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Service-sales ambidexterity and employee performance: a dual-path model of stress appraisal and regulatory focus

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As organizations increasingly adopt service-sales ambidexterity (SSA) to enhance performance and customer satisfaction, understanding its impact on employees has become crucial. While SSA has demonstrated organizational benefits, its influence mechanisms at the individual level remain underexplored. This study employed a cross-sectional design and used purposive sampling to collect data from 379 frontline employees in the healthcare, tourism, and education sectors in China's Pearl River Delta. Using partial least squares structural equation modeling (PLS-SEM), we examined how SSA influences employee performance through stress appraisals and regulatory focus. The findings reveal two distinct psychological pathways. When SSA is perceived as a challenge, it enhances performance by increasing motivation and proactive behavior. Conversely, when seen as a hindrance, it induces stress and role conflict, reducing performance. The positive influences of challenge stress appraisal outweigh the negative influences of hindrance stress appraisal. Moreover, employees with a promotion focus are more likely to interpret SSA as a challenge, amplifying its positive influences. In contrast, those with a prevention focus are more sensitive to risks, intensifying the negative influences of hindrance stress. The findings provide valuable insights into the complex interplay between individual psychological factors and employee performance in service-sales environments.

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Introduction

Although sales and service are typically regarded as two separate functions in a traditional organization, increasing market competition has prompted firms to restructure the setup of these functions (Gabler et al., 2017; Liao et al., 2025). Recently, service-sales ambidexterity (SSA), as a new form of organizational duality, has gradually become a strategic tool for many firms to enhance sales performance (Jasmand et al., 2012a; Shiue et al., 2021; Tremblay, 2025). SSA refers to the practice where employees provide customer service while simultaneously identifying potential sales opportunities, thereby integrating service with sales and promoting additional purchases (Ahmad et al., 2022; Liao et al., 2025). This ambidexterity not only helps create greater value for both buyers and sellers but also drives profit maximization by reducing operational costs (Hughes and Ogilvie, 2020; Ahmad et al., 2024; Badenas-Boldó et al., 2025).

Given the importance of SSA, motivating SSA has gained widespread recognition and attention from the academic community as a key strategy in the field of organizational management (Rapp et al., 2020; Shiue et al., 2021; Classen and Friedli, 2021; Liao et al., 2025). For example, Classen and Friedli (2021) identified eight organizational factors that drive SSA, expanding the theoretical framework on the antecedents of SSA. Gaan and Shin (2023) pointed out the key factors affecting the SSA in the retail industry and provided insights to address the challenges faced by retail stores. Similarly, Ahmad et al. (2024) provided an in-depth analysis of how to foster salesperson duality through a patchwork strategy. However, most of the existing studies have focused on exploring the influencing factors of SSA, over-emphasizing its positive aspects (Ahmad et al., 2021; Fujii, 2024), potentially overlooking the pitfalls and complexities that may be encountered during implementation. The studies by Sok et al. (2022) and Tremblay (2025) emphasize that although SSA brings certain positive returns to businesses, it also has negative influences. Therefore, the impact of SSA on employee performance is not unidimensional, but rather a dual process involving both positive and negative influences (Gabler et al., 2017; de Ruyter et al., 2020). Nonetheless, current literature seldom systematically reveals its dual impact mechanisms and lacks an in-depth understanding of its underlying psychological processes.

Employee performance refers to the extent to which an employee completes tasks and achieves work goals within a given period (Janssen and Van Yperen, 2004; Qalati et al., 2022). To better understand the dual effects of SSA on employee performance, we introduce the transaction stress theory for analysis (Lazarus and Folkman, 1987; Folkman, 2020). This theory posits that individuals engage in subjective cognitive appraisal when confronted with job demands, categorizing them as either challenge stress or hindrance stress. A challenge stress is perceived as an opportunity for growth and achievement, typically triggering proactive coping strategies (Folkman, 2020; Podsakoff et al., 2023). In contrast, a hindrance stress is viewed as obstacles that impede goal attainment, often leading to avoidance behaviors and the depletion of personal resources (Podsakoff et al., 2023; Pindek et al., 2024). This study conceptualizes challenge stress and hindrance stress appraisal as dual mediating variables in the relationship between SSA and employee performance. This dual-pathway model provides a more robust explanatory framework to understand how employees psychologically respond to ambidextrous role demands, thereby illuminating the internal mechanisms that lead to divergent performance outcomes under SSA.

Although transactional stress theory offers a valuable perspective for understanding how SSA leads to different stress perceptions and subsequently influences employee performance, it does not fully explain why employees exposed to similar SSA-

related role demands may exhibit divergent psychological responses. This reveals a theoretical gap: the lack of attention to individual-level motivational traits that shape how employees appraise and respond to such demands. To address this gap, we incorporate regulatory focus theory (RFT) (Brockner and Higgins, 2001; Lanaj et al., 2012), which identifies two distinct motivational orientations: promotion focus, characterized by a desire for growth, advancement, and accomplishment, and prevention focus, driven by the need for security, obligation, and the avoidance of negative outcomes. These regulatory focuses do not directly determine outcomes, but rather moderate how individuals interpret SSA-related demands (Luqman et al., 2021). Specifically, promotion-focused individuals are more likely to appraise SSA as a challenge, leading to more adaptive psychological responses, whereas prevention-focused individuals are more inclined to view SSA as a hindrance, eliciting more defensive reactions. By integrating RFT, we introduce an individual-level perspective into the SSA-stress appraisal relationship, offering a more comprehensive understanding of why the same role expectations may lead to fundamentally different experiences and outcomes across employees.

Therefore, this study investigates the relationship between SSA and employee performance by integrating cognitive stress appraisal with motivational orientation. We aim to address the following research questions:

- (1) How is employee performance related to SSA through challenge and hindrance stress appraisal?
- (2) How do individual differences in regulatory focus influence the way employees appraise and respond to SSA demands?
- (3) To what extent do the challenge and hindrance pathways differ in their relationships with performance?

To explore these questions, we propose a dual-path model grounded in transactional stress theory and further enriched by RFT. This study makes several important contributions to the literature on SSA and employee stress responses: (1) It examines the potential for SSA to elicit both positive and negative psychological performance, offering a more balanced and employee-centered perspective; (2) drawing on transactional stress theory, it develops a dual-pathway model in which SSA triggers both challenge and hindrance stress, thereby uncovering the cognitive mechanisms through which SSA influences performance; (3) by incorporating regulatory focus as a moderating variable, it identifies a boundary condition that shapes whether SSA is more likely to be appraised as a challenge versus a hindrance.

Theoretical grounding

Transactional stress theory. Transactional stress theory, as introduced by Lazarus and Folkman (1987), is a foundational framework for understanding how individuals perceive and respond to stress within their environment. The theory emphasizes that stress is not an inherent characteristic of a situation but rather a dynamic transaction that involves the person's cognitive appraisal of the event. This appraisal determines whether a person will experience stress and how they will cope with it (Folkman, 2020).

