



Authentic leadership and employee resilience during the COVID-19: The role of flow, organizational identification, and trust

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Accepted: 11 December 2022 / Published online: 23 January 2023

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Abstract

The present work investigated fundamental mediating mechanisms (i.e., flow experience, organizational identification, and trust), underlining the impact of authentic leadership on employee resilience during the turbulent COVID-19 pandemic. A total of 901 frontline employees working in a construction engineering company in China participated in this study. They were asked to respond to a battery of questionnaires comprising Trust Scale (affective-based, cognitive-based, and competence-based), Flow Proneness Questionnaire (FPQ), Organizational Identification Scale, Authentic Leadership Questionnaire, and Employee Resilience Scale. Results of structural equation modeling indicated that: (1) Authentic leadership positively predicted employee resilience in the COVID-19 pandemic, directly and indirectly. (2) As for the indirect relationship, two parallel mediation effects and one chain mediation were detected: employees' flow at work and organizational identification respectively and dependently mediated the relationship between authentic leadership and employee resilience; trust and organizational identification played as a chain mediation role within authentic leadership-employee resilience association. The study provides empirical evidence for organizations' resilience-building and leadership training programs. Findings also contribute to the literature by facilitating flow intervention, promoting organizational identification and trust to enhance the effect of authentic leadership in promoting positive psychological functioning of employee resilience. Limitations with respect to future research directions were also outlined.

Keywords Authentic leadership · Employee resilience · Flow experience · Organizational identification · Trust

Introduction

Since the novel coronavirus disease (COVID-19) was identified in December 2019, more than 110 million cases have been reported worldwide at the time of writing in February 2021, according to a report from WHO (World Health Organization, 2021). To control the spread of the COVID-19 pandemic, plenty of enterprises had to suspend their operation, which has led to severe challenges such as shrinking profits, rising costs, and even bankruptcy (Habersaat et al., 2020). For employees, this sudden outbreak of the pandemic has not only brought threats to their physical health and psychological well-being (Pagliaro et al., 2021) but also confronted them with the uncertainty of financial income, job opportunities, and working routine (Chawla et al., 2020). As a result, for both enterprises and employees, it is of vital importance to build and maintain resilience in coping with such a challenge and adjust to such a newly altered working environment to maintain organizations' dynamic sustainability and

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employees' well-being in this "new reality" (Carnevale & Hatak, 2020).

Employee resilience is an employee's adaptive behavioral capacity; with such capacity, one can gather, integrate and utilize organizational resources, as well as seek opportunities for continuous improvement and cope with work-related challenges, especially in the challenge of a crisis context (Braun et al., 2017; Caniëls & Baaten, 2019; Fan et al., 2020; Kuntz et al., 2016; Lengnick-Hall et al., 2011; Stokes et al., 2019). Research has indicated that resilience can positively affect employee satisfaction (Youssef & Luthans, 2007), organizational commitment (Karatepe & Karadas, 2014; Shin et al., 2012), and employee engagement (Cooke et al., 2019). Resilience is critical in coping with unexpected changes and crises (Stoverink et al., 2020; Vegt et al., 2015; Williams & Shepherd, 2016). Therefore, it is crucial to study employee resilience under the severe challenge of the COVID-19 pandemic.

In coping with disasters or extreme situations like the COVID-19 pandemic, organizations play significant and positive roles in building their employees' resilience (Williams & Shepherd, 2016). However, an organization would be an illusory concept and a cold entity without its leaders, as the leaders contribute to or represent the work climate for their employees, socialize reports into the organization, and maintain prolonged interaction with their employees (Ostroff & Kozlowski, 1993). Leadership can be an essential recovery factor for both an organization and its employees due to its beneficial role in the organization well-functioning and the flourishing of its followers (Alilyyani et al., 2018; Farid et al., 2020; Neider & Schriesheim, 2011; Townsen et al., 2020; Walumbwa et al., 2008, 2011; Zhang et al., 2020). Several authors have investigated the positive impact of authentic leadership in organizational contexts (Laschinger et al., 2014; Zhang et al., 2018) since authentic leadership is "a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate" (Walumbwa et al., 2008). However, to our best knowledge, the study of authentic leadership and employee resilience in the present challenging context of the COVID-19 pandemic can barely be traced in research records insofar. As a result, the effect of authentic leadership on employee resilience needs further investigation into the organization-leader-employee interaction.

Authentic leadership also helps create employees' trust (Avolio et al., 2005; Farid et al., 2020; Hsieh & Wang, 2015; Iqbal et al., 2019). People with a higher level of trust between leaders and employees within organizations are better able to overcome the adverse effects of disasters (Brown et al., 2018), improve their capability of resilience, and mitigate their feelings of insecurity that are triggered by hazards (Hopkins & Weathington, 2006; Mishra & Spreitzer, 1998;

Saad et al., 2020). As a result, for employees, trust can be reckoned as a significant factor in building, maintaining, and strengthening resilience during the COVID-19 transition (Habersaat et al., 2020; Pagliaro et al., 2021). In this sense, the effect of authentic leadership on employee resilience can be further analyzed from the perspective of trust during the present pandemic challenge.

In addition to trust, employees' organizational identification helps combat such a challenge (Jaspal & Nerlich, 2020). Supportive evidence has demonstrated the crucial effect of identification as a protective buffer for well-being and social support during crises (Drury & Reicher, 2008; Templeton et al., 2020). However, few research records have studied this positive effect at the organizational level in such a turbulent context. As a result, organizational identification deserves further exploration for its potential recovery role with respect to the employees (Lyu et al., 2020).

