health Foundation of New Zealand and based on *The Five Ways to Wellbeing* (Aked et al., 2008). The five ways (Connect, Be Active, Keep Learning, Give, and Take Notice) and their contribution to wellbeing are summarized here:

Connect: Social relationships provide a sense of belonging (Morrow, 2001) and act as a buffer against negative mental health symptoms (Kirkwood, Bond, May, Keith, & Teh, 2008).

Be Active: Regular physical activity has shown to facilitate perceived ability to cope with stress, detract from negative thoughts, and lower rates of depression and anxiety across all age groups (Biddle, Fox, & Boutcher, 2000). Moreover, mood and affect can be improved by as little as single bouts of exercise of less than 10 minutes (Acevedo & Ekkekakis, 2006). The implication of these findings is that even small changes in activity levels of desk-bound workers are likely to enhance wellbeing.

Keep Learning: The continuation of learning through life has the benefits of enhancing an individual's self-esteem, encouraging social interaction, and a more active life (Kirkwood et al., 2008).

Give: Helping, sharing, giving, and team-oriented behaviors are associated with an increased sense of self-worth and positive feelings (Aked et al., 2008).

Take Notice (akin to Mindfulness): When a person reflects on their experiences, it is argued that the individual will appreciate what matters most to them. Being attentive to and aware of what is taking place in the present predicts positive mental states, self-regulated behavior, and resilience (Aikens et al., 2014; Goldhagen, Kingsolver, Stinnett, & Rosdahl, 2015; Keyes & Pidgeon, 2013; Rogers, 2013).

Self-determination theory suggests that an open awareness is particularly valuable for choosing behaviors that are consistent with one's needs, values and interests (Ryan & Deci, 2000). Therefore, if the Wellbeing Game players are encouraged to raise their awareness of things they can do that make them feel good, they are more likely to choose activities that meet their needs, thus increasing both their Game score and wellbeing.

Importantly, what differentiates the Game from many other workplace wellbeing interventions is the autonomy that participants are given to choose to partake in any or all of the *Five Ways to Wellbeing* actions, thus increasing their motivation to participate (Sheldon & Lyubomirsky, 2006). By requiring players to record their wellbeing activities, the intention is that players will develop a better understanding of their own thoughts and actions that support their wellbeing and that they already engaged in (Aked et al., 2008).

The Game has been found to have a moderate effect on wellbeing (Cohen's $d = 0.44$) as measured by the Short Warwick-Edinburgh Mental Wellbeing Survey in a sample ($N = 256$) of workers from the general public, after one month of engaging with the online Game (Green, 2014). It takes less than one minute to record an activity, and the 2014 evaluation showed that recording an activity three or more days per week resulted in a significant increase in players' psychological wellbeing. Importantly, the low time and cost investment for organizations makes the Game a practical choice.

The present study draws on the assumptions that resilience is context dependent (Southwick et al., 2014) and that adaptive, proactive, and social-oriented behaviors that characterize employee resilience can be enhanced by a wellbeing intervention in the workplace (Kuntz et al., 2016). Furthermore, while all employees possess personal resilience to a varying degree (Southwick et al., 2014), organizations can provide work-specific enablers that

facilitate resilience specific to the workplace (employee resilience; Näswall et al., 2015). Based on previous research, we put forward the following hypotheses:

Hypothesis 1: *Personal and employee resilience are two distinct, but positively related, constructs.*

Hypothesis 2: *Taking part in a workplace wellbeing intervention will increase levels of employee resilience.*

Hypothesis 3: *Taking part in a workplace wellbeing intervention will increase levels of personal resilience.*

Hypothesis 4: *Taking part in a workplace wellbeing intervention will increase levels of employee self-rated health.*

Hypothesis 5: *Taking part in a workplace wellbeing intervention will increase employee energy levels.*

4 | METHOD

The following section introduces the study participants, materials and the study procedure.