Transactional stress theory provides a refined lens for examining why SSA can be perceived as both challenge stress and hindrance stress. SSA, which entails the simultaneous management of service and sales roles, can be seen as a challenge stressor when employees view these dual demands as opportunities for professional growth, skill development, and the achievement of higher goals (Cavanaugh et al., 2000). In this case, ambidexterity is viewed as a positive, motivating factor that

encourages proactive engagement and the employment of active coping strategies, potentially leading to enhanced performance and personal advancement (Podsakoff et al., 2023; Xie et al., 2024; Xu et al., 2024). Conversely, SSA can also be experienced as hindrance stress when employees feel overwhelmed by the dual roles, experience role conflict, or lack the resources necessary to fulfill both service and sales responsibilities effectively (Cavanaugh et al., 2000). Such hindrance stress can result in passive avoidance behaviors, emotional exhaustion, and depletion of personal resources, adversely affecting employee performance and well-being (Podsakoff et al., 2023; Xie et al., 2024). Given the potential for both positive and negative influences, we refrain from proposing a direct relationship hypothesis between the two.

Regulatory focus theory (RFT). As a motivational framework, RFT offers a nuanced understanding of how individuals regulate behavior in pursuit of goals under varying contextual pressures (Brockner and Higgins, 2001; Luqman et al., 2021). Rather than assuming uniform responses to external demands, RFT posits that individuals operate through two distinct systems: a promotion focus, which is oriented toward hopes, advancement, and growth; and a prevention focus, which is oriented toward duties, safety, and loss avoidance (Brockner et al., 2004; Higgins and Pinelli, 2020). These regulatory orientations influence not only goal selection but also how individuals interpret ambiguous or demanding work environments (Wallace et al., 2016). Importantly, such motivational dispositions are chronically accessible and relatively stable, making them a critical factor in shaping individual-level psychological processes in organizational settings (Higgins and Pinelli, 2020).

The core tenet of RFT is that people differ in the way they approach goals and interpret situational demands based on their dominant regulatory orientation (Brockner and Higgins, 2001; Lanaj et al., 2012). This distinction leads to systematic differences in cognition, emotion, and behavior. While transactional stress theory explains how employees cognitively assess job demands as either challenge or hindrance stressors, it leaves open the question of why such appraisals vary across individuals. RFT fills this theoretical gap by suggesting that promotion-focused employees are more likely to interpret SSA as a meaningful challenge aligned with personal growth motives (Brockner et al., 2004; Higgins and Pinelli, 2020), thereby responding with proactive engagement. Conversely, prevention-focused employees, attuned to risk and the avoidance of failure (Brockner et al., 2004; Higgins and Pinelli, 2020), may perceive the same demands as threatening, thus experiencing heightened hindrance stress. Incorporating RFT into the model deepens our understanding of the boundary conditions under which SSA enhances or impairs employee performance and adds motivational depth to the cognitive appraisal process.

Literature review and hypotheses development

SSA and employees' challenge stress appraisal. SSA refers to employees' simultaneous engagement in service delivery and sales-related tasks (Jasmand et al., 2012a; Ahmad et al., 2022; Liao et al., 2025). This dual-role expectation increases task complexity and cognitive demands, requiring employees to manage service quality, identify customer needs, and achieve sales goals concurrently (Ahmad et al., 2022). However, these demands can also expand the scope of employees' work roles, creating conditions that foster professional growth, recognition, and skill development. According to transactional stress theory, role demands are more likely to be appraised as challenge stress when they are perceived to offer potential benefits and are accompanied by organizational resources or rewards (Webster et al., 2011).

Empirical studies support this interpretation. Jianfeng et al. (2022) found that frontline employees who viewed multitasking and dual-role demands as opportunities for growth were more likely to report challenge stress. Moreover, the sense of responsibility inherent in dual roles may further promote challenge appraisal (Ma et al., 2021a). Therefore, we propose the following hypothesis:

H1a: SSA is positively correlated with challenge stress appraisal.

Challenge stress appraisal and employee performance. Challenge stress refers to the positive psychological strain experienced by employees when they perceive demanding work situations as opportunities for growth, achievement, or learning (Cavanaugh et al., 2000; Webster et al., 2011; Podsakoff et al., 2023). According to transactional stress theory, when employees interpret heavy workloads or complex dual-role demands as sources of challenge stress, they are more likely to regard these demands as opportunities for personal growth and achievement (Webster et al., 2011; Podsakoff et al., 2023). These positive appraisals activate intrinsic motivation, foster goal-directed behaviors, and cultivate a sense of control and competence (Ma et al., 2021b). As a result, employees experiencing challenging stress tend to proactively seek feedback, acquire new skills, and expand their role responsibilities, all of which contribute to improved job performance. For instance, Xu et al. (2024) found that challenge stress enhances employees' task crafting and innovative performance in fast-paced work environments. Similarly, Huang and Gursoy (2024) demonstrated a positive effect of challenge stress appraisal on service performance. Therefore, we propose the following hypothesis:

H1b: Challenge stress appraisal is positively correlated with employee performance.

Drawing on transactional stress theory, we argue that SSA enhances employee performance through the challenge appraisal of work demands. In this context, employees are expected to simultaneously deliver high-quality service while achieving sales targets, a role that inherently involves complexity and tension. However, when these dual-role demands are appraised as opportunities for growth, achievement, or learning, rather than as threats, they are likely to be perceived as challenge stressors (Webster et al., 2011; Podsakoff et al., 2023). Such positive appraisals can, in turn, trigger higher levels of motivation, engagement, and proactive behavior, ultimately improving job performance (Huang and Gursoy, 2024; Xu et al., 2024). Therefore, we propose the following hypothesis:

H1c: Challenge stress appraisal mediates the relationship between SSA and employee performance.

SSA and employees' hindrance stress appraisal. Hindrance stress refers to the strain and negative effect experienced by individuals when they perceive certain job demands as obstacles to their goals, personal development, or work effectiveness (Cavanaugh et al., 2000; Mazzola and Disselhorst, 2019). The genesis of hindrance stress can stem from various sources, including vague job requirements and work standards, cumbersome work procedures, organizational politics, and job insecurity (Cavanaugh et al., 2000). Under the transactional stress theory, SSA can be categorized as a hindrance stressor, especially when the associated responsibilities are not clearly delineated or adequately supported. The complexity introduced by SSA can lead to ambiguous workflows and blurred job roles, which employees might interpret as a source of hindrance stress (Mazzola and Disselhorst, 2019; Sok et al., 2022). For instance, a salesperson tasked with enhancing customer service may experience role conflict, perceiving the dual demands as an obstacle to their

primary sales objectives (Sok et al., 2022). When employees sense that their expanded role surpasses their competencies or the scope of their control, or when they lack the resources necessary to meet these new expectations, the stress linked to hindrance intensifies (Gabler et al., 2017; Mazzola and Disselhorst, 2019). Therefore, we develop the hypothesis:

H2a: SSA is positively correlated with hindrance stress appraisal.