Moreover, a focus shift from the negative side to the positive lens is applauded in coping with the COVID-19 pandemic, as the mere endurance of negative emotions can be exhausting per se (Yamaguchi et al., 2020). Thus, how to strategically make employees more active in coping positively with these stressful situations is worth exploring. To this end, we look into an opportunity for resilience building and rediscovery of the meaning of life through the perspective of positive psychology (Fava et al., 2017; Padesky & Mooney, 2012). From such a perspective, we introduce and investigate a theory of human flourishing experience called flow. Flow depicts a smooth affective and cognitive experience when engaging in any daily activity, especially within the organizational work context (Csikszentmihalyi, 1990; Mao et al., 2016; Mao et al., 2022). Being characterized as optimal enjoyment, high focus, full concentration, and intrinsic motivation when one is devoting himself or herself to the challenges of the present activities at hand, flow helps the individuals to achieve the integration of activities with consciousness and the disappearance of the sense of time (Csikszentmihalyi & Asakawa, 2016; Csikszentmihalyi & LeFevre, 1989; Demerouti, 2006; Nielsen & Cleal, 2010; Gu et al., 2020). Flow experience is ubiquitous during work due to its positive impact on employees' work performance and physical and mental well-being (Bakker, 2008). Hardly any research focusing on the relationship between authentic leadership and employee resilience has taken flow into consideration. In this respect, the purpose of this study is to investigate the impact of authentic leadership on employee resilience under COVID-19 challenging circumstances by exploring the underlying mechanism of the above-mentioned positive organizational psychological factors: trust, organizational identification, and flow that may drive to cope with such a global crisis.

Theory and hypotheses

Authentic leadership and employee resilience

Leadership, irrespective of different types, has been demonstrated to influence resilience in various contexts and countries positively. For instance, Trigueros et al. (2020) found that teachers' transformational leadership positively predicts students' academic performance and resilience in university settings in Spain. In government organizations in New Zealand, paradoxical leadership was observed to help employees behave resiliently (Franken et al., 2020). While for full-time organizational employees working in mainland China, perceived humble leadership was found to facilitate employee resilience (Zhu et al., 2019). However, as an alternative leadership style, the authentic leadership and employee resilience relationship can barely be traced within such a limited research record. Indeed, several studies have confirmed the importance of authentic leaders for positive employee development (Alilyyani et al., 2018; Farid et al., 2020; Towsen et al., 2020; Walumbwa et al., 2008, 2011). These studies have provided implicit clues that authentic leaders may support employees in coping with potential adversities and constant challenges (Gardner & Schermerhorn, 2004; Lengnick-Hall et al., 2011). As employee resilience has been described as a developable capability to gather, integrate, and utilize organizational resources (Kuntz et al., 2016; Lengnick-Hall & Lengnick-Hall, 2011), especially in an enabling and resilient organizational context (Kuntz et al., 2016). Infer from such evidence, we, therefore, anticipate that:

H1: Authentic leadership is positively associated with employee resilience.

The previous section has discussed the relationship between authentic leadership and employee resilience. Following that, we wish to explore the underlying mechanism through which authentic leadership facilitates employee resilience by considering positive psychological factors such as flow, organizational identification, and trust.

Authentic leadership and employee resilience: flow as a mediator

Flow, as the first factor being considered within the relationship between authentic leadership and employee resilience, is a multi-dimensional concept. It can be represented by nine unique characteristics, which include: (1) challenges-skills balance in coping with job demand, (2) clear goals for work achievement, (3) unambiguous and prompt feedback from the work performance, (4) a sense of control over the present job task, (5) total concentration on the task at hand, (6) action-awareness merging together, (7) loss of

self-consciousness by focusing solely on the present work, (8) distorted sense of time as it goes faster or slower, and (9) autotelic work experience that is intrinsically motivated (Csikszentmihalyi, 1975, 1990, 2000; Jackson & Marsh, 1996; Mao et al., 2022). Such a universal experience is found irrespective of the young or the old, male or female, individual or organizational group (e.g., Mao et al., 2016). However, the study of flow with regard to authentic leadership can barely be traced, though sparkling evidence has shown that some other styles of leadership are predictive of employees' flow experience. For instance, Schermuly and Meyer (2020) found that transformational leaders who show idealized influence, inspiration, intellectual stimulation, and individualized consideration can affect their followers' flow experience at work. Shared leadership (Aube et al., 2018) and servant leadership (Jin et al., 2017) have also been proven to affect employees' flow at work positively. This evidence guides us in assuming authentic leadership's positive impact on flow. Prior work has also suggested that authentic leadership cultivates intrinsic motivation and healthy psychological behaviors in employees (Csikszentmihalyi et al., 2014; Luthans & Avolio, 2003), which, in turn, leads to flow at work (Luthans et al., 2007). Besides, the extent to which leaders show their great self-awareness, internalized moral perspective, balanced processing of information, and relational transparency play an essential role in motivating their followers to state disagreements (Walumbwa et al., 2008). In this way, employees are likely to gain a great sense of control over their work environment and their abilities (Jiang & Men, 2017; Tapscott & Ticoll, 2003), which would provide conditions conducive to the generation of flow (Csikszentmihalyi, 1975, 1990, 2000; Jackson & Marsh, 1996). Taken together, the above indirect relationship between authentic leadership and flow leads us to uncover the mask of flow in contributing to understanding how employees' perceived authentic leadership may associate with their resilience.

Flow has been applied to various working contexts in exploring positive organizational behavior (See Fullagar & Delle Fave, 2017, for a review). Sparkling evidence in this area suggests that the positive human flourishing experience of flow contributes to building and maintaining resilience. For instance, Debus and colleagues have found that the daily experience of work-related flow positively predicts resilience by reducing job demands and facilitating recovery (Debus et al., 2014). Besides, Bakker (2008) has demonstrated that the intrinsically motivated person (as in a flow state) is more likely to be (1) inquisitive and inclined for learning and change, (2) cognitively active and flexible in procedures and application of mechanisms, (3) eager to take the risk for unconventional methods, and (4) determined in overcoming the obstacles and challenges, as well as to explore new opportunities. These seem to suggest

that an employee who experienced flow more could indicate more resilience. Building on the broaden-and-build theory that positive emotional experience promotes the discovery of novel and creative actions, ideas, and social bonds, which, in turn, facilitate building an employee's personal resources (i.e., physical, intellectual, social, and psychological resources). Such resources function as reserves that can be drawn on later to improve one's coping and survival (Fredrickson, 1998, 2001; Fredrickson & Branigan, 2005). In other words, the frequent and repeated optimal enjoyment of flow experience, which produces positive affect and cognition, facilitates building resilience (Fullagar & Delle Fave, 2014). With this respect, we propose that:

H2: Flow mediates the positive relationship between authentic leadership and employee resilience.

