The double-edged sword effect of mega sport event strength on volunteer performance

Jing Jiang, Huijuan Dong, Yanan Dong, Huimin Gu and Yina Lv

Abstract

Purpose — This study aims to use event system theory and job demands–resources (JD-R) model to examine the double-edged sword effect of event strength of Beijing Winter Olympics (BWO) on volunteers' in-role performance and proactive behavior as mediated by work overload and meaningfulness.

Design/methodology/approach — The sample included 193 volunteer–leader dyads working at one BWO venue. The authors conducted a multitime and multisource study using Mplus 8 to examine the hypotheses.

Findings — Volunteers' perceived BWO event strength was positively related to work overload, which reduced in-role performance and proactive behavior. Volunteers' perceived BWO event strength was also positively related to work meaningfulness, which promoted in-role performance and proactive behavior. Perceived organizational support served as a moderator by mitigating the positive relationship between perceived BWO event strength and work overload; however, it did not strengthen the positive relationship between perceived BWO event strength and work meaningfulness.

Originality/value — This study developed a comprehensive model of how BWO event strength affected volunteers’ performance from the perspective of event system theory and the JD-R model, which enriches theoretical application and research in the context of mega sport events.

Keywords Beijing Winter Olympics (BWO), Event strength, Job demands–resources (JD-R) model, Volunteers, In-role performance

El efecto de doble filo de la intensidad de los megaeventos deportivos en el rendimiento de los voluntarios

Resumen

Objetivo: Este estudio utiliza la teoría del sistema de eventos y el modelo de demandas de trabajo-recursos (JD-R) para examinar el efecto de doble filo de la fuerza del evento de los Juegos Olímpicos de

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TOURISM REVIEW
1. Introduction

Successfully hosting mega sport events such as the Winter Olympics is important to the development of diverse fields, including national politics, economics and tourism (De Grote, 2005). Volunteers, who offer their time, skills and labor without pay, play a crucial role in mega sport events (Vetitnev et al., 2018), as their participation and performance can influence the event’s hosting quality (Kim et al., 2019).

Previous studies on mega sport events volunteers have mainly focused on the effects of volunteers’ psychological attributes, such as motivation and involvement (Kim et al., 2022; Vetitnev et al., 2018), or organizational factors, such as volunteer job assignments and training (Cho et al., 2020; Wang et al., 2022), on volunteers’ cognition, attitude and behavior. A few studies focused on the effect of the event itself (e.g. perceived event prestige) on volunteers such as commitment (Kim et al., 2013). However, these studies only discussed a single pathway: the positive effect of the event itself on volunteers (Bang et al., 2014; Kim et al., 2013). The current study proposes that mega sport events might also result in negative volunteers’ cognition and attitude. Furthermore, studies on mega sport event prestige noted that previous research has not focused on the effect of event itself on volunteers’ behavior outcomes, such as performance (Kim et al., 2013), which is important for improving event’s hosting quality. The 2022 Beijing Winter Olympics (BWO) is a typical mega sport event that attracted the attention from two billion audiences (Kim et al., 2019). The policies, environment and processing mechanisms of hosting BWO are more applicable to future mega sport events, which makes it a suitable case to research. Therefore, we use the BWO as an example to explore the effect of perceived BWO event strength on volunteers’ psychological responses and performance outcomes from the dual pathway perspective, to help event organizers understand volunteers’ psychology and improve their performance.

We adopt a framework that combines the job demands–resources (JD-R) model and event system theory to examine how volunteers’ perceived BWO event strength influences their in-role and extra-role performance, like proactive behavior (Demerouti et al., 2001; Morgeson et al., 2015). First, event system theory posits that event strength including event’s novelty (the occurrence of an unanticipated phenomenon that distinguishes current events from past events), disruption (to what extent the event represents a change or transformation of normal activities) and criticality (to what extent the event demands extraordinary attention and action), determines the degree to which the event will affect individual cognition, attitude and behavior (Morgeson et al., 2015). In this paper, we expect that BWO event strength, with its inherent criticality (its successful hosting is important to the development of the country and volunteers), disruption (it is held in an uncertain environment of COVID-19 and alters the way volunteers normally operate at work) and novelty (it is the first Winter Olympics held in China and it is a new incoming event to volunteers that differed from their previous work and study) might influence volunteers’ cognition and...
behavior. Specifically, volunteers’ perceived BWO event strength affects their perception of work characteristics and influences their in-role performance and proactive behavior.

Second, the JD-R model posits that individual work outcomes are influenced by job demands and resources (Bakker et al., 2023). As suggested by the JD-R model and related studies (e.g. Chen and Ye, 2023), excess job demands bring a harmful impact on employees and increase their psychological burden, while high levels of job resources lead to positive work outcomes. Considering that the importance of successfully hosting BWO may put crucial duties on volunteers and increase their psychological burden, we adopt work overload, representing “perceived high work role demands and a feeling that tasks are excessive without adequate time to complete them” (Karatepe, 2013), as a key index of job demands. We expect that high BWO event strength creates excessive job demands, which hinders volunteers’ performance (Demerouti et al., 2001). However, we also expect that BWO volunteers would have felt pride in participating in this once-in-a-lifetime event. The meaning they assign to their work is likely to have motivated volunteers to put more energy into their tasks, which, in turn, have improved their performance. Accordingly, we adopt work meaningfulness, representing “the degree to which individuals experience their jobs as generally worthwhile, valuable” (Hackman and Oldham, 1976, p. 256), as a key index of job resources. We propose that higher perceived BWO event strength will promote volunteers’ performance through the mechanism of meaningfulness (Bakker et al., 2023). Therefore, the main aim of this study is to test the double effect of BWO event strength on volunteers’ performance.