Hindrance stress appraisal and employee performance. When employees perceive their work demands as hindrance stressors, such as conflicting role expectations or unclear job responsibilities, the negative impact on job performance can be significant. Transactional stress theory suggests that hindrance stress leads individuals to focus on minimizing negative outcomes rather than pursuing personal growth or performance enhancement (Mazzola and Disselhorst, 2019). This shift in focus reduces proactive behavior, increases emotional exhaustion, and diminishes overall work engagement. Empirical studies provide strong support for this view, showing that employees who view their tasks as obstacles are more likely to experience burnout and lower job performance (Sawhney and Michel, 2022; Sok et al., 2022; Azeem et al., 2023). Furthermore, Azeem et al. (2025) found that when employees appraise their work tasks as excessively demanding, it negatively influences their attitudes toward work, leading to feelings of helplessness due to job demands, which may ultimately result in delays in task performance. Consequently, we hypothesize the following:

H2b: Hindrance stress appraisal is negatively correlated to employee performance.

Guided by transactional stress theory, the current study proposes that SSA can also lead employees to perceive work demands as hindrance stressors, which in turn suppresses their job performance. While SSA may present growth opportunities, its dual-role nature, requiring employees to simultaneously deliver high-quality service and achieve sales targets, can also create role conflict, ambiguity, and resource strain, especially when adequate support or clarity is lacking (Webster et al., 2011; Pindek et al., 2024). In such situations, employees may appraise SSA demands not as challenges but as obstacles that impede personal goals, drain psychological resources, and elicit feelings of frustration or overload. This hindrance stress appraisal reduces intrinsic motivation and narrows attention away from performance goals, resulting in disengagement, lowered persistence, and ultimately diminished job performance (Azeem et al., 2025; Kunzelmann et al., 2025). Therefore, we propose the following hypothesis:

H2c: Hindrance stress appraisal mediates the relationship between SSA and employee performance.

Regulatory focus as the boundary condition. RFT delineates two primary self-regulatory systems: promotion focus and prevention focus (Van Lange et al., 2011). Promotion focus refers to a motivational orientation centered on aspirations, growth, and the pursuit of positive outcomes, often involving risk-taking and opportunity seeking (Luqman et al., 2021). Prevention focus, in contrast, emphasizes fulfilling obligations, avoiding mistakes, and maintaining security, leading individuals to adopt a more cautious and risk-averse approach (Luqman et al., 2021).

In the context of SSA, which represents an organizational change and an external stimulus imposed on employees, how individuals process and respond to this stimulus is significantly influenced by their inherent regulatory focus (Boehlein and Baum, 2022). Drawing from the RFT, we propose that promotion regulatory focus plays a moderating role in the relationship between SSA and challenge stress appraisal. Specifically, the

positive effect of SSA on challenge stress is expected to be more pronounced among individuals with a higher level of promotion focus (Lichtenthaler and Fischbach, 2019). This is because individuals with a promotion focus are more likely to view the dual demands of service and sales as opportunities for advancement and personal growth (Baas et al., 2011a), aligning well with the nature of challenge stress. They are more inclined to seek out and capitalize on opportunities that promise reward and are, therefore, more responsive to the potential benefits of SSA. Empirical evidence supports this notion, with studies showing that individuals with a promotion focus are more likely to exhibit positive responses to job characteristics that offer the potential for growth and development (Kark et al., 2018; Lichtenthaler and Fischbach, 2019; Luqman et al., 2021).

Conversely, a prevention focus is expected to moderate the relationship between SSA and hindrance stress. Individuals with a prevention focus are more sensitive to potential threats and are driven by a desire to avoid negative outcomes (Lichtenthaler and Fischbach, 2019). When faced with the demands of SSA, these individuals may perceive the dual role as a source of potential failure or risk, leading to increased hindrance stress appraisal. They are more likely to focus on the potential negative consequences of not meeting the demands of the dual role, which can exacerbate feelings of being overwhelmed and constrained. Research has demonstrated that individuals with a prevention focus are more susceptible to stress and negative emotions when confronted with job demands that they perceive as threatening their ability to maintain safety and security (Baas et al., 2011b; Lichtenthaler and Fischbach, 2019; Luqman et al., 2021). Therefore, we propose the following hypotheses:

H3a: Promotion focus moderates the relationship between SSA and challenge stress appraisal, such that the positive relationship between SSA and challenge stress appraisal is stronger at higher levels of promotion focus.

H3b: Prevention focus moderates the relationship between SSA and hindrance stress appraisal, such that the positive relationship between SSA and hindrance stress appraisal is stronger at higher levels of prevention focus.

Following the established groundwork in H3a, which suggests that promotion focus strengthens the positive relationship between SSA and challenge stress appraisal, we extend this reasoning to the mediating role of SSA on employee performance. When employees exhibit a high level of promotion focus, the indirect effect of SSA on their performance through challenge stress appraisal is strengthened. Individuals with a strong promotion focus are inclined to approach goals with an eagerness for advancement and growth. When faced with the multifaceted challenges of SSA, these individuals are more likely to interpret these challenges as opportunities to achieve their aspirations. This proactive approach, fueled by a promotion focus, amplifies the role of challenge stress, leading to a more pronounced impact on employee performance.

Similarly, in alignment with H3b, which proposes that prevention focus intensifies the negative relationship between SSA and hindrance stress appraisal. That is, when the level of prevention focus is high, the negative indirect effect of SSA on employee performance through hindrance stress is exacerbated. Employees with a heightened prevention focus are more likely to be risk-averse and vigilant about potential threats to their security and responsibilities. Consequently, the additional demands and potential role conflicts inherent in SSA can be perceived as significant threats, thereby increasing the experience of hindrance stress appraisal. This heightened hindrance stress, in turn, can lead to a stronger negative effect on employee performance, as the focus shifts from proactive engagement to defensive protection

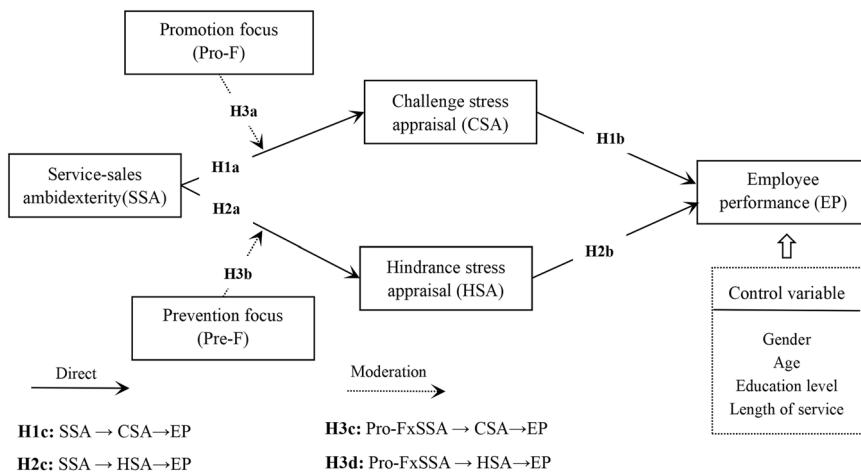


Fig. 1 The conceptual model of this study. Source: Authors own work.

Table 1 Demographic characteristics of respondents.