4.1 | Participants

Employees from two organizations, a government department and a tertiary education provider, participated in this research. Employees from specific departments chosen by the organizations were invited to participate in a study on employee wellbeing. For the tertiary education provider, all members of a nonacademic staff support network were invited to take part in the research. For the government department, employees with easy computer access were invited to take part in the research. A total of 433 employees were invited to participate. Overall, 211 participants completed the survey at Time 1. This figure was composed of 106 participants for organization A (39% response rate) and 105 participants for organization B (70% response rate). The higher response rate in the second organization may be explained by organization B's senior managers acting as the wellbeing champions and offering further incentives (i.e., prizes) for participation. Sixty-four participants from organization A (59% response rate) and 69 participants from organization B (65% response rate) comprised the 133 participants who completed the Time 2 survey. Out of the participants who completed the Time 1 survey, 145 took part in the Game, and out of these, 81 participants completed the Time 2 survey. See Figure 1 for the study flow chart. Eighty-five percent of the participants were female, with ages ranging from 19 to 67 years ($M = 42$, $SD = 11.94$).

4.2 | Materials

Demographics measured in the study included age and gender. For all scales, a higher score indicates a more positive response to the item.

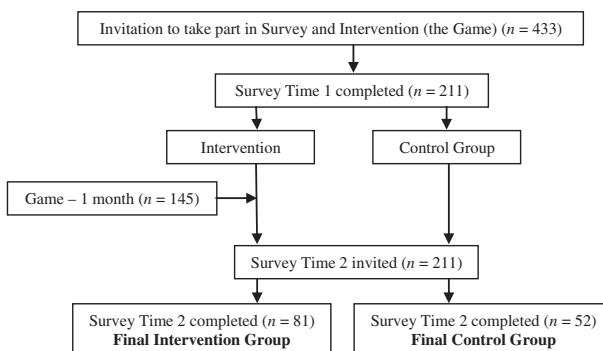


FIGURE 1 Participant flow chart

4.2.1 | Resilience Measures

Employee resilience was measured with the Employee Resilience Scale (EmpRes) (Näswall et al., 2015). The scale was specifically developed to measure employees' resilient behaviors at work and was therefore deemed the most appropriate measure for this study. The EmpRes Scale has nine items and uses a 5-point response scale from 1 = *almost never* to 5 = *almost always*. An example item is "I effectively collaborate with others to handle challenges at work."

Personal resilience was measured with the 10-item shortened scale from the 25-item Connor-Davidson Resilience Scale (CD-RISC) (Connor & Davidson, 2003) using a five point Likert type scale from 1 = *strongly disagree* to 5 = *strongly agree*. An example item refers to individuals' ability to adapt to change.

4.2.2 | Wellbeing measures

Wellbeing was measured using a number of different indicators, tapping into the two aspects of the definition of wellbeing as "feeling good and functioning well." To assess "feeling good" we measured three indicators of self-rated health, and for "functioning well" we measured energy levels.

Self-rated health was measured with three items from two scales, with response options from 1 = *bad* to 5 = *excellent* combined into a single index. This included one item, "How would you rate your health at the present time?" (Idler, Kasl, & Lemke, 1990), and two items from the Brief Fatigue Syndrome Scale (Arnetz, Frenzel, Åkerstedt, & Lisspers, 2008), including "How do you rate the quality of your sleep last night?"

These items were chosen based on research indicating that these are global measures of wellbeing that reflect both physiological and psychological components of wellbeing (Arnetz et al., 2008), making these items appropriate to use in the present study since organizational constraints on survey length required the survey to be as short as possible.

Energy levels were measured with one item: "How energetic do you usually feel at work?" from the Brief Fatigue Syndrome Scale (Arnetz et al., 2008). This was developed to assess how well people feel that they are able to function at work and has been related to other measures of health wellbeing (Arnetz et al., 2008). Responses were made on a five-point scale from 1 = *not energetic at all* to 5 = *very energetic*. Due to organizational constraints on the length of the survey and guided by the literature (Fisher, Matthews, & Gibbons, 2016; Guadagnoli & Velicer, 1988), a single-item measure was deemed acceptable to measure energy levels.

4.2.3 | Intervention

The Wellbeing Game is a free online tool, owned and developed by the Mental Health Foundation of New Zealand. Participants sign up to the Game, either in a team or individually, and compete against other players/teams. The goal is to record more *wellbeing hours* than other players. Participants do this by documenting, against their Game profile, the time they have spent on activities in their day-to-day lives that relate to one or more of the Five Ways of Wellbeing, for example: "I went for a walk with my colleague and she explained her current team project to me" (30 minutes) (Be Active, Connect, Keep Learning). Points are accrued for the time recorded. Throughout the Game, players can also accumulate *badges* by reaching the predetermined target amount of time on an activity, or number of activities, related to each Way of Wellbeing. Game placings are based on the overall wellbeing points for a team, or those playing individually, recorded at the conclusion of the Game. Further information on the Game can be found in the procedure section.