JD-R model also highlights how better organizational support can improve individual performance (Demerouti et al., 2001). To help identify how volunteers are able to perform their work smoothly at the BWO, we consider perceived organizational support (POS), defined as the assistance that organization provides individuals to effectively perform their tasks and cope with work stress (Arelkaner and Boylu, 2017), as a key job resource that might have played a positive role in the relationship between perceived BWO event strength and volunteers’ performance via work overload and meaningfulness (Bakker et al., 2023). Therefore, the second aim of this study is to test the boundary condition of volunteers’ POS.

In considering the distal consequences of BWO event strength, we focus on how it influences volunteers’ in-role and extra-role performance. In-role performance refers to individuals’ responsibility to complete duties specified in their job description (Williams and Anderson, 1991). During the BWO, attendees could have unexpected needs at any time. Therefore, we measure proactive behavior as extra-performance, which refers to individuals taking a proactive approach to perform work beyond formal job requirements (Frese et al., 1997).

The key contribution of this study is its comprehensive model of discussing how mega sport events influence volunteers’ performance. Previous research mainly focused on the single positive effect of mega sport events itself on volunteers (e.g. Bang et al., 2014; Kim et al., 2013). They did not discuss the double effect of mega sport events on volunteers and extend this effect to volunteers’ behavior outcomes. Considering that mega sport events’ strength might both positively influence volunteers while also increase their stress, which may further influence volunteers’ performance differently, we combine event system theory with the JD-R model and discuss two pathways linking BWO event strength to volunteers’ performance, which enriches theoretical application and research of mega sport events.

2. Literature review and hypothesis development

2.1 Job demands: work overload

Event strength studies have mainly focused on the workplace to discuss the positive or negative effects of certain types of event strength (e.g. COVID-19 event, working from home event and status promotions event) on employees’ cognition and behavior, such as coping behavior (Yin and Ni, 2021), emotional exhaustion (Lin et al., 2021) and creativity (Chen et al., 2021). Among these studies, most studies have used negative mediating mechanisms
such as job insecurity (Lin et al., 2021) and fear (Yin and Ni, 2021) and used positive mediating mechanisms such as employees’ ability of improvisation (Chen et al., 2021) and self-efficacy (Wei et al., 2021) to show how certain event strength brings employees’ negative and positive behavior, respectively. However, studies have not considered the negative and positive effect of event strength simultaneously.

In our study, we integrate event system theory and the JD-R model, positing that volunteers’ perceived BWO event strength may affect their perceptions of job demands (work overload), thus influencing their in-role performance and proactive behavior (Demerouti et al., 2001; Morgeson et al., 2015). Regarding job demands, volunteers who perceived high event strength might have felt compelled to accept a higher work load. We elaborate on this effect from three dimensions of event strength. First, from the dimension of novelty, this was the first time China had hosted the Winter Olympics, and Beijing became the first city to have held both Summer and Winter Games. Volunteers who perceived this high event strength may feel pressured to invest more efforts into their duties (Vetitnev et al., 2018). Furthermore, from the dimension of disruption, the BWO was run differently because it was held in an uncertain environment of epidemic. All participants in the Games were placed within a closed-loop management system to guarantee safety through precise epidemic-prevention procedures. Volunteers who perceived high event strength might have more strictly followed the COVID-19 prevention measures at work, thereby increasing their work overload (Nicoliello, 2022). Finally, the health of approximately 11,000 athletes and supporting personnel were critical to the success of the Games. Volunteers who perceived high event strength might have considered any mistake in their duties as potentially detrimental to national honor, thus increasing the demands of their everyday tasks (Kim et al., 2019).

According to JD-R model, excessive workloads lead to undesirable performance outcomes. Studies have shown that excessive workloads have negative effect on employees' performance at workplace (Nawaz Kalyar et al., 2019) and are positively related to job dissatisfaction (Üngüren and Arslan, 2021). Nawaz Kalyar et al. (2019) found that work stress reduced employees’ performance and creativity. The psychological pressure from the BWO and extra physical burden from the uncertain environment resulted in volunteers being occupied often, with limited time to recover from stressful situations (Ma et al., 2019). With greater fatigue, volunteers inevitably developed negative affective states that reduced their capacity to perform job responsibilities and engaged in extra-role activities (Hetland et al., 2022). Therefore, the following hypotheses are proposed:

**H1.** Volunteers’ perceived BWO event strength is positively related to their perceived work overload.

**H2.** Volunteers’ perceived work overload mediates the relationships between their perceived BWO event strength and their in-role performance (H2a) and proactive behavior (H2b).