Attributes	Characteristic	Frequency	Percentage(%)
Gender	Male	193	50.923
	Female	186	49.077
Age	18-25	149	39.314
	26-35	105	27.704
	36-45	70	18.470
	More than 45	55	14.512
Education level	High school	55	14.512
	Junior college degree	127	33.509
	Bachelor's degree	169	44.591
	Master's or higher degree	28	7.388
Length of service	Less than 1 year	116	30.607
	1-3 years	103	21.177
	4-6 years	57	15.040
	7-10 years	61	16.095
	More than 10 years	42	11.082

Source: Authors own work.

against perceived obstacles. Therefore, we propose the following hypotheses:

H3c: Promotion focus moderates the positive indirect relationship between SSA and employee performance through challenge stress appraisal, such that this indirect relationship becomes stronger at higher levels of promotion focus.

H3d: Prevention focus moderates the negative indirect relationship between SSA and employee performance through hindrance stress appraisal, such that this negative indirect relationship becomes stronger at higher levels of prevention focus.

As shown in Fig.1, we propose a double-edged conceptual model of the influence of SSA on employee performance.

Methods

Participants and procedures. This study collected data through an online questionnaire targeting frontline employees in the Pearl River Delta(PRD) region of China. The participants worked in positions that involved both service delivery and sales responsibilities. This dual role is commonly found in sectors such as private healthcare, tourism, and education and training. Data were gathered in January 2024, a period aligned with

organizational year-end reviews, when employees typically reflect on their job performance and responsibilities

A purposive sampling strategy was used due to the specificity of the target group. Participants were recruited through several channels. First, the research team relied on university-enterprise partnerships, including internship programs and applied research collaborations. Additional support was provided by alumni referrals, industry contacts, and professional training institutions. In each case, human resource staff or team leaders helped distribute the survey to eligible employees. To be included, respondents had to meet three criteria: (1) be employed full-time in a frontline position, (2) have at least 6 months of tenure in the current role, and (3) engage in both service and sales tasks as part of their daily work. All participants provided informed consent before beginning the survey. The study received approval from the university's institutional ethics committee and was conducted in accordance with the Declaration of Helsinki.

To address potential common method bias (CMB), the questionnaire used randomized item sequences, reverse-coded questions, and varied response formats. A total of 600 responses were collected. After removing incomplete or low-quality submissions, including those completed unusually quickly or with uniform response patterns, 379 valid responses remained for analysis. Descriptive statistics of the sample are presented in Table 1.

Measures. This study employed internationally established scales. Before formal data collection, a pilot study was conducted with 30 frontline employees to examine the clarity, structure, and contextual relevance of the questionnaire items. Based on the feedback received, minor wording adjustments were made to improve clarity and alignment with local workplace terminology. All construct items were measured using a 7-point Likert scale. The complete list of measurement items is shown in Table 3.

Challenge stress and hindrance stress appraisals were measured using the scale developed by Cavanaugh et al. (2000), consisting of a total of 11 items. The challenge stress appraisal subscale included 6 items, which were adapted from the original challenge stressor scale related to workload. These items were revised to focus specifically on employees' subjective perceptions of challenge in the context of SSA, while maintaining one-to-one correspondence with the original items in terms of structure and meaning. The hindrance stress appraisal subscale consisted of 5 items, each of which preserved the original constructs, but was modified to reflect employees' perceived hindrances within the context of SSA.

Table 2 Normality test result (N = 379).

Constructs	Mean	S.D.	Skewness	Kurtosis
SSA	3.973	1.273	-0.057	-1.161
CSA	3.694	1.508	0.124	-1.318
HSA	4.046	1.457	-0.058	-1.179
Pro-F	3.697	1.775	0.045	-1.481
Pre-F	3.388	1.559	0.387	-0.985
EP	3.577	1.345	0.255	-0.912

Source: Authors own work.

SSA Service-sales ambidexterity, CSA Challenge stress appraisal, HSA Hindrance stress appraisal, Pro-F Promotion focus, Pre-F Prevention focus, EP Employee performance.

The SSA scale was adopted from Jasmand et al. (2012a) and consists of 12 items. It is primarily used to measure employees' simultaneous engagement in service and sales behaviors during customer interactions, meaning their performance to address customers' current issues while actively identifying and promoting potential sales opportunities.

Regulatory focus was measured using the scale developed by Shin et al. (2016), consisting of two dimensions: promotion focus and prevention focus, each measured with three items. Promotion focus reflects employees' motivation driven by growth and aspirations, while prevention focus captures motivation based on duties, responsibilities, and the need to avoid failure. The original items, which assessed team-level motivation, were adapted into an employee self-assessment format by changing the subject to "I" while preserving the original phrasing and meaning as much as possible.

Employee performance was measured using the five-item scale developed by Janssen and Van Yperen (2004). In this study, the scale was adapted into a self-report format, allowing employees to evaluate their task performance. The items assess the extent to which employees perceive themselves as meeting formal job requirements, fulfilling job responsibilities, and avoiding neglect of essential duties, with one reverse-coded item included to reduce response bias.

Finally, we control for gender, age, educational level, and length of service. These variables may have potential influences on the exogenous variables in our model (Zhong et al., 2022; Fein et al., 2023; Fujii, 2024). Controlling for these demographic and contextual characteristics helps isolate the effects of the primary variables of interest and enhances the internal validity of the findings.

Statistical technique. This study employed partial least squares structural equation modeling (PLS-SEM) using SmartPLS 4.0 to test the proposed model. PLS-SEM is appropriate given the inclusion of multiple latent constructs, as well as the examination of mediation (challenge and hindrance stress appraisal) and moderation (regulatory focus)(Hair et al., 2019). This research is prediction-oriented, which aligns with the strengths of PLS-SEM (Hair et al., 2019). Moreover, our sample size of 379 meets recommended thresholds (Kock and Hadaya, 2018; Ali et al., 2018). The use of PLS-SEM is also supported by prior studies in the field of organizational and service research (Hair et al., 2011; Akter et al., 2017), where complex models and interaction effects are common.

Results

Normality test. Although PLS-SEM is commonly characterized as a distribution-free method, assessing the normality of the data remains a critical preliminary step (Sarstedt et al., 2022; Vaithilingam et al., 2024). This is because severely non-normal data can still affect the accuracy of parameter estimates and undermine the

statistical validity of the findings (Vaithilingam et al., 2024). In this study, univariate normality was assessed for all key constructs included in the model. As shown in Table 2, skewness values range from -0.058 to 0.387, while kurtosis values range from -1.481 to -0.912. These values fall well within the commonly accepted threshold of ± 2 , indicating no substantial deviation from normality across the variables (Vaithilingam et al., 2024).

Common method bias (CMB) test. Since this study collected self-reported data for both predictors and outcomes within a single questionnaire, there was a potential risk of CMB. To assess this, we conducted Harman's single-factor test. This test examines whether the majority of the variance in all measured items can be attributed to a single latent factor. In this study, the first unrotated factor explained only 28.838% of the variance, indicating that CMB is unlikely to pose a serious threat (Podsakoff et al., 2003). However, the single-factor test is a relatively simplistic approach that may not adequately account for the various sources of common method bias, particularly when the method bias is more complex or when multiple substantive factors are involved.