Authentic leadership and employee resilience: organizational identification as a mediator

Another positive psychological factor being considered in authentic leadership and employee resilience association is organizational identification (OI). OI refers to one's identification with the values of an organization and his or her perceived belongingness to that organization (Mael & Ashforth, 1992). Prior evidence has indicated a subtle link between authentic leadership and organizational identification inferred from some indirect evidence. For example, transformational leadership can affect how employees identify with their leader, which, in turn, affects their identification with their co-worked organization (Carmeli et al., 2011). Schein (1985) argued that employees tend to think that their leaders are the representation of organizations, which, in all probability, can lead to a significant influence from authentic leadership to employees' organizational identification based on the distinctive values and philosophy of the organization (Avolio et al., 2004; Sluss & Ashforth, 2008; Walumbwa et al., 2008). More recently, it has been found that when a leader's authenticity is low, the enhancement of organizational identification is lessened (Kim et al., 2018). Besides, findings from a group of nurses have demonstrated that authentic leadership significantly and positively influences identification with their leaders and their organization (Fallatah et al., 2017). In line with the evidence mentioned above, we suppose that authentic leadership positively predicts employees' OI.

Evidence on the relationship between OI and employee resilience is also limited. However, little research has indicated that employees' organizational identification positively affects psychological resilience, which, in turn, affects work engagement (Lyu et al., 2020). According to the social exchange theory (SET; Blau, 1964) that employees with a higher level of OI may regard themselves as part of their

organizations, contributing more effort and being "more likely to engage in resilient reactions to workplace challenges" (Zhu et al., 2019). Employees' perceived insider identification with their organization facilitates employee resilience. Building on the prior assumption that authentic leadership positively predicts employees' OI, which, in turn, predicts stronger employee resilience, we, therefore, assume that:

H3: Organizational identification mediates the positive relationship between authentic leadership and employee resilience.

Authentic leadership and employee resilience: trust as a mediator

Trust, the third positive organizational psychological factor being considered within authentic leadership and employee resilience, can be referred to as (1) one's belief in integrity, character, and ability (Robbins et al., 1999); (2) reciprocal faith in one's intentions and behaviors (Kreitner et al., 1998); (3) confidant reliance on the integrity, honesty, or justice of another (Funk & Wagnalls, 1985). Trust in authentic leaders within the working context can be traced in various studies. For instance, Gardner et al. (2005) have found that authentic leader-follower relationships include heightened levels of follower trust in the leader because an authentic leader plays a crucial role in building trust and cooperation and nurturing teamwork among colleagues. Heyns et al. (2015) have demonstrated that leaders' personal characters and behaviors have a significant impact on their employees' inclination to trust. If perceived as trustworthy, followers will be likely to respond by engaging in trusting behaviors toward them. Besides, employees' trust plays a mediating role between leaders' real leadership level and their followers' work engagement (Hsieh & Wang, 2015). More directly, according to recent findings, authentic leadership is positively associated with subordinates' affective- and cognitive-based trust, as well as competence-based trust towards their leaders (Farid et al. 2020; Iqbal et al., 2019).

Regarding the association between trust and employee resilience, scholars have suggested that the organizations' capital (i.e., economic, social, physical, human, natural and cultural) functions importantly in creating resilience capacity for employees (Brown et al., 2018; Mayunga, 2007). A higher level of trust helps cultivate the potential for mitigating the impacts of disaster and expediting recovery (Brown et al., 2018). Employees' trust in their superiors encourages creating an environment where resilient employees feel secure in their jobs, despite the adversity, therefore, leading to business continuity and quick recovery (Saad et al., 2020). Based on the assumptions that authentic leadership positively creates employees' trust (affective-, cognitive-,

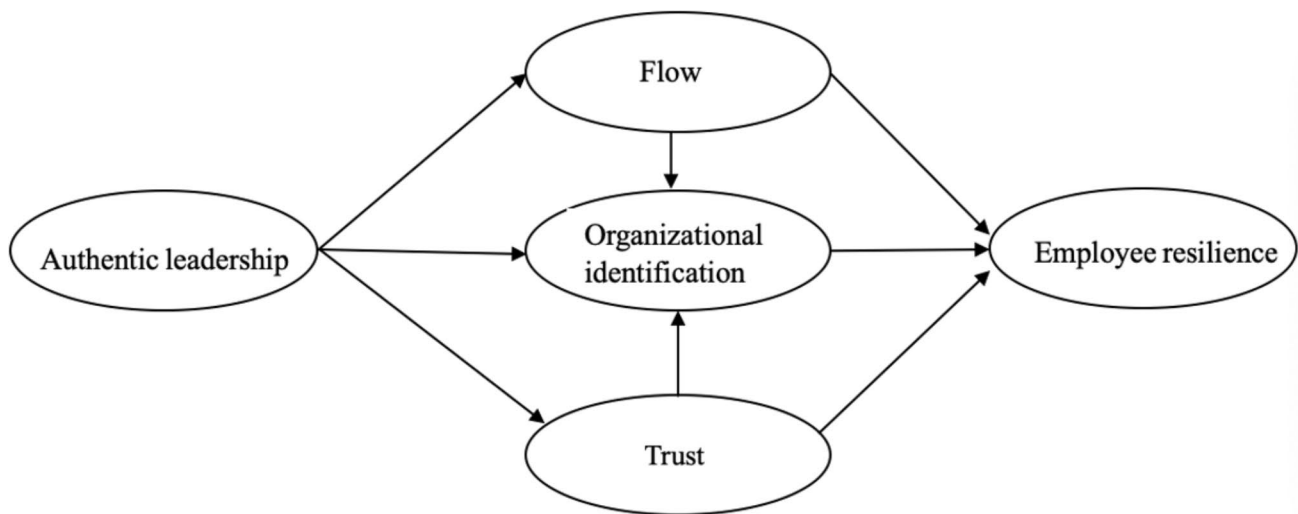


Fig. 1 The hypothesized chain mediation model

Note. The hypothesized mediation model about the mediation effects

of flow, organizational identification, and trust on the relationship between authentic leadership and employee resilience

and competence-based trust) toward their leaders, and that trust may in turn facilitate employee resilience, we therefore propose that:

H4: Trust mediates the positive relationship between authentic leadership and employee resilience.