### 2.2 Job resources: work meaningfulness

Likewise, we conceptualize work meaningfulness as an indicator of job resources, positing that it connects volunteers’ perceived BWO event strength to their in-role performance and proactive behavior. We argue that volunteers who perceived high event strength would have also had a strong sense of engaging in meaningful work.

First, the BWO is important to the development of different fields (Barreda et al., 2017), as well as greatly significant for China in building sports power. Volunteers who highly valued the Games would have been proud to participate in this once-in-a-lifetime event and viewed their volunteer work as meaningful (Nedvetskaya, 2023). Besides, the BWO was also held under the unique circumstances of epidemic, at a time with high virus transmissibility (Nicoliello, 2022). Volunteers who perceived high event strength might have an unprecedented sense of
mission to ensure the smooth running of the Games. Most importantly, the BWO provided
more resources and opportunities to volunteers such as training skills, experience. Volunteers
might have learned new skills while working at the BWO (Bang et al., 2019; Vetitnev et al.,
2018), and potentially obtained significant work experience for their future career
development (Bang et al., 2019; Gang et al., 2022). Thus, volunteers who highly valued this
event might view their work as meaningful.

Furthermore, according to JD-R model, we expect that volunteers’ perceived work
meaningfulness will be positively correlated with their in-role performance and proactive
behavior. Several studies have provided evidence that work meaningfulness is positively
related to high job performance (Rabiul et al., 2023) and occupational citizenship behavior
(Agyeiwaah et al., 2023). Rabiul et al. (2023) found that work meaningfulness mediated the
relationship between work ostracism and task performance. Work meaningfulness is an
important job resource that can enhance volunteers’ work motivation and encourage them
to maximize the use of available resources to achieve high levels of performance and meet
any of the attendees’ unexpected needs (Chen and Ye, 2023; Guo and Hou, 2022).
Therefore, the following hypotheses are proposed:

H3. Volunteers’ perceived BWO event strength is positively related to their perceived
work meaningfulness.

H4. Volunteers’ perceived work meaningfulness mediates the relationships between their
perceived BWO event strength and their in-role performance (H4a) and proactive
behavior (H4b).

2.3 The moderating effect of perceived organizational support

Most event strength studies at workplace have shown that certain organizational factors
(e.g. organizational identification) buffered employees’ negative behavior that event strength
brought (Lin et al., 2021; Yin and Ni, 2021). Lin et al. (2021) found that organizational adaptive
practices can reduce employees’ job insecurity that COVID-19 event strength brought.

In our study, drawing on JD-R model, we conceptualize POS as an important job resource
because it generates a positive work environment for volunteers (Bakker et al., 2023).
Volunteers valued POS as assurance that organization provided them with what they need
to perform their job effectively (Mehta et al., 2023). Among volunteers who perceived high
BWO event strength, high POS might have reduced their perceptions of work overload
(Chen and Eyoun, 2021). Based on reciprocity, high POS produced a feeling of having a
mission to care about collective goals and encouraged individuals to help organization
achieve its objectives (Wang and Xu, 2019). Volunteers with high perceived POS
considered their work significant and useful, which enhanced their belief that they were
engaging in meaningful work (Wang and Xu, 2019). Thus, we hypothesize the following:

H5. Volunteers’ POS moderates the relationship between perceived BWO event strength
and their perceived work overload (the relationship is weaker when POS is high and
stronger when POS is low) (H5a), and their perceived work meaningfulness (the
relationship is stronger when POS is high and weaker when POS is low) (H5b).

Integrating the above hypotheses, we propose that POS will moderate the indirect relationship
between BWO event strength and in-role performance and proactive behavior via work
overload and meaningfulness. We hypothesize:

H6. Volunteers’ POS moderates the indirect relationship between perceived BWO event
strength and in-role performance (H6a) and proactive behavior (H6c) via perceived
work overload (the relationship is weaker when POS is high), and moderated the
indirect relationship between perceived BWO event strength and in-role
performance (H6b) and proactive behavior (H6d) via work meaningfulness (the
relationship is stronger when POS is high).
The overall hypothesized model is shown in Figure 1.

3. Methods

3.1 Sample and procedure

The study sample comprised volunteers at the 2022 Winter Olympics in Beijing, China. The BWO was held from February 4 to 20, 2022, in which 2,880 athletes from 91 countries participated. To maximize the potential for success, the Beijing Olympic Committee initially recruited volunteers from universities, enterprises and ultimately 18,000 volunteers were selected and distributed across different venues. One of the authors worked at the Big Family Hotel Venue of the BWO, which provided accommodations for the distinguished guests of the International Olympics Committee. Approximately 300 volunteers worked at this venue in a range of roles, such as financial assistant, language assistant, technology assistant and medical station doctor. The author contacted the leader of volunteer department at this venue for supporting to conduct this study.

Before starting data collection, we obtained a list of names from the project leader including a statement describing the team structure and division of labor (i.e. names of team leaders and members). We used this roster to assign codes to respondents (that is, number A01 for the leader in Team A, and members of Team A were numbered A0101, A0102 as well as A0103) to identify leader–member dyads and match the answers from respondents at two-time points (Lin et al., 2021).