4.3 | Procedure

Two organizations were approached to take part in the research. Each organization had over 1,000 employees, which was desirable for securing a sufficient pool of participants. Following a briefing by the researcher on the study process, organizational leaders chose the specific departments that could be approached to participate in the research (all nonacademic staff of organization A, and all staff with easy computer access in organization B).

Recruitment of participants was then made by a senior member of each of the participating organizations with the assistance of program “champions” (influential employees who were tasked with motivating other employees to participate). First, all employees received an e-mail introducing the project and explaining the purpose and procedure of the survey and Game. Next, the researcher e-mailed participants a link to the first survey through Qualtrics, an online survey tool. Participants were asked to provide informed consent, demographic information, and their work e-mail address (which was later replaced by a four-digit ID number). The survey was open for 12 days to allow adequate time for responding.

Participants were then e-mailed an invitation to take part in the Game and a join-up guide. Participants could self-select themselves into a team, play individually (as a team of one player), or exclude themselves from participating in the Game. First, self-selected team leaders registered their team for the Game and then invited (via an e-mailed link to the team home page on the Game website) other members to join their team. All players registered with their work e-mail address to enable the researchers to send e-mails about the Game directly to the participants at work, rather than through a work supervisor or to participants' personal e-mail address, and to make it clear to participants that the organization was supportive of the intervention. To record an activity, participants clicked on the Play tab and typed a one-sentence statement of recent activities in their day-to-day lives that involved one or more of the Five Ways to Wellbeing. They then chose the relevant Five Ways to Wellbeing icon(s) (Connect, Be Active, Keep Learning, Give, and Take Notice), time the activity took, and the avatar of any other team players involved in the activity. Players recorded activities at their chosen time, and weekly reminders were sent to players via the Game site to encourage participation. The Game ran for four weeks. During the Game, the researcher gave a prize (coffee vouchers) for the first three players to achieve the *Launched* badge (recording three activities) and the first three players to achieve the *Connect* badge (recording 10+ Connect hours). At the Game's conclusion, Game scores for individuals and teams were calculated using the number of wellbeing hours recorded over the four weeks of the Game, with a log correction for number of players in the team. The team with the highest number of points in each organization was deemed the Game winner and received a prize (a NZ\$100 voucher).

Finally, all employees who completed the survey at Time 1 were sent the same survey for a second completion, with the exclusion of demographics items. Participants who completed the survey at both times but did not take part in the intervention formed the control group. Participants were therefore not randomly assigned to conditions. The only addition to the second survey was the statement “I participated in the Wellbeing Game, answered either yes or no. This survey remained open for 10 days. A prize draw of gift vouchers was offered as an incentive for participants who completed both surveys. This study was reviewed and approved by the university's Human Ethics Committee.

5 | RESULTS

The following section outlines the findings of the study. We begin with a description of the factor analyses conducted, discuss the relationships between the study variables and then focus on the impact of the wellbeing intervention.

5.1 | Factor analysis

SPSS Statistics Version 22 was used for all analyses. Factor analyses were conducted to investigate the dimensionality of the variables at Time 1. Principal axis factoring with oblique rotation was used for factor extraction. We selected this method to allow for the potential correlations between the factors (as psychological variables are often correlated). The criteria for factor inclusion were eigenvalues greater than one, item factor loadings of greater than .40, items that loaded on only one factor (DeVellis, 2012), with no cross loadings of greater than .3 (Shultz &

TABLE 1 Means, standard deviations, coefficient alphas (in brackets on the diagonal), and correlations between variables (time 1)

	M	SD	Employee Resilience	Personal Resilience	Self-Rated Health
Employee Resilience	4.14	.46	(.82)		
Personal Resilience	3.89	.53	.55**	(.87)	
Self-Rated Health	3.70	.74	.27**	.27**	(.73)
Energy Levels	3.60	.85	.34**	.38**	.62**

Notes: N = 209, ** $p < .01$.
Listwise deletion.