Moreover, we employed the common method factor technique to control for potential CMB. This approach introduces a theoretically neutral latent factor into the measurement model, with all measurement items loading onto both their theoretical constructs and the method factor (Podsakoff et al., 2003; Liang et al., 2007). By comparing the variance explained by each item's theoretical construct and the method factor, results indicated that the average variance explained by the theoretical constructs was 0.678, whereas the variance explained by the method factor was only 0.033 (see Supplementary materials for details). The ratio of substantive to method variance was ~21:1, and most of the path loadings from the method factor were not statistically significant, further suggesting its limited influence (Liang et al., 2007). Therefore, the structural estimates are unlikely to have been substantially affected by CMB.

Measurement model analysis. The analysis of the measurement model is a critical step in ensuring the psychometric integrity of the constructs used in this study. We employed a two-step approach as recommended by Anderson and Gerbing (1988), which involves assessing the measurement model's reliability and validity before testing the structural model. To assess reliability, we calculated composite reliability (CR) and Cronbach's α for each construct. All CR values exceeded the recommended threshold of 0.700, and the Cronbach's α values were similarly satisfactory. These results collectively confirm the internal consistency and reliability of the measures.

Convergent validity, which is essential for establishing the one-dimensionality of the constructs, was evaluated using average variance extracted (AVE) and factor loadings. As shown in Table 3, all AVE values surpassed the recommended level of 0.500, with the lowest being 0.575 for SSA and the highest at 0.831 for promotion focus, thereby fulfilling the criteria for convergent validity. Moreover, all factor loadings range from 0.700 to 0.962, further providing strong evidence of convergent validity (Hair et al., 2019).

To assess discriminant validity, we first applied the Fornell-Larcker criterion, which posits that the AVE for a construct should be greater than the shared variance between that construct and other constructs in the model. As shown in Table 4, the square root of the AVE for each construct exceeded its correlations with all other constructs, satisfying the threshold proposed by Fornell and Larcker (1981). While this result provides preliminary support, this criterion may lack sensitivity in detecting discriminant validity issues. Therefore, we also

Table 3 Results for reflective measurement models.

Constructs	Items	Loading
Service-sales ambidexterity(SSA)(Cronbach's $\alpha = 0.933$; CR = 0.942; AVE = 0.575)	SSA1: I usually try to calm complaining customers, so that we can jointly handle their complaints about their products. SSA2: I usually provide solutions to customers' concerns related to the products they currently own. SSA3: Having identified the customers' exact problem with their products, I solve it in a reliable way. SSA4: I usually listen attentively to customers in order to take appropriate action to handle their concerns regarding their products. SSA5: I usually pay attention to the customers' questions about their products to answer them correctly. SSA6: Making sure that I fully understand the reason why the customers contact me allows me to better help them with their questions and concerns regarding their products. SSA7: I usually explore potential matches between the customers' needs and the features of a product which they do not currently own. SSA8: I usually gather as much customer information as possible to offer a suitable product to customers. SSA9: I usually try to identify good ways of familiarizing customers with another product that can satisfy their needs. SSA10: I usually ask questions to assess whether the customers would be willing to buy an additional product. SSA11: I hardly neglect a good opportunity to advise customers of a product which they could benefit from. SSA12: I usually offer an additional product which meets the customers' needs best.	0.747 0.764 0.739 0.735 0.772 0.770 0.748 0.767 0.775 0.785 0.795 0.700
Challenge stress appraisal(CSA)(Cronbach's $\alpha = 0.922$; CR = 0.939; AVE = 0.720)	CSA1: The number of service and sales tasks I need to handle makes my job feel meaningfully challenging. CSA2: The time I devote to managing both service and sales tasks reflects the demanding and challenging nature of my role. CSA3: Completing both service and sales tasks within limited time frames is a challenge that pushes me to perform better. CSA4: The time pressure from balancing service and sales activities stimulates me to stay focused and effective. CSA5: Being responsible for both service and sales outcomes challenges me in a way that helps me grow professionally. CSA6: The broad scope of handling both service and sales tasks makes my job feel complex and positively challenging.	0.854 0.858 0.823 0.843 0.855 0.858
Hindrance stress appraisal(HSA)(Cronbach's $\alpha = 0.894$; CR = 0.922; AVE = 0.703)	HSA1: Organizational politics around service and sales decisions reduce my ability to perform both roles effectively. HSA2: I often find it unclear what is expected of me when balancing both service and sales tasks. HSA3: Simultaneously performing both service and sales tasks increases the complexity of my work and creates difficulties in task execution. HSA4: Managing both service and sales responsibilities makes me feel uncertain about my job security. HSA5: Managing both service and sales tasks feels disconnected from real career advancement, which makes me feel stuck.	0.841 0.839 0.827 0.843 0.843
Promotion focus(Pro-F)(Cronbach's $\alpha = 0.908$; CR = 0.936; AVE = 0.831)	Pro-F1: I take chances at work to maximize my goals for advancement. Pro-F2: If my job did not allow for advancement, I would likely find a new one. Pro-F3: At work, I am motivated by my hopes and aspirations.	0.879 0.962 0.892
Prevention focus(Pre-F)(Cronbach's $\alpha = 0.878$; CR = 0.919; AVE = 0.791)	Pre-F1: I concentrate on completing my work tasks correctly to increase my job security Pre-F2: At work, I focus my attention on completing my assigned responsibilities. Pre-F3: I focus my attention on avoiding failure at work.	0.885 0.832 0.948
Employee performance(EP)(Cronbach's $\alpha = 0.873$; CR = 0.908; AVE = 0.666)	EP1: I always complete the duties specified in my job description. EP2: I meet all the formal performance requirements of my job. EP3: I fulfill all the responsibilities required by my job. EP4: I never neglect any aspects of my job that I am obligated to perform. EP5: I often fail to perform essential duties. (Reverse)	0.798 0.820 0.900 0.835 0.718

Source: Authors own work.

employed the heterotrait-monotrait (HTMT) ratio, which compares the variance shared between a construct and other constructs outside its nomological net to the variance accounted for by the construct itself. All HTMT values were

well below the recommended cut-off of 0.85 (Henseler et al., 2015), with the highest value being 0.497. These findings jointly confirm adequate discriminant validity across the model constructs.

Structural model analysis. The evaluation of the structural model involves not only examining the magnitude and significance of the path coefficients but also assessing model fit among endogenous constructs, multicollinearity, the coefficient of determination (R^2), and predictive relevance (Q^2) (Hair et al., 2019; Legate et al., 2023). In this study, the value of the standardized root mean square residual (SRMR) was 0.048, which is below the recommended threshold of 0.08, indicating a good model fit (Cho et al., 2020). Furthermore, all constructs exhibited acceptable levels of multicollinearity (VIF < 3) (Hair et al., 2019). Lastly, the R^2 values for all endogenous variables met the recommended threshold of 0.19 (Chin, 1998), and all Q^2 values were above 0 (Hair et al., 2019). These results suggest that the model not only

explains a substantial proportion of variance in the outcome variables but also demonstrates strong predictive relevance.