Flow and organizational identification

In extending prior empirical findings on flow-organizational identification association (Mao et al., 2016), to a more specific organizational context, we propose that employees who experience more flow will exhibit more identification with their organization. As more flow at work indicates more intrinsic motivation, deeper absorption, and higher work enjoyment (Bakker, 2008), each of them is positively correlated with organizational identification (Chen et al., 2019; Lee et al., 2015; Mael & Ashforth, 1992; Rockmann & Ballinger, 2017). Besides, flow at work helps reduce emotional problems such as depression and burnout (Mosing et al., 2018), which are negatively associated with organizational identification (Ferris et al., 2016; Mael & Ashforth, 1992; Parrello et al., 2019). A very recent work by Peng et al. (2020), building on social identity theory, has indicated that residents' flow experience from activities conducted at the residential community is predictive of identification with their community. In accordance, we wish to confirm that:

H5: Flow is positively associated with organizational identification.

Trust and organizational identification

During the identification process, how much people identify with their organization largely depends on how they view

that organization (Ashforth & Mael, 1989). For instance, if one indicates trust toward his or her organization, he or she is willing to form the connections that foster identification with the organization (Rousseau, 1998). Therefore, trust plays a positive role in increasing organizational identification. According to social exchange theory, if employees perceive their organization as fair, kind, and caring, they will be intensely motivated to give back, generating more trust in turn (Molm et al., 2000). Empirical findings have suggested that employees' trust in their leaders in organizations can positively influence the establishment of organizational identification (e.g., Edwards & Cable, 2009; Lisbona et al., 2020). With this respect, we assume that:

H6: Trust is positively associated with organizational identification.

All of the above-proposed hypotheses are included in the hypothesized model, as presented in Fig. 1.

Materials and methods

Participants

Participants were frontline employees working on different construction engineering projects from China Railway Construction Corporation Limited. This corporation is a state-owned company in China and is the second-largest construction and engineering company in the world by revenue in 2014. It also ranked 42nd among the annual list of Fortune 500 companies in 2021 at the time of writing. A total of 901 employees who worked for these construction projects were from different cities in southwest China (i.e., Kunming, Guizhou, Panzhihua, etc.). Their mean age was

32.38 years old ($SD = 8.56$). The majority of them were male (258 were female), with 64.5% of them having worked for this company for more than 3 years. Additionally, 91.9% of them had bachelor's degree or above, 53% of them were frontline general staff, and 27% were frontline project managers.

Procedure

First, all questionnaire items regarding each of our study variables that the participants responded to were subject to the translation and back-translation procedure from the original English version. Later, an online Chinese version questionnaire was created for a pilot test, subsequently, it was administered by sending a URL link and QR code to potential participants via *WeChat* (an instant messaging system that is popular in China). The study was approved by the local ethical committee at the first author's university. Employees were provided online informed consent; they confirmed their voluntary participation and were told that they could withdraw participation at any point during the survey process. The survey was administered with self-reports based on employees' interaction with their organizational leaders referring to their work experience in the past 6 months when the COVID-19 pandemic was massively present. The invited participants were encouraged by the manager of the human resource (HR) department to share the survey link with other co-workers inside the company. Questionnaires took approximately 5 to 10 min for them to complete. Data collection lasted from December 13 to December 28 in the year 2020, with the assistance of the HR manager.

Measures

Employee resilience

The 9-item Employee Resilience Scale developed by Näswall et al. (2015) was used to measure employees' resilience ("I use change at work as an opportunity for growth"). This unidimensional scale was revised from the original 18-item scale by Näswall et al. (2013). Responses were recorded by a 5 Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Such a scale has been validated in mainland China (Cronbach's $\alpha = 0.85$; Zhu et al., 2019). The internal consistency regarding the present sample was excellent (Cronbach's $\alpha = 0.95$).

Authentic leadership

The 16-item Authentic Leadership Questionnaire (Walumbwa et al., 2008) comprising four dimensions was

adopted in the present work: Self-Awareness (e.g., "Seeks feedback to improve interactions with others"), Relational Transparency (e.g., "Says exactly what he or she means"), Internalized Moral Perspective (e.g., "Demonstrates beliefs that are consistent with actions"), and Balanced Processing (e.g., "Solicits views that challenge his or her deeply held positions"). Responses were registered based on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The internal consistency was excellent regarding each sub-scale: 0.93 for self-awareness; 0.94 for relational transparency; 0.92 for internalized moral perspective; and 0.95 for balanced processing. The internal consistency of the total Authentic Leadership in the current sample was excellent (Cronbach's $\alpha = 0.98$).

Flow experience

We adopted the 7-item Flow Proneness Questionnaire (FPQ; Ullen et al., 2012) for measuring one's frequency of flow experience at work. This scale captures the main dimensions of flow experience identified by Csikszentmihalyi (1990), for instance, a balance between the skills of a person and the challenges of a task, sense of control, sense of distorted time, and optimal enjoyment. In the current study, participants reported how frequently they experienced flow at work during the last six months (e.g., "When you do something at work, how often does it happen that you feel completely concentrated?"). Responses were registered based on a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*every day, or almost every day*), with a higher score indicating a higher level of flow frequency. Cronbach's alpha was 0.81 in the present study.

Organizational identification

Organizational identification was measured by the 6-item Organizational Identification scale (Mael & Ashforth, 1992). Response to items (e.g., "When someone criticizes my company, it feels like a personal insult") was registered on a 5-point Likert-type scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Higher accumulating scores indicate greater levels of organizational identification. Such a scale has been validated in Chinese samples showing good reliability (e.g., Mao et al., 2016, Cronbach's $\alpha = 0.89$). Cronbach's alpha regarding the present sample was 0.86.

Trust

We asked participants to indicate their perceived trust toward their vertical leaders regarding leaders' affect, cognition, and competence. Specifically, we adopted a 5-item

Table 1 Descriptive statistics and correlational indices among latent variables

	Mean	SD	AL	Flow	OI	Trust	ER
AL	3.76	0.77	1				
Flow	3.58	0.70	0.52**	1			
OI	3.75	0.75	0.64**	0.23**	1		
Trust	3.79	0.81	0.89**	0.22	0.39**	1	
ER	3.91	0.64	0.66**	0.21**	0.27**	0.62**	1

Note: **, $p < 0.01$ (two-tailed); AL = Authentic Leadership; OI = Organizational Identification; ER = Employee Resilience.