Whitney, 2005) and meeting assumptions for sphericity (Field, 2013). Listwise deletion was used to deal with seven missing data values, as Little's MCAR analysis showed that data were missing completely at random (chi square (7) = 7.527, $p = .376$).

For each scale, factor analyses were conducted both for the individual scale and between scales in the study. The analyses supported the expected structures for employee resilience ($\alpha = .82$) and self-rated health ($\alpha = .73$). For personal resilience, one item was discarded due to its low communality ($h^2 = .12$) and low factor loading (.34). This deletion resulted in one meaningful factor for personal resilience ($\alpha = .87$). Items from the employee resilience and personal resilience scales loaded clearly on separate factors, supporting Hypothesis 1.

5.2 | Relationships between variables

Descriptive statistics, reliability coefficients, and correlations between variables (at Time 1) are presented in Table 1.

A positive relationship between personal and employee resilience, $r = .55$, $p < .001$, was found at Time 1 (Hypothesis 1). Thus, Hypothesis 1 was supported. The findings suggest that personal and employee resilience share around 30% of variance (i.e., $r = .55^2$). Additionally, of interest, a paired-sample t -test indicated that Time 1 mean levels of employee resilience were significantly higher ($t(207) = 7.38$, $p < .001$) than for personal resilience, ($M_{\text{Personal}} = 3.89$, $M_{\text{Employee}} = 4.14$). No differences were found between the control and experimental group participants on any of the dependent variables at Time 1. Further analysis found both employee and personal resilience had significant positive relationships with self-rated health and energy levels (Time 1).

5.3 | Impact of a workplace wellbeing intervention on resilience

Pre- and post-intervention means and standard deviations for employee and personal resilience, self-rated health, and energy levels can be found in Table 2.

To investigate whether the wellbeing intervention increased employees' levels of employee resilience (Hypothesis 2), we ran a 2 (Time: pre- vs. post-intervention) $\times$ 2 (Organization: A vs. B) $\times$ 2 (Condition: Game vs. Control)

TABLE 2 Pre- and post-intervention descriptive means and standard deviations for the resilience and wellbeing measures

Variable	Range	Time 1				Time 2			
		Experimental group		Control		Experimental group		Control	
		M	SD	M	SD	M	SD	M	SD
Employee Resilience	1–5	4.15	.42	4.20	.46	4.18	.47	4.13	.51
Personal Resilience	1–5	3.88	.56	3.95	.53	4.04	.51	4.02	.50
Self-Rated Health	1–5	3.71	.68	3.80	.66	3.80	.72	3.69	.75
Energy Levels	1–5	3.58	.84	3.62	.89	3.79	.92	3.71	.92

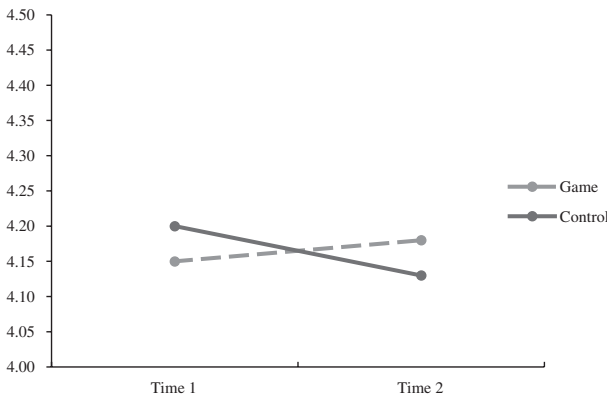


FIGURE 2 Condition $\times$ Time interaction for employee resilience

mixed design analysis of variances (ANOVAs) with Time as the within-subjects factor. Effect sizes denoted by partial eta squared (η_p^2) can be interpreted as: $>.01$ (small effect), $>.06$ (medium effect), $>.14$ (large effect) (Field, 2013; Pallant, 2007). Using the traditional cutoff of $p < .05$, the results found no significant main effects or interactions, thereby failing to support Hypothesis 2. However, Condition $\times$ Time interaction for employee resilience was significant at $p < .10$, with $F(1, 129) = 2.914$, $p = .090$, $\eta_p^2 = .02$ (see Figure 2). The interaction indicates that there was a minor change in perceived employee resilience as a function of the wellbeing intervention, such that the experimental group participants had higher levels of employee resilience at Time 2 as compared with the control group. The levels of employee resilience at Time 1 did not differ between the two groups.