To avoid common bias (Podsakoff et al., 2003), we collected data at two time points and from multi sources (i.e. volunteers and team leaders). Time 1 was in the first week after the Opening Ceremony, when we distributed online questionnaires to all 300 participating volunteers and emphasized the principle of their voluntary participation, the processes of filling out the questionnaires and the anonymity of their responses. They reported their perceived BWO event strength and POS and provided their demographic information. A total of 239 volunteers completed online questionnaires, for a retention rate of 79.67%. We invited these 239 volunteers and their 30 responding department leaders to complete the Time 2 survey (after the Closing Ceremony of the Games) using another online questionnaire. These volunteers were from 30 different departments, with one leader in each department who was responsible for managing volunteers in their departments. The team members reported their perceived work overload and work meaningfulness, and team leaders evaluated the in-role performance and proactive behavior of their team members. It took about one week to get most the questionnaires returned at the second-round of survey. Online questionnaires were returned by 214
team members and 27 team leaders, for a response rate of 89.54% and 90%, respectively.

After deleting unmatched cases, our final sample included 193 volunteers who returned both completed questionnaires (response rate: 64.33%). Most respondents were females (69.70%), and the average age was 22.45 years (SD = 2.07).

3.2 Measures

All the scales used in this study were initially compiled in English. Brislin's (1986) translation model with high reliability was adopted to convert scales into Chinese. All items were scored using a seven-point Likert scale (from “1 = not at all” to “7 = very much”), except when otherwise noted:

- **Perceived BWO event strength.** Volunteers rated their perceived BWO event strength on an 11-item scale with three dimensions (Morgeson et al., 2015). Example items include “The Beijing Winter Games are important to our long-term success.” We conducted a second-order confirmatory factor analysis (CFA) to test the scale’s factor structure. The second-order CFA model showed good fit ($\chi^2 = 88.58, df = 38, TLI = 0.92, CFI = 0.95, SRMR = 0.07, RMSEA = 0.08$), suggesting that it was appropriate to gather the items into a composite score to subsequent analyses (Wong et al., 2008). Cronbach’s alpha for this scale was 0.79.

- **Perceived organizational support.** Volunteers’ POS was assessed using a three-item scale compiled by Yoon and Lim (1999). An example item is: “The organization is willing to help me when I need a special favor.” Cronbach’s alpha was 0.82.

- **Perceived work overload.** We used the three-item scale of Bolino and Turnley (2005) to rate volunteers’ work overload. An example item is: “The amount of work I am expected to do is too much.” Cronbach’s alpha was 0.83.

- **Perceived work meaningfulness.** The volunteers rated their perceptions of work meaningfulness on a three-item scale compiled by Spreitzer (1995). An example item is: “The work I do on the job is very important to me.” Cronbach’s alpha was 0.95.

- **Volunteer in-role performance.** Department leaders rated team members’ in-role performance on a seven-item scale developed by Williams and Anderson (1991). An example item is: “This volunteer adequately completes assigned duties.” Cronbach’s alpha was 0.99.

- **Volunteer proactive behavior.** Department leaders rated team members’ proactive behavior on a seven-item scale from Frese et al. (1997). An example item is: “Whenever something goes wrong, this volunteer searches for a solution immediately.” Cronbach’s alpha was 0.99.

- **Control variables.** Previous studies have proved that in-role performance and proactive behaviors can be affected by some demographic variables (Grant et al., 2009); therefore, we controlled for volunteers’ age and gender (1 = female, 0 = male). We also controlled for volunteers’ source to eliminate its potentially confounding influence on volunteer in-role performance and proactive behavior.

3.3 Analytical strategy

The volunteer participants in our study were nested in teams, with an in-role performance intraclass correlation coefficient [ICC (1) = 0.64, $F = 1.92, p = 0.008$], proactive behavior [ICC (1) = 0.66, $F = 1.75, p = 0.019$]. Therefore, we conducted a
multilevel analysis to adapt individual effects (Level 1) and leader effects (Level 2) concurrently, using Mplus 8. Following Hofmann et al. (2000), all predictors were centered at the grand mean, and we multiply the centered variable of perceived BWO by the centered variable of POS to create an interaction term.

To test the indirect effects of work overload and work meaningfulness and conditional indirect (moderated mediation) effects, we adopted Monte Carlo simulation procedures (5,000 repetitions) and calculated bias-corrected 95% confidence intervals with R (CIs; Preacher et al., 2010; Selig and Preacher, 2008). This approach does not assume that the composite terms (indirect effects and moderation effects) are “normally distributed and yields asymmetric CIs that are faithful to the skewed sampling distributions of the product term” (Preacher et al., 2010, p. 223).