Affective-based Trust and a 6-item Cognitive-based Trust developed by McAllister (1995) that has been widely used and validated (Olson et al., 2007). Sample item of Affective-based Trust included “*If I shared my problems with my vertical leader, I know he would respond constructively and caringly.*” While sample item of Cognitive-based Trust included “*My vertical leader approaches his/ her job with professionalism and dedication*”. We also adopted a 3-item Competence Trust scale (Kumar et al., 1995) that has demonstrated good reliability in the Chinese organizational context (Xue et al., 2016), to evaluate the extent to which an employee’s belief that their leader possesses adequate resources and capabilities to meet the cooperative requirements. Responses to each item ranged from 1 (*completely disagree*) to 5 (*completely agree*). Cronbach’s alpha coefficients regarding the present sample were 0.80 for Affective-based Trust, 0.86 for Cognitive-based Trust, and 0.84 for competence trust. The internal consistency of the total trust items in the current sample was 0.98.

Data analytic strategy

Firstly, we used SPSS (26.0) to describe participants’ social demographic background information. Secondly, we used AMOS (22.0) to test the data’s normality. After that, we deleted all outliers. Then, we used the item parceling technique via SPSS to control for inflated measurement errors caused by multiple items, parceling strategy has been widely used in previous SEM studies (e.g., Kong et al., 2012; Kong et al., 2019). AL, OI, and ER were categorized into 4-, 2- and 3-item parcels, respectively, according to the factorial algorithm; Flow was packaged into 2 parcels according to the correlation algorithm; Trust was packaged into 3 parcels according to its 3 theoretically derived dimensions. Thirdly, we used AMOS to test correlations between latent variables and tested the measurement model. It is impossible that the SEM assumption of multivariate is normal in that the data in this study was at the ordinal level (Fisher & King, 2010). Therefore, we used AMOS non-parametric bootstrap option for structural model measurement. Finally, data were analyzed in AMOS via structural equation modeling following a two-step procedure testing the mediation model (Anderson & Gerbing, 1988). In the first step, we tested the

measurement model to estimate the extent to which each latent variable was represented by its observed indicators. In the second step, the structural model was examined on the premise that the measurement model was satisfactory. The significance of mediation effects was tested using a 95% bias-corrected bootstrap. The robust maximum likelihood method was used as the estimation method. Our decision to reject or retain a model was based on the Bollen-Stine bootstrap p -value and fit indices (Kline, 2010). The following indices were used to evaluate the overall model fit according to the criteria (Hu & Bentler, 1999): root-mean-square error of approximation ($RMSEA \leq 0.06$), standardized root-mean-square-residual ($SRMR \leq 0.08$), comparative fit index ($CFI \geq 0.95$), normative fit index ($NFI \geq 0.95$), goodness-of-fit index ($GFI \geq 0.95$), incremental fit index ($IFI \geq 0.95$) and non-normed fit index ($NNFI \geq 0.95$). Finally, the chi-square/degrees of freedom ratio (χ^2/df) were used, with a value below 3 indicating acceptable.

Results

Preliminary results

We deleted all multivariate outliers (17 cases) after the normality test using Mahalanobis distance ($p < 0.001$) in the sample. The skewness values for the items ranged from -0.38 to -0.75, and the kurtosis value ranged from -0.48 to 1.36, indicating univariate normality. As the data was at the ordinal level, it failed to satisfy the requirement of multivariate normality (multivariate kurtosis = 139.97; critical ratio = 98.31). We, therefore, used AMOS non-parametric bootstrap option for further analysis, the Bollen–Stine bootstrap p procedure was used to adjust model fit and parameter estimates to accommodate the lack of multivariate normality.

Descriptive statistics

Table 1 presents descriptive statistics and correlations between our latent variables yielded from AMOS. As indicated, an employee’s perceived authentic leadership was highly correlated with trust, then moderately with

organizational identification, employee resilience, and flow. Trust was positively and significantly correlated with employee resilience.

Test of the measurement model

There were 5 latent variables (authentic leadership, flow, organizational identification, and trust) with corresponding 14 observed indicators constituting our measurement model, the measurement model revealed a satisfactory fit to the data based on literature criteria: $\chi^2 = 2535.14$, $df = 1147$, $\chi^2/df = 2.210$, $p < 0.001$; RMSEA = 0.037; RMR = 0.029; CFI = 0.97; GFI = 0.90; NFI = 0.95 (Akaike, 1987; Hu & Bentler, 1999; Kaplan, 2008).

Test of the structural model

The results of the hypothesized model, though yielded a good fit to our data, the standard path coefficient from trust to employee resilience was very small ($\beta = 0.01$, $p > 0.1$), thus, we deleted this path in the adjusted model (see Fig. 1). After deleting this path, the indices yielded better fit to our data: $\chi^2 = 183.953$, $\chi^2/df = 2.746$, $p < 0.001$; RMSEA = 0.044; RMR = 0.016; CFI = 0.992; NFI = 0.988; IFI = 0.992, and the Bollen-Stine bootstrap p -value was 0.001. The newly yielded chi-square (183.953) was lower than before (2535.14), and χ^2/df was below the critical value 3. The AIC value decreased slightly, which indicated that the deletion of this path was acceptable. All the indices were improved. As shown in Fig. 2, ellipses and rectangles represent latent variables and observed indicators, respectively. The values alongside the arrows represent regression weights, and those above rectangles represent reliability coefficients. The values beside ellipses represent squared multiple correlations, which are similar to r -squared values in multivariate linear regression.

Direct effects

Figure 2 shows predicting the relationship between variables. As shown in Fig. 2, a significant relationship was found between authentic leadership and employee resilience ($\beta = 0.36$, $p < 0.001$), which confirmed our hypothesis **H1**. The statistical results of the structural equation model by running the path diagram are revealed in Table 2 and Table 3. The Bootstrap program with deviation correction was repeatedly sampled 2000 times to test the significance of the mediation effect in the model. Results are reported based on the standardized estimates of direct effect and indirect mediation effect by the Maximum Likelihood estimation method.