We also conducted the same analysis with employee resilience as the dependent variable, while controlling for levels of personal resilience (measured at Time 1). A similar pattern of results to the above were found with a Condition $\times$ Time interaction ($F(1, 128) = 2.914$, $p = .090$, $\eta_p^2 = .02$).

To investigate whether the wellbeing intervention increased employees' levels of personal resilience (Hypothesis 3), we ran a 2 (Time: pre- vs. post-intervention) $\times$ 2 (Organization: A vs. B) $\times$ 2 (Condition: Game vs. Control) mixed design ANOVA with Time as the within-subjects factor. Only a significant main effect of Time was found, with $F(1, 129) = 14.77$, $p < .001$, $\eta_p^2 = .10$. Both the control and experimental group participants reported higher levels of personal resilience at Time 2; however, these levels did not differ as a function of taking part in the Game or not ($M_{\text{Time1}} = 3.91$, $SD = .54$ vs. $M_{\text{Time2}} = 4.03$, $SD = .50$, $p = \text{ns}$). Thus, Hypothesis 3 was not supported.

To investigate the impact of the Game on self-rated health (Hypothesis 4) and energy levels (Hypothesis 5), 2 - (Time: pre- vs. post-intervention) $\times$ 2 (Organization: A vs. B) $\times$ 2 (Condition: Game vs. Control) mixed design

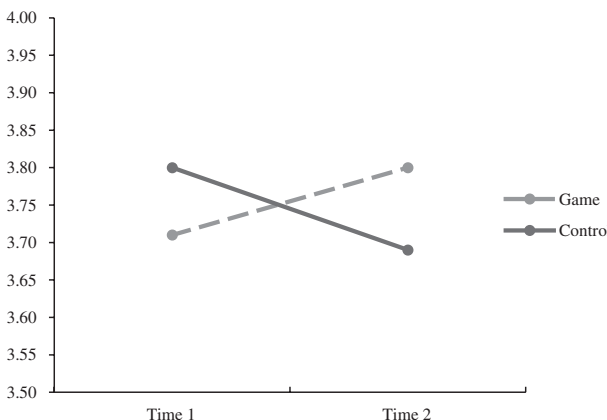


FIGURE 3 Condition $\times$ Time interaction for self-rated health

ANOVAs, with Time as the within-subjects factor, were conducted. No significant main effects were found for self-rated health or energy levels. However, a significant interaction of Condition $\times$ Time was found for self-rated health, $F(1, 129) = 5.00, p = .027, \eta_p^2 = .04$ (see Figure 3). Time 2 self-rated health levels were higher as a function of playing the Game. Thus, support was found for Hypothesis 4, but not for Hypothesis 5.

As an additional analysis, we conducted a 2 (Time: pre- vs. post-intervention) $\times$ (Game: Individual vs. Team) mixed design ANOVA with Time as the within-subject factor to investigate whether playing the Game as an individual or a team influenced the findings. The results suggest no differences in the outcome variables as a function of playing the Game as an individual or a team.

6 | DISCUSSION

Given the constantly changing and unpredictable environments that today's organizations are required to work in, the need for resilient employees has never been more crucial for organizational success. As there are many reasons for organizations not to invest in programmatic employee wellbeing and resilience interventions (Abbott et al., 2009; Meyers et al., 2013), including time and financial constraints, there is a clear and immediate need to provide guidance to organizations in practical and cost-effective ways to develop psychological resources that benefit both employees and the organization. In this research, we investigated whether a workplace wellbeing intervention would influence employees' levels of wellbeing (i.e., energy levels and self-rated health) and resilience. We also investigated the relationship between personal and work-related employee resilience.

6.1 | Relationship between individual and employee resilience

As expected, a positive relationship was found between personal and employee-level resilience (Hypothesis 1). Analysis also demonstrated that levels of employee resilience were significantly higher than levels of personal resilience before the intervention. That is, the participants in this study reported experiencing higher levels of resilience at work than in general. As demonstrated by factor analysis, although employee resilience and personal resilience share similarities, they represent distinct psychological constructs. Indeed, the evidence indicated that, while personal resilience has a significant positive relationship with employee resilience, analysis suggested that they share only 30% of the variance, indicating that most of the variance in employee resilience is due to factors other than personal resilience.