4. Results

4.1 Multilevel confirmatory factor analysis

We performed a multilevel confirmatory factor analysis (ML-CFA) in Mplus 8 to assess the distinctiveness of our six main variables through maximum likelihood estimation. ML-CFA allows the factor structure of the measured constructs to be tested simultaneously between and within levels (Dyer et al., 2005). Considering our small sample size, we created three indicators of perceived BWO event strength, volunteer in-role performance and volunteer proactive behavior by packaging items to simplify our measurement models (Bagozzi and Edwards, 1998). We parcelled perceived BWO event strength into three indicators according to the theoretical dimensions and adopted the item-to-construct balance method proposed by Little et al. (2013) to parcel volunteer in-role performance and volunteer proactive behavior. Specifically, the first indicator consisted of the highest and lowest loadings among items and the second highest and second lowest loadings were included in the second indicator, identically, the third indicator was comprised of the third highest and lowest loadings among items. In addition, the last item was parcelled into the first indicator.

The results (see Table 1) shows that the data fits better with the six-factor model ($\chi^2 = 312.72$, df = 145, CFI = 0.97, TLI = 0.96, RMSEA = 0.08, SRMR within = 0.06, SRMR between = 0.06) than with alternative models (see Table 1). The six-factor model is the best to fit our data, with CFI > 0.90, TLI > 0.90, RMSEA < 0.08, SRMR within < 0.90 (Hu and Bentler, 1999) and SRMR between < 0.14 (Hsu et al., 2015). Therefore, the results supported the distinctiveness of the six constructs.

<table>
<thead>
<tr>
<th>Models</th>
<th>$\chi^2$</th>
<th>$\Delta \chi^2$</th>
<th>df</th>
<th>RMSEA</th>
<th>SRMR within</th>
<th>SRMR between</th>
<th>CFI</th>
<th>TLI</th>
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</thead>
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<tr>
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<td>312.72</td>
<td>-</td>
<td>145</td>
<td>0.08</td>
<td>0.06</td>
<td>0.06</td>
<td>0.97</td>
<td>0.96</td>
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<tr>
<td>Alternative Model 1</td>
<td>532.82</td>
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<td>150</td>
<td>0.12</td>
<td>0.08</td>
<td>0.06</td>
<td>0.93</td>
<td>0.91</td>
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<tr>
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<td>0.16</td>
<td>0.14</td>
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<td>Alternative Model 4</td>
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<td>160</td>
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<td>0.16</td>
<td>0.10</td>
<td>0.76</td>
<td>0.72</td>
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</table>

Notes: Model 1 = four-factor model with perceived BWO event strength and POS combined; Model 2 = four-factor model with perceived work overload and work meaningfulness combined; Model 3 = three-factor model with perceived BWO event strength, perceived work overload, work meaningfulness and POS combined; Model 4 = two-factor model with employee-rated measures and leader-rated measures combined in separate factors. RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; CFI = comparative fit index; TLI = Tucker–Lewis index

Source: Created by authors
4.2 Hypothesis testing

Prior to hypothesis testing, we conducted Harman’s single-factor test to examine the existence of common method bias. According to Podsakoff et al. (2003), if a substantial common method bias was present, either a general factor would emerge from the factor analysis or it would account for the most variance of all items. Our Harman’s single-factor tested with a principal component factor analysis and varimax rotation revealed that there were eight distinct factors with eigenvalues greater than 1.0 rather than a general single factor. The six factors together accounted for 84.25% of the variance, and the first factor did not account for a majority of the variance (33.16%). Thus, common method bias was not a major concern in our study. Table 2 shows variables’ means, standard deviations, reliability and correlations.

Coincide with our prediction, perceived BWO event strength was positively related to perceived work overload \((r = 0.16, p = 0.03)\) and work meaningfulness \((r = 0.22, p = 0.00)\). Volunteers’ perceived work overload was negatively correlated with both volunteers’ in-role performance \((r = −0.26, p = 0.00)\) and proactive behavior \((r = −0.22, p = 0.00)\). Volunteers’ perceived work meaningfulness was positively correlated with both volunteers’ in-role performance \((r = 0.29, p = 0.00)\) and proactive behavior \((r = 0.29, p = 0.00)\).

Model 2 (see Table 3) shows that perceived BWO event strength was positively related to perceived work overload \((B = 0.32, SE = 0.14, p = 0.03)\). Thus, \(H1\) was supported. We applied the Monte Carlo simulation procedures noted by Selig and Preacher (2008) to calculate the mediating effect of perceived work overload between volunteers’ perceived BWO event strength and their in-role performance and proactive behavior. Model 8, shown