Using SmartPLS 4.0, we employed PLS-SEM to examine the direct and indirect influences of SSA on employee performance, with challenge stress appraisal and hindrance stress appraisal as mediators. The model estimation was conducted using a non-parametric bootstrapping procedure with 5,000 resamples. As shown in Table 5, the results reveal that SSA is significantly positively related to challenge stress appraisal ($\beta = 0.454$, $p < 0.001$), supporting H1a, and challenge stress appraisal positively predicts employee performance ($\beta = 0.479$, $p < 0.001$), supporting H1b. In addition, SSA is significantly positively related to hindrance stress appraisal ($\beta = 0.459$, $p < 0.001$), supporting H2a, while hindrance stress appraisal is negatively related to employee performance ($\beta = -0.161$, $p < 0.001$), supporting H2b.

Regarding the indirect relationships, SSA shows a significant positive indirect relationship with employee performance through challenge stress appraisal ($\beta = 0.218$, $p < 0.001$), providing support for H1c. Meanwhile, the indirect relationship between SSA and employee performance through hindrance stress appraisal is significant and negative ($\beta = -0.074$, $p < 0.001$), supporting H2c. A comparison of the two mediation paths indicates that the positive indirect relationship through challenge stress appraisal is stronger than the negative indirect relationship through hindrance stress appraisal. These results suggest that SSA exerts both beneficial and detrimental influences on employee performance via dual appraisal mechanisms, with challenge stress appraisal playing a stronger mediating role in enhancing employee outcomes.

Using SmartPLS 4.0, we further examined the moderating roles of promotion focus and prevention focus on the relationship between SSA, stress appraisal (challenge vs. hindrance), and employee performance. Interaction terms were tested using 5000 bootstrap samples to assess the significance of the moderation effects. The results are shown in Table 6.

The results reveal that promotion focus positively moderates the relationship between SSA and challenge stress appraisal ($\beta = 0.364$, $p < 0.001$), supporting H3a. This indicates that a

Table 4 Discriminant validity analysis.

Constructs	Fornell-larcker criterion					
	1	2	3	4	5	6
1. SSA	0.758					
2. CSA	0.454	0.848				
3. EP	0.210	0.449	0.816			
4. HSA	0.460	0.164	-0.084	0.839		
5. Pre-F	-0.021	0.030	0.136	-0.065	0.890	
6. Pro-F	-0.069	0.091	0.118	-0.075	0.047	0.912
Constructs	HTMT ratio					
	1	2	3	4	5	6
1. SSA	—					
2. CSA	0.473					
3. EP	0.216	0.497				
4. HSA	0.483	0.178	0.093			
5. Pre-F	0.057	0.045	0.149	0.064		
6. Pro-F	0.082	0.084	0.115	0.076	0.060	—

Source: Authors own work.

The bold elements are the square roots of AVE, SSA Service-sales ambidexterity, CSA Challenge stress appraisal, HSA Hindrance stress appraisal, Pro-F Promotion focus, Pre-F Prevention focus, EP Employee performance.

Table 5 Direct and mediated (indirect) effects test results.

Path	β -value	LLCI	ULCI	p-value	R^2	Q^2	VIF	Support
H1a	SSA \rightarrow CSA	0.454	0.373	0.534	0.000	0.206	0.146	1.000 Yes
H1b	CSA \rightarrow EP	0.479	0.398	0.565	0.000			1.044 Yes
H1c	SSA \rightarrow CSA \rightarrow EP	0.218	0.164	0.279	0.000			Yes
H2a	SSA \rightarrow HSA	0.459	0.373	0.548	0.000	0.211	0.146	1.000 Yes
H2b	HSA \rightarrow EP	-0.161	-0.241	-0.075	0.000			1.028 Yes
H2c	SSA \rightarrow HSA \rightarrow EP	-0.074	-0.115	-0.034	0.000	0.234	0.147	Yes

Source: Authors own work.

SSA Service-sales ambidexterity, CSA Challenge stress appraisal, HSA Hindrance stress appraisal, EP Employee performance, LLCI Lower-limit of confidence interval, ULCI Upper-limit of confidence interval.

Table 6 Moderating effects test results.

Path	β -value	LLCI	ULCI	p-value	R^2	Q^2	VIF	Support
H3a	Pro-F \times SSA \rightarrow CSA	0.364	0.115	0.433	0.000	0.346	0.245	1.004 Yes
H3b	Pre-F \times SSA \rightarrow HSA	0.262	0.071	0.347	0.000	0.288	0.199	1.015 Yes
H3c	Pro-F \times SSA \rightarrow CSA - \rightarrow EP	0.174	0.055	0.219	0.000	0.234	0.157	Yes
H3d	Pre-F \times SSA \rightarrow HSA - \rightarrow EP	-0.042	-0.07	-0.009	0.006			Yes

Source: Authors own work.

SSA Service-sales ambidexterity, CSA Challenge stress appraisal, HSA Hindrance stress appraisal, Pro-F Promotion focus, Pre-F Prevention focus, EP Employee performance, LLLCI Lower-limit of confidence interval, ULLCI Upper-limit of confidence interval.

stronger promotion focus amplifies the positive influence of SSA on employees' challenge stress appraisal. Furthermore, the interaction between promotion focus and SSA also strengthened the positive indirect influence of SSA on employee performance through challenge stress appraisal ($\beta = 0.174$, $p < 0.001$), thus supporting H3c. These findings suggest that employees with a stronger promotion focus are more likely to interpret SSA as a challenging opportunity, thereby enhancing their performance via elevated challenge stress appraisal.

In contrast, prevention focus was found to positively moderate the relationship between SSA and hindrance stress appraisal ($\beta = 0.262$, $p < 0.001$), supporting H3b. This implies that a stronger prevention regulatory focus intensifies the positive association between SSA and employees' hindrance stress appraisal. Moreover, the interaction between prevention focus and SSA has a significant negative influence on employee performance through hindrance stress appraisal ($\beta = -0.042$, $p < 0.01$), supporting H3d. These findings suggest that individuals with a high prevention focus are more likely to perceive SSA as a threat or burden, thereby exacerbating the negative influence of SSA on performance through increased hindrance stress.

Finally, we examined the influences of the control variables. As shown in Table 7, age, education, length of service, and gender did not exhibit statistically significant effects on employee performance (all $p > 0.05$), suggesting that these variables have limited explanatory power in the current model. However, the positive influence of age on performance approached marginal significance ($\beta = 0.090$, $p = 0.088$), its influence remains limited.

Robustness checks. To examine potential endogeneity issues within the model, this study employed the Gaussian copula (GC) method, which does not require instrumental variables, to ensure the robustness of the results (Hair et al., 2019; Sarstedt et al., 2020; Vaithilingam et al., 2024). As shown in Table 8, the p -values associated with the copula coefficients for all paths exceeded 0.05 (ranging from 0.39 to 0.96), indicating that none of the copula terms are statistically significant. These results indicate that the

model does not suffer from endogeneity (Sarstedt et al., 2020; Vaithilingam et al., 2024).

Discussion

This study, grounded in transactional stress theory and RFT, explores how SSA influences employee performance through the pathway of subjective stress appraisal. It also examines the moderating role of individual motivational orientations in this process. The findings confirm the dual nature of SSA, indicating that different cognitive appraisal mechanisms may lead to divergent outcomes. This provides a meaningful theoretical extension to existing SSA research.