6.2 | The impact of the Game on resilience and wellbeing

We expected that supporting the wellbeing of employees at work would act as an organizational enabler of employee resilience (Hypothesis 2). Although nonsignificant at the traditional level of $p < .05$, the results indicated that participants' levels of employee resilience changed marginally following playing the Game ($p = .090$). It is noteworthy that this pattern of results was also found when personal resilience was controlled for.

Our finding is not conclusive due to the small effect size. A growing body of research does, however, argue that resilience at work should and can be developed (Luthans et al., 2006; Näswall et al., 2015; Shin et al., 2012). Our finding highlights the importance of further research into how an organization may provide the necessary conditions to support employees' resilient behaviors required for building the collective capacity for resilience within an organization (Kuntz et al., 2016; Lengnick-Hall, Lengnick-Hall, & Beck, 2011).

The study findings regarding personal resilience were unexpected. Personal resilience increased for both conditions between the two surveys. This may be due to greater awareness of personal resilience as a function of completing the initial survey or perhaps due to socially desirable responding. Furthermore, while hypothesized, personal resilience did not change as a function of participating in the wellbeing intervention (Hypothesis 3). Although this finding was unexpected, it is possible that a different type of an intervention would be required for a change to personal resilience to occur. Given that the Wellbeing Game was played in an organizational context, and it is the

working environment that is expected to influence employee resilience, it is perhaps not surprising that changes were not observed in personal resilience. Activities outside of the work environment, such as strengthening close relationships, may more readily influence personal resilience.

As expected, participants reported an improvement in self-rated health (including improved quality of sleep and ability to concentrate) following their participation in the Wellbeing Game (Hypothesis 4). This is consistent with contemporary literature on positive psychology workplace wellbeing interventions in general (Meyers et al., 2013) and with the 2014 evaluation of the Wellbeing Game (Green, 2014). This is a noteworthy finding, as the reported improvements in these aspects of wellbeing may subsequently result in reduced absenteeism, which in turn has been found to be related to improved job performance (Seifert, 1995).

However, the expectation that aspects of wellbeing measured by energy levels would increase after participating in the Game (Hypothesis 5) was not realized. This is in contrast to the moderate effect found on energy levels (measured as vigor) following a different workplace wellbeing intervention (Aikens et al., 2014). However, Aikens and colleagues' study was much more intensive and time demanding on participants than that used in the current study. It is possible that the previous study's inclusion of regular physical activity (e.g., yoga classes) and training in monitoring physical sensations may more strongly facilitate participant's awareness of their energy levels than the intervention used in the current study. Further, it may be that those who completed more Be Active activities experienced greater increases in energy levels; however, it is not known what percentage of participant's overall Game activities involved physical activity.

Furthermore, when attempting to understand why stronger results were not found, consideration must be given to the characteristics of the participants. Contrasting views have been argued for who should be selected to participate in wellbeing interventions. Huppert, Baylis and Keverne (2005) suggest that wellbeing should be increased for all employees, while Vanhove et al. (2015) argue that employees with the lowest levels of personal resilience should be targeted (to achieve the largest effect size). The fact that there was no sampling criterion in this study (i.e., only low-resilience employees) may explain why our results did not show strong evidence of intervention effectiveness. Participants self-selected to participate in the surveys and intervention, and it may be that those who would have benefited most from the intervention did not participate due to time restrictions or personal reasons. Indeed, it is possible that the specific intervention used in the present study may have been more attractive to individuals who were already feeling well, although it is noteworthy that there were no differences in wellbeing between the control and the experimental group participants at Time 1. We advocate involving all employees in these initiatives for the benefit of the organization at large, to gain potential positive personal and social outcomes across all employees. It is also possible that effects would be more salient with longer-term, more intensive, interventions.