Mediation effects

As indicated in Fig. 2, authentic leadership had a significant and positive effect on flow ($\beta = 0.51$, $p < 0.001$), flow had a significant and positive effect on employee resilience ($\beta = 0.39$, $p < 0.001$), in addition to the direct effect of authentic leadership on employee resilience, a partial mediating effect of flow in the positive relationship between authentic leadership and employee resilience was obtained, therefore, confirming our hypothesis **H2**. Besides, as authentic leadership positively predicted organizational identification ($\beta = 0.18$, $p < 0.01$), and organizational identification significantly predicted employee resilience ($\beta = 0.16$, $p < 0.001$), taking into consideration of the direct effect of authentic leadership and employee resilience, hence, a partial mediation effect of organizational identification was found; therefore, our hypothesis (**H3**) was confirmed. However, the mediation effect of trust, as hypothesized in **H4**, was not supported by the present data set, though authentic leadership positively and significantly predicted trust ($\beta = 0.89$, $p < 0.001$), the effect of trust on employee resilience was barely large ($\beta = 0.01$, $p < 0.001$) therefore this path was deleted, so, **H4** was rejected. Interestingly, trust, together with organizational identification, played a chain mediation role on the path between authentic leadership and employee resilience: authentic leadership to trust ($\beta = 0.89$, $p < 0.001$), trust to organizational identification ($\beta = 0.36$, $p < 0.001$), organizational identification to employee resilience ($\beta = 0.16$, $p < 0.001$). Finally, the organizational identification was predicted by flow ($\beta = 0.25$, $p < 0.001$) and by trust ($\beta = 0.36$, $p < 0.001$), confirming our hypotheses **H5** and **H6**.

Discussion

Considering the severe challenges posed by the COVID-19 pandemic to organizational employees, the importance of resilience in coping with such challenges, as well as the significant role of authentic leaders in facilitating them building resilience, the aim of this study was to test the association between authentic leadership and employee resilience and investigate the mediating role of flow, organizational identification, and trust within the association. The results revealed from 901 organizational employees demonstrated that flow and organizational identification independently mediated the effect of authentic leadership on employee resilience. Besides, authentic leadership could positively predict employee resilience through the chain mediation effect of “flow-organizational identification” and “trust-organizational identification”. Taken together, these findings contribute to a deeper understanding of the

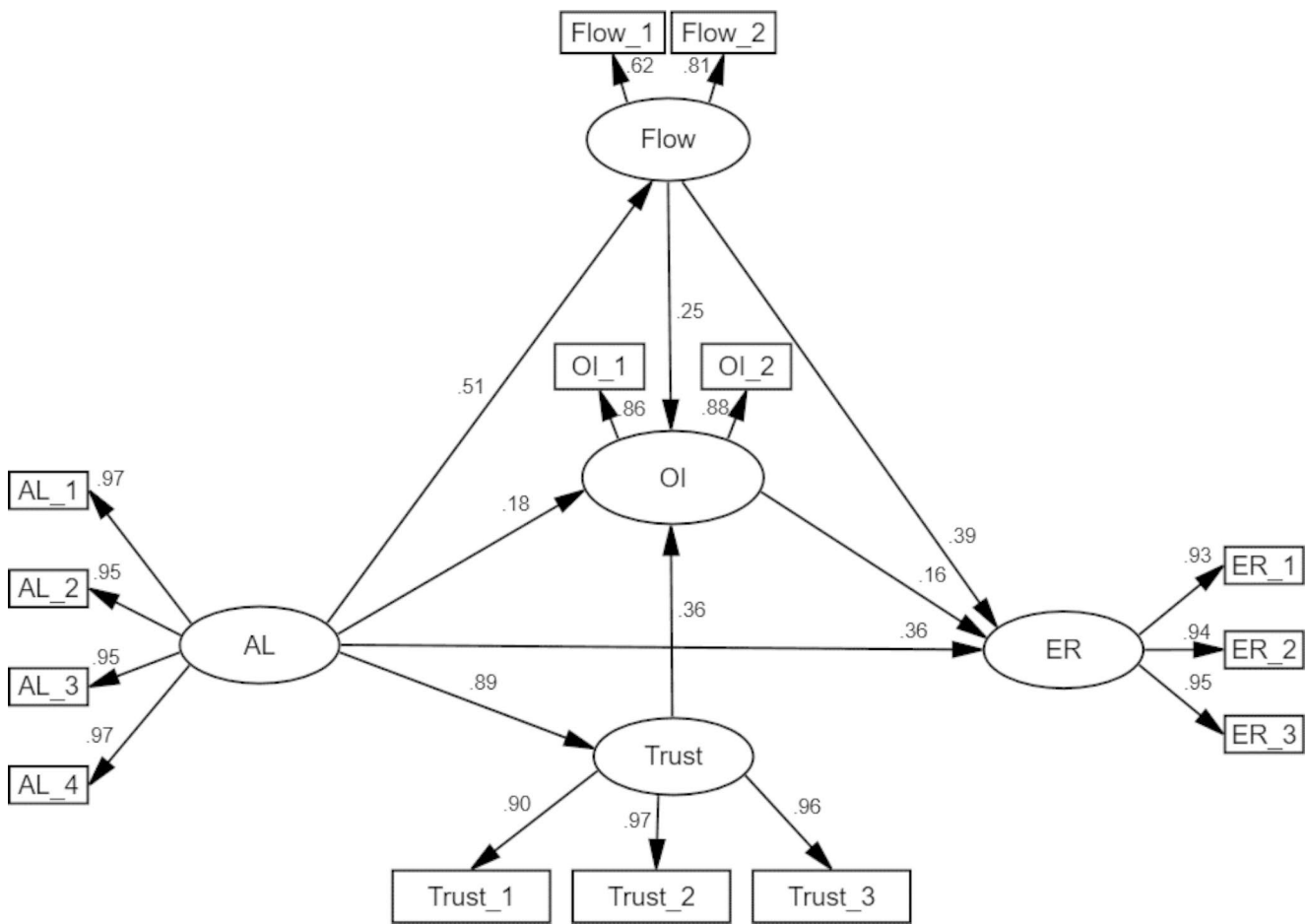


Fig. 2 The adjusted model

Note: All the variables are packed. Al_1, Al_2, Al_3, Al_4, respectively refer to self-awareness, relational transparency, internalized moral perspective, and balanced processing; Trust_1, Trust_2,