First, the study finds that SSA is significantly related to employees' appraisals of challenge stress ($\beta = 0.454$), which in turn is positively related to job performance ($\beta = 0.479$). The indirect relationship between SSA and performance via challenge stress appraisal is also statistically significant ($\beta = 0.218$, $p < 0.001$). These findings align with the perspectives of Cavanaugh et al. (2000) and Pindek et al. (2024), suggesting that when employees perceive complex or demanding tasks as opportunities for growth, they are more likely to activate intrinsic motivation and achieve higher levels of performance. Recent studies have also emphasized that task complexity and uncertainty, when interpreted positively, can effectively stimulate proactivity and innovation among employees (Huang and Gursoy, 2024; Xu et al., 2024). This is particularly true in high-interaction, high-autonomy roles commonly associated with SSA, such as in healthcare, tourism, and training. In these positions, frontline employees typically possess discretion and informational advantages. When they view dual-role demands as platforms for development rather than burdens, they are more likely to improve service quality and identify sales opportunities, thereby initiating a positive cycle of challenge appraisal, motivation, and performance (Jasmand et al., 2012a; Ahmad et al., 2022). Hence, SSA is not only a structural task arrangement but also a contextual trigger that activates employees' cognitive potential.

However, SSA does not always produce positive outcomes. It can also trigger employees' perceptions of hindrance stress, which negatively influences their performance through this pathway. While the challenge appraisal route appears dominant, the study also finds that SSA is significantly related to perceptions of hindrance stress appraisal ($\beta = 0.459$), which in turn is negatively related to performance ($\beta = -0.161$). Although this negative indirect relationship is relatively modest ($\beta = -0.074$), it remains statistically significant, indicating that the adverse associations of SSA should not be overlooked. This challenges the view that SSA is always beneficial. As noted by Mazzola and Disselhorst (2019), when employees feel a lack of control over unclear role boundaries, insufficient resources, or role conflicts, tasks that might otherwise be motivating may instead become sources of strain and psychological burden. SSA inherently involves task-switching and the pursuit of dual performance objectives. Without clear

Table 7 Results of control variables.

Control variables	β -value	LLCI	ULCI	p -value
Age -> EP	0.090	-0.012	0.193	0.088
Education -> EP	-0.049	-0.139	0.038	0.285
Length of service -> EP	-0.027	-0.14	0.083	0.628
Gender -> EP	-0.029	-0.208	0.153	0.755

Source: Authors own work.

EP Employee performance, LLCI Lower-limit of confidence interval, ULCI Upper-limit of confidence interval.

Table 8 Assessment of endogeneity test using the Gaussian copula approach.

Path	Copula coefficient	LLCI	ULCI	p -value
GC (SSA) -> CSA	0.013	-0.559	0.444	0.959
GC (SSA) -> HSA	-0.219	-0.787	0.314	0.431
GC (HSA) -> EP	0.132	-0.374	0.505	0.551
GC (CSA) -> EP	-0.183	-0.644	0.193	0.390
GC (SSA) -> HSA -> EP	0.064	-0.110	0.316	0.534
GC (SSA) -> CS A -> EP	0.009	-0.422	0.334	0.963

Source: Authors own work.

SSA Service-sales ambidexterity, CSA Challenge stress appraisal, HSA Hindrance stress appraisal, EP Employee performance, LLLCI Lower-limit of confidence interval, ULLCI Upper-limit of confidence interval.

guidance and supporting resources from the organization, employees may perceive SSA as an unrealistic expectation, leading to disengaged or avoidant behaviors (Gabler et al., 2017; Sok et al., 2022; Pindek et al., 2024; Azeem et al., 2025). Therefore, the study emphasizes that the negative influences of SSA on performance stem not from the task itself but from how employees subjectively appraise stress and perceive a mismatch in the support they receive.

Further analysis reveals that employees' regulatory focus, as a form of motivational orientation, plays an important moderating role in the relationship between SSA, stress appraisal, and performance. Employees with a strong promotion focus are more likely to view SSA as an opportunity for growth and advancement. This positive goal orientation is positively related to the relationship between SSA and challenge stress appraisal ($\beta = 0.364$) and amplifies the indirect positive influence on performance through the challenge pathway ($\beta = 0.174$). This finding supports the regulatory fit theory proposed by Brockner and Higgins (2001), as well as the work of Lanaj et al. (2012), both of which suggest that individuals' interpretations of work stimuli depend on the activation of their goal systems. Promotion-focused employees tend to concentrate on potential achievements and breakthroughs when facing complex tasks, making them more capable of transforming stress into motivation. In contrast, employees with a strong prevention focus are more sensitive to risks, failures, and responsibilities. They are more likely to perceive SSA as a source of uncertainty that disrupts goal attainment, which increases their hindrance stress ($\beta = 0.262$) and, in turn, diminishes performance ($\beta = -0.042$). This finding is consistent with prior research by Lichtenhaller and Fischbach (2019) on the relationship between prevention focus and work avoidance behavior, as well as Luqman et al. (2021) on the influence of motivational regulation on innovation and stress tolerance. Thus, individual motivational systems act as "amplifiers" or "filters" in shaping stress appraisals under SSA.

Theoretical implications. First, this study deepens the application of transactional stress theory in the context of organizational roles. Lazarus and Folkman (1987) proposed that individuals respond to stress based on their cognitive appraisal of external situations. From this perspective, we identify a dual nature in employees' subjective perceptions of SSA: it can be appraised either as a challenging stimulus that promotes growth or as a hindering burden that obstructs goal achievement. This dual-path cognitive appraisal has been largely underrepresented in existing SSA research. The findings confirm that SSA can simultaneously elicit both challenge and hindrance appraisals, which in turn influence performance through distinct pathways. This supports and extends the challenge-hindrance stressor framework (Cavanaugh et al., 2000; Podsakoff et al., 2023), pushing the boundaries of its applicability in dual-role contexts.

Moreover, this study integrates RFT to delineate the boundary conditions under which SSA influences employees' stress perceptions and performance outcomes. The findings reveal that employees' regulatory focus plays a crucial moderating role in shaping their stress responses to SSA. Employees with a promotion focus are more likely to interpret SSA as an opportunity for goal attainment, thereby amplifying the positive influences of the challenge appraisal pathway. In contrast, those with a prevention focus tend to be more sensitive to risks of failure and role conflict, which intensifies the negative impact of hindrance stress on performance. Previous literature often treats SSA as a universal concept, assuming that all employees respond similarly to the dual demands of service and sales tasks (Jasmand

et al., 2012b; Classen and Friedli, 2021). This discovery not only fills a theoretical gap in SSA literature concerning individual differences but also extends the application of RFT in the domains of multitasking cognition and stress regulation (Brockner and Higgins, 2001; Lanaj et al., 2012), highlighting the pivotal role of motivational orientation as a boundary condition in stress formation pathways.