Although we sought a practical solution to building resilience, higher participation rates, commitment to the Game, and potentially larger effects on the resilience and wellbeing variables, may have been achieved if supervisors or representatives of the organization had greater involvement in the intervention (Nielsen, 2013). In this study, the majority of communications with participants, including the initial briefing, was via e-mail from the researchers. Although this was an efficient format for contacting the large number of potential participants, it was very easy for recipients to ignore researcher e-mails. Face-to-face briefings, conducted jointly by the researchers and organization leaders, may have served to engage more employees in the project. The support of senior managers is invaluable as they are seen by employees to have the ability to allocate intervention resources and can act as intervention role models (Ouweneel, Le Blanc, & Schaufeli, 2013). In this study, organization B's higher response rate may be attributed to senior managers encouraging participation in the study.

Alongside the challenges of securing research participants, attrition rates are notoriously high in wellbeing interventions (Meyers et al., 2013; Vanhove et al., 2015). Research suggests that if a group of employees have a joint understanding that the intervention may be of benefit to them, they will as a unit work toward the success of the intervention (Nytrø, Saksvik, Mikkelsen, Bohle, & Quinlan, 2000). As such, to sustain participation, comprehensive briefings were provided to all invited participants prior to and throughout the study. Additionally, guided by the literature and best practice guidelines on workplace interventions (Anseel, Lievens, Schollaert, & Choragwicka, 2010; Nielsen, 2013; Nielsen & Abildgaard, 2013), participation in the Game was incentivized. However, there were

multiple comments in the qualitative feedback received on the Game that some participants found the competitive nature of their team mates counter to the benefits of wellbeing and team cohesion, and questioned using a competition (regardless of incentives provided) to promote wellbeing. This may in turn have impacted on how some participants responded to the follow-up survey. This highlights the trade-offs between securing a sufficient study sample by providing incentives and intervention findings.

Another reason that a stronger effect of the Game on the resilience variables was not found is the short timeline between pre- and post-intervention measurement. In order to fully assess any effects of the intervention, it is important for future research to measure outcomes at least 6 and 12 months post-intervention to evaluate long-term intervention effects (Nielsen & Abildgaard, 2013). Changes in practices may be detected at a relatively early stage, whereas other changes (wellbeing, resilience) may not be detected until much later (Grant & Wall, 2009).

6.3 | Implications

Our research has both practical and scholarly contributions. The findings suggest that personal and employee resilience are related, but two distinct constructs, which may require different interventions to influence them. Our study also supports the interconnected nature of resilience and wellbeing. The findings suggest that wellbeing and resilience may indeed be reciprocally related, and focusing on one may lead to increases in the other. Influencing employee resilience through focusing on employee wellbeing may offer an untapped opportunity for organizational leaders, although further research is needed to understand whether wellbeing and resilience can be influenced via the same intervention.

This study also suggests that there are some practical, easy-to-implement initiatives, which are likely to enhance aspects of employee wellbeing. The uptake of the wellbeing intervention was higher in the organization that had clear senior leader support for the Game. We therefore recommend that any wellbeing intervention should be explicitly and continuously supported by senior leaders. The study also provides evidence that leaders can provide resources to employees, which do not need to be a financial cost to organizations.

Finally, anecdotal evidence suggests that employees had fun while playing the Game, which is likely to influence other aspects of workplace behavior, such as work engagement.

6.4 | Limitations and future research

As with all research, some limitations need highlighting. The literature has shown that previous workplace interventions, such as resilience training, have had significant effects on resilience in the workforce (Grant, Green, & Rynsaardt, 2010; Griffith & West, 2013; Sood et al., 2011; Vanhove et al., 2015), yet the effects of a wellbeing intervention on resilience were minimal in the present study. Although the Game met its developers' expectations by increasing aspects of wellbeing, it is conceivable that the Game itself has limited influence in the workplace. As organizational support is the strongest contributor to employee resilience (Kuntz et al., 2016), measures of perceived supervisor and organizational support should be used in future studies to assess whether the provision of the Game is an enabler of resilience. More specifically, it is recommended that future research measures the extent employees felt the Game supported them to manage challenges and change at work.

In addition, the limited sample size may have undermined the statistical power to detect an effect might there be one (Field, 2013). Future studies should aim for a minimum of 150 intervention group participants (Hinkin, 1995). Furthermore, consistent with the literature on resilience and wellbeing interventions for non-clinical samples (Robertson et al., 2015) females were over-represented in the present study, and pre-intervention ceiling effects were evident (particularly for employee resilience, $M = 4.15$, on a scale from 1 to 5), potentially reducing the reliability and generalisability of results (Field, 2013). The fact that both organization A and B historically ran regular employee wellbeing initiatives may have reduced any intervention effects. Future research should consider investigating the impact of the Game with a gender-balanced sample of participants who have not previously taken part in a workplace wellbeing initiative.