Trust_3, respectively refer to affective trust, cognition trust, and competence trust; flow_1 and flow_2 contain items 2/3/4 and items 5/6/7, OI_1 contains items 1/4/5, OI_2 contains items 2/3/6; ER_1, ER_2, and ER_3 respectively contain items 1/4/9, items 2/6/7 and items 3/5/8

Table 2 Total, direct and indirect effect of each path

	Direct	S.e.	Significance		Indirect	S.e.	Significance	
			Percentile 95% CI	Bias-corrected 95% CI			Percentile 95% CI	Bias-corrected 95% CI
AL → Trust	0.890	0.018	0.002	0.003				
AL → Flow	0.514	0.047	0.002	0.002				
AL → OI	0.181	0.089	0.039	0.041	0.450	0.079	0.002	0.001
AL → ER	0.360	0.050	0.002	0.002	0.299	0.034	0.002	0.002
Trust → OI	0.359	0.088	0.002	0.001				
Trust → ER	0	0	0.056	0.017	0.002	0.002
Flow → OI	0.255	0.054	0.002	0.002				
Flow → ER	0.390	0.052	0.002	0.002	0.040	0.017	0.002	0.001
OI → ER	0.156	0.048	0.002	0.002				

Note. AL: authentic leadership, OI: organizational identification, ER: employee resilience. Total, direct, and indirect, respectively, means total effect, direct effect, and indirect effect. There are two kinds of significance level, the left one is based in percentile method 95% (two-tailed), and the right one is based in bias-corrected percentile method 95% (BC, two-tailed). $p < 0.01$ indicates significant inspection.

Table 3 Results of hypotheses test

Hypothesis	Path	Standardized Estimate	Non-standardized Estimate	S.e	C.R	<i>p</i>	Decisions
H1	AL→ER	0.360	0.286	0.029	9.923	0.000	Supported
H2	AL→Flow→ER	0.200	0.201				Supported
	AL→Flow	0.514	0.4343	0.031	11.194	0.000	
	Flow→ER	0.390	0.464	0.091	9.045	0.000	
H3	AL→OI→ER	0.028	0.023				Supported
	AL→OI	0.181	0.172	0.068	2.536	0.001	
	OI→ER	0.156	0.131	0.032	4.055	0.000	
H4	AL→Trust→ER						Rejected
	AL→Trust	0.890	0.932	0.020	45.755	0.000	
	Trust→ER						
H5	Flow→OI	0.255	0.262	0.062	5.869	0.000	Supported
H6	Trust→OI	0.359	0.327	0.062	5.285	0.000	Supported

associations between these factors and suggest that authentic leaders shed light on employee resilience through flow, organizational identification, and trust.

Correlational analysis indicating that authentic leadership was positively related to flow filled the literature gap by adding additional value to the leadership-flow association. Since previously validated associations were focused on shared leadership with flow (Aube et al., 2018), servant leadership with flow (Jin et al., 2017), and transformational leadership with flow (Schermuly & Meyer, 2020), neglecting the authenticity of leaders in facilitating their employees' enjoyable intrinsic optimal experience (flow) that could help to build resilience. Similarly, the association between authentic leadership and employee resilience has also filled the literature gap, by extending paradoxical leadership (Franken et al., 2020) and humble leadership (Zhu et al., 2019), to authentic leadership in a broader sense investigating authentic leadership-employee resilience association.

Our measurement model indicated that authentic leadership is associated with employee resilience, which in some sense supported our hypothesis **H1**: the beneficial role of authentic leaders is for flourishing their followers (Alilyani et al., 2018; Farid et al., 2020; Neider & Schriesheim, 2011; Townsen et al., 2020; Walumbwa et al., 2008, 2011; Zhang et al., 2020), and for fostering positive team climate (Kinunnen et al., 2016), authentic leadership facilitates support for employees coping with potential adversities and constant challenges (Gardner & Schermerhorn, 2004; Lengnick-Hall et al., 2011). Moreover, the measurement model also confirmed prior findings regarding the association of authentic leadership with organizational identification (Avolio et al., 2004; Kim et al., 2018; Sluss & Ashforth, 2008; Walumbwa et al., 2008), and with employees' trust (Farid et al., 2020; Iqbal et al., 2019). In addition, the positive association of flow to organizational identification (Mao et al., 2016), and the trust-organizational identification association (Lisbona et al., 2020) were also confirmed by our empirical results, thus providing support for **H5** and **H6** in the present work.

Our structural model depicted a more detailed underlying mechanism on how the authentic leadership might predict employee resilience. Specifically, with regard to hypothesis **H2**, the specific indirect effect of authentic leadership on employee resilience through flow was shown to be significant, which supported the flow mediation model. That being said, employees who perceive higher levels of authenticity from their leaders, tend to experience more enjoyable and intrinsic flow, thereafter, embrace a higher frequency of flow experience during the work, which in turn helps them build and maintain stronger resilience. In addition to the such indirect effect of authentic leadership on employees' resilience as discussed, the direct effect of authentic leadership on flow was also exhibited, thus provided additional concrete evidence supporting prior validated research on the warm role authentic leaders played within the cold entity of an organization in facilitating employees' flow experience (Aube et al., 2018; Jin et al., 2017; Schermuly & Meyer, 2020), and supported that authentic leadership and flow are powerful in building employee resilience at work (Luthans & Avolio, 2003). More generally, therefore, this part of the results provided empirical evidence supporting flow theory, as flow fosters employees' positive psychological capacities, thereby predicting positive self-development and finally facilitating stronger resilience (Csikszentmihalyi et al., 2014; Luthans et al., 2007). Specifically, the flow was found to predict employee resilience, which contributed to filling the gap pertaining to the positive outcome of flow experience in working contexts. This result is also consistent with related research showing how flow at work positively impacts on person's relative day-specific state of well-being recovering (i.e., feeling refreshed) in the morning (Debus et al., 2014). As flow has been suggested to be effective in facilitating enjoyment, well-being, and physical and mental health for employees (Bakker, 2008; Ullen et al., 2012), flow can be considered to have "flowering" effects by building resilience under working conditions (Fullagar & Delle Fave, 2014).