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### Table 2

<table>
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<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tr>
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<td>0.45</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
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<td>Volunteer source</td>
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<td>1.60</td>
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<td>0.03</td>
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<td>Perceived BWO event strength</td>
<td>4.63</td>
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<td>−0.05</td>
<td>−0.05</td>
<td>(0.79)</td>
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<td>Perceived organizational support</td>
<td>5.44</td>
<td>1.41</td>
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<td>0.01</td>
<td>0.09</td>
<td>−0.08</td>
<td>(0.82)</td>
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<tr>
<td>Perceived work overload</td>
<td>2.63</td>
<td>1.45</td>
<td>0.05</td>
<td>−0.06</td>
<td>−0.05</td>
<td>0.16**</td>
<td>−0.53**</td>
<td>(0.83)</td>
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<tr>
<td>Perceived work meaningfulness</td>
<td>6.17</td>
<td>1.20</td>
<td>−0.13†</td>
<td>−0.06</td>
<td>−0.06</td>
<td>0.22**</td>
<td>0.37**</td>
<td>−0.09</td>
<td>(0.95)</td>
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<tr>
<td>Volunteers’ in-role performance</td>
<td>6.56</td>
<td>0.98</td>
<td>−0.10</td>
<td>−0.02</td>
<td>−0.13</td>
<td>−0.07</td>
<td>0.24**</td>
<td>−0.29**</td>
<td>0.23**</td>
<td>(0.99)</td>
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<tr>
<td>Volunteers’ proactive behavior</td>
<td>6.36</td>
<td>1.29</td>
<td>−0.10</td>
<td>−0.03</td>
<td>−0.07</td>
<td>−0.11</td>
<td>0.31**</td>
<td>−0.45**</td>
<td>0.23**</td>
<td>0.49**</td>
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</tbody>
</table>

**Notes:** † Individual \(n = 193\). The reliabilities are in parentheses. For gender, 0 = male, 1 = female; † \(p < 0.10\); * \(p < 0.05\); ** \(p < 0.01\) (two-tailed)

**Source:** Created by authors

### Table 3

<table>
<thead>
<tr>
<th>Variables</th>
<th>Perceived work overload</th>
<th>Perceived work meaningfulness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Volunteer age</td>
<td>0.06 (0.04)*</td>
<td>0.07 (0.04)*</td>
</tr>
<tr>
<td>Volunteer gender</td>
<td>−0.21 (0.19)</td>
<td>−0.18 (0.17)</td>
</tr>
<tr>
<td>Volunteer source</td>
<td>−0.08 (0.11)</td>
<td>−0.07 (0.11)</td>
</tr>
<tr>
<td>Perceived BWO event strength (BWO)</td>
<td>0.32 (0.14)*</td>
<td>0.31 (0.14)*</td>
</tr>
<tr>
<td>Perceived organizational support (POS)</td>
<td>−0.48 (0.09)**</td>
<td></td>
</tr>
<tr>
<td>Perceived work overload</td>
<td>Residual variances</td>
<td>944.42</td>
</tr>
<tr>
<td>BWO × POS</td>
<td>–0.28 (0.09)**</td>
<td>–0.02 (0.09)</td>
</tr>
</tbody>
</table>

**Notes:** * Individual \(n = 193\). Unstandardized regression coefficients are reported (with standard errors in parentheses). All the coefficients were calculated in a two-level analysis using Mplus 8; † \(p < 0.10\); * \(p < 0.05\); ** \(p < 0.01\) (two-tailed)

**Source:** Created by authors
Table 4 Regression on volunteer in-role performance and volunteer proactive behavior\textsuperscript{a}

<table>
<thead>
<tr>
<th>Variables</th>
<th>In-role performance</th>
<th>Proactive behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 7</td>
<td>Model 8</td>
</tr>
<tr>
<td>Volunteer age</td>
<td>−0.03 (0.03)</td>
<td>−0.01 (0.03)†</td>
</tr>
<tr>
<td>Volunteer gender</td>
<td>0.14 (0.16)</td>
<td>0.12 (0.17)</td>
</tr>
<tr>
<td>Volunteer source</td>
<td>−0.00 (0.05)</td>
<td>−0.06 (0.04)†</td>
</tr>
<tr>
<td>Perceived BWO event strength (BWO)</td>
<td>−0.09 (0.10)</td>
<td>−0.17 (0.04)†</td>
</tr>
<tr>
<td>Perceived organizational support (POS)</td>
<td>−0.17 (0.06)**</td>
<td>−0.38 (0.07)**</td>
</tr>
<tr>
<td>Perceived work overload</td>
<td>0.18 (0.07)**</td>
<td>0.23 (0.07)**</td>
</tr>
<tr>
<td>BWO ( \times ) POS</td>
<td>0.84 (0.17)**</td>
<td>1.20 (0.17)**</td>
</tr>
<tr>
<td>Residual variances</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: \textsuperscript{a}Individual \( n = 193 \), unstandardized regression coefficients are reported (with standard errors in parentheses). All the coefficients were calculated in a two-level analysis using Mplus 8; † \( p < 0.10; \) ** \( p < 0.05; \) *** \( p < 0.01 \) (two-tailed)

Source: Created by authors

In Table 4, demonstrated a negative relationship between perceived work overload and volunteers’ in-role performance (\( B = −0.17, SE = 0.06, p = 0.00 \)), and Model 10, shown in Table 4, demonstrated that perceived work overload was negatively related to volunteers’ proactive behavior (\( B = −0.38, SE = 0.07, p = 0.00 \)). The Monte Carlo simulation results showed that perceived BWO event strength was negatively related to volunteers’ in-role performance via perceived work overload [estimator = −0.05, 95% CI (−0.00, 0.157) excluding 0]. Thus, \( H2a \) was supported. Perceived BWO event strength was negatively related to volunteers’ proactive behavior via perceived work overload [estimator = −0.12, 95% CI (−0.076, −0.121) excluding 0]. Thus, \( H2b \) was supported.