Importantly, the impact of the Game should be investigated with using a true control group. Participants who chose not to take part in the Game formed the control group in the present study, which we acknowledge was non-optimal. However, self-selected individuals have been found to benefit more from positive psychology interventions than their non-self-selected peers (Sin & Lyubomirsky, 2009). Nonetheless, to reduce confounding variables such as motivation, future studies are encouraged to use an experimental design where participants are randomly assigned to conditions (Vanhove et al., 2015).

We were also unable to investigate influences of, for example, ethnicity or seniority due to organization's concerns for participant anonymity. A potentially fruitful avenue for future research would be to investigate other demographic and organizational influences on wellbeing interventions to better tailor such interventions.

Challenges also existed for how best to represent wellbeing in this study due to organizational constraints on survey length and a necessity for face validity. Indeed, the difficulty of defining and measuring wellbeing is a common issue expressed in the positive psychology literature (Forgeard, Jayawickreme, Kern, & Seligman 2011; Thomas, 2009). In this study, we clustered brief wellbeing measures of particular relevance to work and performance. However, we acknowledge that use of an established wellbeing scale to measure wellbeing as an individual variable would have strengthened this study.

Due to organizational constraints on the survey length, a single item was used to measure energy levels. Single items are often criticized, however, the literature offers support for the use of single items in longitudinal studies (Fu, 2005) and to prevent participant fatigue (Crawford, Couper, & Lamias, 2001), which we considered particularly pertinent given the two different surveys. Arnetz et al. (2008) further suggest that the use of this brief measure is particularly beneficial when researchers want to investigate other constructs (resilience in the present case) and when assessing the effectiveness of interventions.

Future research may investigate the effects the Game has on employee wellbeing and resilience following major organizational changes such as downsizing, restructuring, and diversification. Further, exerting high levels of effort in wellbeing activities, and continuing to practice wellbeing strategies past the conclusion of the intervention, is likely to result in greater improvements in wellbeing (Lyubomirsky, 2008). Thus, for the benefit of the employee and the organization, facilitators of wellbeing interventions should encourage employees to incorporate the activities into their daily lives until they become a habit (Sin & Lyubomirsky, 2009). Such incorporation is likely to enable lasting effects of wellbeing interventions. Indeed, future research should investigate the longevity of effects from wellbeing interventions and what enables enduring effects.

Alternatively, given the evidence supporting the wellbeing enhancing effects of the *Five Ways to Wellbeing* (Aked et al., 2008), researchers may look at alternative ways which an organization can incorporate the *Five Ways of Wellbeing* into resilience building work-related resources (a supportive, learning-oriented, and cooperative environment) that overtly demonstrate the organization's commitment to support employees. Examples include organizational leaders facilitating weekly walking groups (Be Active) and opportunities for employees to volunteer in the community (Give). More formal initiatives may include measuring and incentivizing collaboration between and within business units (Connect) and actively investing in employees' professional development (Keep Learning).

Finally, it may be that different interventions will be effective in influencing personal and employee resilience. Some recent research suggests that enabling organizational contextual factors, such as empowering leadership is likely to influence employee resilience (Nguyen, Kuntz, Näswall & Malinen, 2016), while more individually focused and comprehensive interventions have been found to be effective at enhancing individual's stress-coping ability (Vanhove et al., 2015).

6.5 | Conclusion

This study has provided a novel contribution to the resilience literature by investigating how an organization's investment in employee wellbeing may build employee resilience. It also takes the first steps in filling in the gaps on how personal and employee-level resilience relate. The findings of this study add to the literature by investigating resilience specifically in the workplace and providing some preliminary evidence for the contextual nature of

resilience. Even interventions presenting small effect sizes can in theory have a major impact on populations' well-being when many people are reached (Huppert, 2009). Organizational leaders should create a culture that supports the wellbeing and resilience of their employees in order to build a collective capacity for organizational resilience—where employees adapt, bounce back, and thrive in the face of challenges.

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