As for the other mediating factor-organizational identity-being proposed in **H3**, our results also demonstrated a partial mediation. That being said, organizational employees who perceived a higher level of authenticity from their leader tended to have a higher level of identification towards their organization, therefore, demonstrated a higher level of resilience. Such a finding, in some sense, provided support for previous research according to which employees tend to believe that their leaders are on behalf of corporate image (Schein, 1985), thereby, followers' identification with their authentic leaders may lead to their identification with the organization (Carmeli et al., 2011; Fallatah et al., 2017). Besides, in line with our expectations, organizational identification and employee resilience also show a close relationship, which supported **H5**. Building on the social exchange theory (SET; Blau, 1964) that posits the principle of “*social economics*” during the interpersonal process, an individual with a higher level of organizational identification may view more of himself or herself as a part or insider of the organization, which may be conducive of their effort when engaging with resilient reactions in the face of workplace adversity (Zhu et al., 2019). Employees with a higher level of organizational identification can receive more support and a sense of belonging from their organizations, hence being driven to cultivate themselves to finally demonstrate much more resilience. In conclusion, leaders with higher authenticity can foster their followers with a higher level of organizational identification, thereby predicting their followers' higher resilience.

With regard to the proposed mediation role of trust in authentic leadership and employee resilience (**H4**), our results failed to validate such an assumption. However, interestingly, together with organizational identification, trust, and organizational identification co-play a chain mediation within authentic leadership and employee resilience relationship. One possible reason could be that employees' resilience is more likely to be cultivated by macro-organizational factors, such as organizational context (Kuntz et al., 2016; Lengnick-Hall et al., 2011) and organizations' capital (Brown et al., 2018; Mayunga, 2007). As for trust, this micro factor comprising belief, faith, and reliance (Kreitner et al., 1998; Robbins et al., 1999) that the employees perceive from their leaders may not be sufficient for enhancing their resilience. The direct positive relationship between authentic leadership and employees' trust in their leaders is in accordance with previous studies (Farid et al., 2020; Heyns et al., 2015; Hsieh & Wang, 2015; Iqbal et al., 2019; Zakir et al., 2019), confirming that the authenticity of a leader is strongly associated with his or her follower's trust.

Moreover, the results of the present data set revealed a positive association between work-related flow and organizational identification (**H5**), which is consistent with a

previous study (Mao et al., 2016), and generalized into a more specific context in the construction engineering organizational context. This finding significantly contributes to the existing literature by extending the predicted association between flow and organizational identification from a broad context to a specific working context during the challenge of the COVID-19 pandemic. Finally, as hypothesized, trust can also positively influence employees' organizational identification (**H6**), which concurs with relative literature (Edwards & Cable, 2009; Lisbona et al., 2020).

To sum up, the current work, to our best knowledge, endeavors the first effort trying to uncover authentic leadership-employee resilience, taking three prominent positive psychological factors into consideration: flow experience - an optimal universal human experience being widely applied in a variety of fields but being neglected in an organizational context (Weintraub et al., 2021); organizational identification - a protective buffer for well-being and social support but is lack of attention during crises such as the present COVID-19 turbulent context (Drury & Reicher, 2008; Templeton et al., 2020); and trust - which may encourage creating a secure psychological environment where resilient employees feel secure in their jobs despite the adversity, therefore, leading to organization's business continuity and quick recovery (Saad et al., 2020). The revealed two independent mediations and chain mediation provide support for pathways building employee resilience and contribute theory and literature as well as practical interventions directed at increasing employee resilience in Chinese culture.

Implication

The current study contributes to the existing literature on authentic leadership and employee resilience, by giving a more comprehensive understanding of the important contributing factors from a positive organizational psychology perspective: such as work-related flow, organizational identification, and trust. Our research fills the theoretical gap related to the scarcity of studies about the relationship between work-related flow and employee resilience, as well as the relationship between organizational identification and employee resilience. The present study also provides evidence indicating the power of the positive enjoyable experience of flow and organizational identification in facilitating employee resilience, especially under specific challenging situations posed by the COVID-19 pandemic. Moreover, this research also emphasizes the great influence of the authenticity of leaders within the Chinese cultural context and empirically confirms that, in a challenging period such as the COVID-19 pandemic, authentic leadership can be fundamental for the cultivation of employee resilience. This could be achieved by promoting flow experience and

organizational identification of employees, which goes beyond the existing resilience-building models (Bardoel et al., 2014; Britt et al., 2016; Rego et al., 2017). Besides, our study is also the first to explore the underlying mechanism of how employee resilience is predicted by authentic leadership during a severe scenario such as the COVID-19 pandemic.

From the managerial perspective, the present result has suggested the positive function of authentic leadership in cultivating and maintaining employee resilience, which contributed to resilience development programs as well as to leadership training programs. Besides, the positive mediating role of flow and organization identification shows that organizations should pay attention to cultivating employees' flow experience by setting appropriate and clear organizational goals that could be achievable along with stretching employees' skills, providing prompt and constructive feedback, providing opportunities to stretch employees' skills and capabilities in coping with COVID-19 challenges, and providing friendly situations and working context facilitating work performance so as to increase their sense of belongingness and identification as a part of the organization, especially under critical turbulent situations like the present pandemic contingencies.

Limitations and avenues for future research

There are several limitations that are worth noting in order to suggest possible directions for future research. First, the one-time cross-sectional data taken in this study hindered the reference of causality. Therefore, in the ongoing work, a longitudinal design to examine authentic leadership-employee resilience may be more persuasive in order to paint a more comprehensive picture. Secondly, our sample was limited to construction project organizations in China, so we should be careful in generalizing our findings to other industrial fields or organizational contexts. Another limitation arising from the excessive homogeneity of the study population is that our sample is not normally distributed. It may therefore be beneficial to retest and validate our findings in various other industries and/or other cultural contexts to promote a more comprehensive understanding of how to promote employees' resilience through authentic leaders in future work.

Author contributions All authors listed have made substantial, direct and intellectual contributions to the work, and approved it for publication.

Funding This work was supported by National Natural Science Foundation of China (Grant Nos.: 71801180, 72271205, 31800942, and 71871201), Applied Psychology Research Center of Sichuan Province (Grant No., CSXL-22101), and the 2022 Graduate Students' Educational Research Program of Southwest Jiaotong University (YJG5-

2022-Z019-2022).

Declarations

Conflict of interest All authors in this article declare that there is no conflict of interest.

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