Model 5 (see Table 3) demonstrates that perceived BWO event strength was positively related to perceived work meaningfulness (\( B = 0.35, SE = 0.13, p = 0.01 \)). Therefore, \( H3 \) was supported. Model 8, shown in Table 4, demonstrated that perceived work meaningfulness was positively related to volunteers’ in-role performance (\( B = 0.18, SE = 0.07, p = 0.01 \)), and Model 10, shown in Table 4, demonstrated that perceived work meaningfulness was positively related to volunteers’ proactive behavior (\( B = 0.23, SE = 0.07, p = 0.00 \)). We adopted Monte Carlo simulation procedures to examine the mediating effect of perceived work meaningfulness between perceived BWO event strength and volunteers’ in-role performance and proactive behavior. The results shows that perceived BWO event strength was positively related to volunteers’ in-role performance [estimator = 0.06, 95% CI (0.004, 0.167) excluding 0] and proactive behavior [estimator = 0.08, 95% CI (0.008, 0.223) excluding 0] via perceived work meaningfulness. Thus, \( H4a \) and \( H4b \) were supported.

For \( H5 \), we conducted in Model 3 (see Table 3) the main effects of perceived BWO event strength and POS and an interaction term shaped by multiplying these two variables. The results indicates that the interaction of perceived BWO event strength and POS was significant (\( B = −0.28, SE = 0.09, p = 0.00 \)). Furthermore, the figure of interaction effects was mapped (see Figure 2) and we processed a simple slope test (Aiken and West, 1991) to observe our results. The results shows that the relationship between perceived BWO event strength and perceived work overload was nonsignificant when POS was high (−1 SD: simple slope = −0.08, \( p = 0.67 \)), but the positive effect was strengthened to a significant level when POS was low (+1 SD: simple slope = 0.69, \( p = 0.01 \)). Thus, \( H5a \) was supported. We adopted a similar process to test \( H5b \), which predicted the moderating effect of POS between perceived BWO event strength and perceived work meaningfulness. The results shows that the interaction between perceived BWO event strength and POS was not significantly related to perceived work meaningfulness (\( B = −0.02, SE = 0.09, p = 0.86 \)). Therefore, \( H5b \) was not supported.

To test our completed pattern, we adopted the Monte Carlo simulation procedures from Preacher et al. (2010) to calculate the conditional indirect effects of perceived BWO event...
strength on volunteers’ in-role performance and proactive behavior via perceived work overload at each level of POS. Results indicate that perceived BWO event strength hurt volunteer in-role performance via perceived work overload when POS was low \([-1 \text{ SD}: \text{indirect effect} = -0.12; 95\% \text{ CI} (-0.25, -0.02) \text{ excluding 0}]\) and a nonsignificant effect when POS was high \([+1 \text{ SD}: \text{indirect effect} = 0.01; 95\% \text{ CI} (-0.05, 0.11) \text{ including 0}]\). Using the same simulation procedures, we found that perceived BWO event strength had a negative effect on volunteer proactive behavior via perceived work overload when POS was low \([-1 \text{ SD}: \text{indirect effect} = -0.26; 95\% \text{ CI} (-0.48, -0.07) \text{ excluding 0}]\) and a nonsignificant effect when POS was high \([+1 \text{ SD}: \text{indirect effect} = 0.03; 95\% \text{ CI} (-0.10, 0.20) \text{ including 0}]\). Therefore, \(H6a\) and \(H6c\) were supported. As POS had no significant effect on the relationship between perceived BWO event strength and perceived work meaningfulness, \(H6b\) and \(H6d\) were not supported.

To check the robustness of our results, we removed the control variables (volunteers’ gender, age and source) to test our hypotheses, which abided by the recommendations noted by Bernerth and Aguinis (2016). The results pattern remained the same after removing the control variables.

5. Discussion

Our empirical study demonstrates that perceived BWO event strength has a dual effect on volunteers’ in-role performance and proactive behavior via work overload and meaningfulness. POS has a positive moderating effect on the relationship between perceived BWO event strength and work overload, which, in turn, promotes in-role performance and proactive behavior. However, volunteers’ POS do not moderate the relationship between perceived BWO event strength and work meaningfulness and the indirect effect between perceived BWO event strength and in-role performance and proactive behavior via work meaningfulness. Based on the literature review, we find that previous studies have shown that POS can promote work meaningfulness in the workplace (Akgunduz et al., 2018). However, previous studies also have shown that when other more positive factors influence individual perceptions of strong work meaningfulness, the effect of POS will be weakened or ineffective (Wang and Xu, 2019). In our study, this may explain for a well-known international event like BWO, volunteers already perceived strong work meaningfulness, which means the role of POS may be weaker or ineffective.
5.1 Theoretical implications

This study has several theoretical implications. First, the study introduces event strength and event system theory into the context of mega sport events, providing a new theoretical perspective for research on volunteers. Studies drawing on event system theory have explored how work-related or external events, such as COVID-19, affect employees’ behavior (Lin et al., 2021). Lin et al. (2021) found that perceived COVID-19 event strength will increase workers’ job insecurity. Regarding mega sport events, previous studies mainly explained how such events influence volunteers from the perspective of social identity theory rather than from event theory itself (Kim et al., 2013). Based on social identity theory, Kim et al. (2013) found that the evaluations of mega sport event volunteers to the event they were working on (perceived event prestige) will influence their self-concept, which, in turn, will influence their job satisfaction. Considering the meaning of event itself may be significant to influence volunteers’ cognition and behavior, this study introduces BWO event strength (Morgeson et al., 2015) and applies event system theory to discuss how BWO event strength affects volunteers’ job characteristics and behavior, which enriches research on mega sport event volunteers.

Second, this study expands the application of JD-R model to mega sport event research and explores how volunteers’ cognitions of job demands and resources affect their behavior outcomes. Previous studies using JD-R model mainly focused on workplace characteristics (Chen and Ye, 2023). Chen and Ye (2023) found that job demands (e.g. work–family conflict) and resources (e.g. training) will increase and reduce hotel employees’ alienation, respectively. In the context of mega sport events, studies have aimed to discuss the effect of job characteristics (e.g. task significance, autonomy) on volunteers using the job characteristics model (Neufeind et al., 2013). Neufeind et al. (2013) found that volunteers’ perceptions of job characteristics (e.g. skill variety, task significance) increased their satisfaction. However, they ignore that other demands and resources at work will also affect volunteers’ behavior. To our knowledge, the current study is the first to apply the JD-R model to mega sport events and find that volunteers at such events also face the challenges of job demands and opportunities for job resources, which provides a new context and perspective for applying the JD-R model.

Third, this study contributes to research on the determinants of volunteer performance at mega sport events. Previous studies mainly researched volunteer performance in other nonprofit organizations (Kuule et al., 2017). Kuule et al. (2017) sampled volunteers working at a community clinic and found that the number of trainings affected volunteers’ performance. Most studies on mega sport events examined the effects of some factors (organizational or individual factors) on future volunteering intention. Cho et al. (2020) found that volunteer management promoted volunteers’ future volunteering intention. Studies that have explored the effect of mega sport event itself on volunteers have mainly focused on discussing volunteers’ cognition and attitude but not behavior and performance (Kim et al., 2013). Given that volunteers’ performance is important for improving the hosting quality of mega sport events, this study focuses on how event strength influence volunteers’ in-role performance and proactive behavior, which enriches research on volunteer performance at mega sport events.

5.2 Practical implications

This study provides practical contributions for mega sport event organizations. First, organizers can take certain measures to reduce volunteers’ work overload. Organizers should realize the high intensity of volunteering work and adequately train volunteers in advance. Organizers can hire professional trainers to help familiarize volunteers with their duties and make sure they have mastered enough knowledge to cope with different work situations. Furthermore, organizers should seek to fully understand volunteers’ characteristics and strengths and assign them to appropriate work roles to reduce work stress (Kim et al., 2013). Moreover, organizers can encourage volunteers to maintain a good work-life balance and
organize their work time properly to ensure adequate rest and recreation time for maintaining physical health, which can reduce work stress (Chen and Eyoun, 2021).

Second, organizers can take measures to encourage volunteers’ perceptions of work meaningfulness. Organizers can provide volunteers with case-sharing opportunities to increase their work meaningfulness, such as hosting online or offline meetings to let volunteers share their service experience, which helps volunteers to understand the real impact of their work and increases identity. Organizers can also pay more attention to combining volunteers’ personal goals with their current work to make them feel their work is meaningful. For example, organizers can communicate with volunteers, discuss their career goals and try to make a connection between their personal aims and work.

Third, considering that POS is important for creating a positive work environment, organizers should invest in providing job resources to volunteers to meet their needs for autonomy and encourage them to face challenges and obstacles with positivity during events. For example, line managers can provide channels to encourage volunteers to participate in decision-making, which can increase volunteers’ intentions to overcome problems by themselves. Meanwhile, organizers can create multiple ways to listen to volunteers’ needs and questions, which will provide volunteers a place to speak out (Chen and Eyoun, 2021).

5.3 Limitations and future research directions

This study has the following limitations. First, we only examine work overload and meaningfulness as a job demand and job resource, respectively. Future studies could investigate other indicators, such as role conflict and clarity to capture elements of stress that have not been tested in previous studies on volunteers at major sports events (Bakker et al., 2023).

Second, although data collection followed the time-lagged principle, we cannot make definite causal inferences. Future research can use other measures, such as more longitudinal or experiments to provide stronger evidence of causality between the focal variables. For example, future studies can track work meaningfulness and work overload of volunteers over three measurement points to determine when these factors are at their highest and when their relationships with volunteer in-role performance and proactive behavior are the strongest.

Third, our study data was based on the BWO, and the degree to which the findings can be generalized to other events is unclear. The BWO provides an interesting case for examining the unique effect of a critical event on volunteers’ psychological states and performance, but it may be subject to the context of COVID-19. Future studies testing our model in other situations are encouraged.

References


Further reading


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