Finally, this study proposes and empirically validates a dual-path cognitive-motivational model through which SSA influences employee performance, systematically integrating both positive and negative psychological mechanisms. Existing studies tend to emphasize the beneficial aspects of SSA (Ahmad et al., 2021; Gaan and Shin, 2023; Fujii, 2024), often neglecting the complexity of employees' stress experiences and the heterogeneity of performance outcomes in practice (Jasmand et al., 2012b; Gabler et al., 2017; Sok et al., 2022). The findings suggest that SSA is not a static structural arrangement, but a task framework that derives its meaning through employees' subjective appraisal. The stress, either challenging or hindering, triggered by SSA is further shaped by the individual's motivation system. This integrative model not only provides a theoretical basis for understanding the "success-failure differentiation" of SSA in organizational practice but also offers a conceptual template for future studies on complex role integrations such as cross-functional collaboration and customer-oriented innovation.

Managerial implications. This study reveals that the impact of SSA on employee performance is not uniform but operates through two distinct pathways: challenge and hindrance stress appraisals, with individual regulatory focus serving as a critical moderating factor. Accordingly, managers should pay close attention to how employees subjectively interpret SSA-related demands and adopt targeted interventions that reflect these cognitive and motivational differences. Specifically, employees with a strong promotion focus, who are driven by growth and achievement goals, are more likely to appraise SSA as a challenge. Organizations can support such individuals by offering development-oriented assignments, clearly defined career advancement opportunities, and performance incentives that align with personal aspirations. Framing SSA as a platform for personal and professional growth can further enhance their engagement and overall performance. In contrast, employees with a strong prevention focus are more concerned with fulfilling obligations and avoiding failure, which makes them more inclined to perceive SSA as a hindrance stressor. To mitigate this, organizations should ensure role clarity, standardize work procedures, and provide stable support resources, such as clear performance standards and timely feedback, which help reduce ambiguity and minimize perceived burden.

At the policy level, organizations are encouraged to develop differentiated management systems that reflect employees' regulatory focus and stress appraisal tendencies, thereby improving the alignment and effectiveness of SSA implementation. One useful approach is to offer cognitive appraisal and stress management training that helps employees reframe SSA as an opportunity rather than a threat, increasing the likelihood of challenge-oriented responses. In addition, regulatory focus profiling, assessed through self-report surveys or periodic interviews, can be incorporated into staffing decisions, training design, and performance evaluations to facilitate better person-role fit. Finally, fostering a supportive organizational climate is also essential. Managers should provide consistent feedback and promote open communication to enhance employees' perception of available organizational resources.

Limitations and future studies. Although this study offers valuable insights into the relationship between SSA and employee performance, it has several limitations. First, the cross-sectional design of this study only captures employees' perceptions of SSA and its influence at a single point in time. As a result, we cannot ascertain how employees' stress appraisals or coping strategies evolve over the long term as they adapt to the dual demands of SSA. To address this, future research could adopt longitudinal tracking or experience sampling methods to explore the dynamic process through which SSA influences employee performance over time.

Second, the data for this study were collected from service-sector employees in China's Pearl River Delta region, which has a relatively centralized industrial structure and a distinct cultural context. While this specific context strengthens the internal validity of the study, it may also limit the generalizability of the findings to other regions or sectors. The cultural and industrial characteristics of the PRD region may differ significantly from those in other areas, potentially influencing how employees experience SSA. To enhance the external validity of the findings, future studies could replicate this research in different cultural and industrial contexts. By comparing SSA's effects across diverse settings, researchers can examine whether the dual-pathway model holds universally or if sector-specific or cultural differences moderate its impact.

In addition, the current study focused primarily on stress perception and regulatory focus as key mediating variables. While these factors provide valuable insights into employee responses to SSA, they represent only a portion of the broader set of individual and organizational influences. Future research could expand on this by examining additional individual differences, such as personality traits, emotional resilience, and coping resources, all of which could shape how employees perceive and respond to SSA-related stress. Furthermore, organizational factors such as leadership styles, team dynamics, and the level of organizational support could interact with individual traits to influence the outcomes of SSA. Incorporating these variables would provide a more holistic view of the mechanisms driving the impact of SSA on employee performance.

Finally, the use of self-report measures in this study may introduce potential biases, such as social desirability or lack of self-awareness, which could influence the accuracy of stress appraisals and performance assessments. Although self-reports are valuable, they are subject to subjective interpretation. To address this limitation, future research could incorporate objective performance measures or use data triangulation techniques, such as supervisor ratings, coworker evaluations, or behavioral observations. This would enhance the objectivity of the findings and provide a more nuanced understanding of the relationship between SSA and employee performance.

Conclusions

SSA has become a critical strategic capability for organizations facing intensifying market competition. This study investigates the dual-edged influence of SSA on employee performance by integrating transactional stress theory and RFT. The results reveal how cognitive appraisal of SSA leads to different stress appraisals, thereby influencing employee performance through different pathways. Employees who view SSA as a challenge experience positive challenge stress, leading to improved performance through increased effort and engagement; conversely, those who perceive SSA as a hindrance experience negative hindrance stress, resulting in decreased performance. Furthermore, the impact of SSA also depends on individual regulatory focus. Promotion-

focused employees are more likely to interpret the dual demands of service and sales as opportunities for personal and career development, while prevention-focused employees—motivated by avoiding losses and fulfilling obligations—tend to perceive the same demands as obstacles. This study provides a framework to guide future research in understanding the complex interactions among SSA, stress appraisals, regulatory focus, and employee performance, advancing the field. The results of the study offer actionable insights for organizations looking to implement or enhance SSA in their workforce.

Data availability

The data generated during the current study are available from the corresponding author on request.

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Conceptualization, CL, PZ, and ZG; Methodology, CL, ZG, and YL; Formal Analysis, ZG and YL; Writing—Original Draft, SZ, CL, PZ, and ZG; Writing—Review and Editing, YL, CL, PZ, ZG, and YL; Supervision, PZ, and LS; Resources, PZ and LS; Investigation, ZG, YL, SZ, and LS; Validation, CL, ZG, and YL; Data Curation, YL, PZ, and LS.

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Competing interests

The authors declare no competing interests.

Ethics approval

This study received ethical approval from the Ethics Committee of Youjiang Medical University for Nationalities (Ethics approval number: 2023091301), granted on September 13, 2023, prior to the commencement of the research. The validity period of approval is 2 years and covers all aspects of the study, including participant recruitment, data collection, and data analysis. All procedures were conducted in accordance with relevant guidelines and regulations for research involving human participants, including the Declaration of Helsinki, with particular attention to safeguarding participants' rights, safety, and well-being, as well as ensuring scientific integrity. There was no unethical behavior during the research process because this study did not involve human clinical trials or animal experiments and the participants were all 18 and above years old.

Informed consent

All participants provided written informed consent electronically prior to completing the questionnaire. Data collection was conducted in January 2024. The research team distributed the survey through corporate human resource departments and relevant personnel to frontline employees working in the healthcare, tourism, and education sectors in the Pearl River Delta region of China. A complete informed consent statement was

displayed on the first page of the questionnaire, outlining the purpose of the study, the scope of data use, the voluntary nature of participation, anonymization procedures, and assurance that there were no known risks involved. Participants were required to actively check a box labeled "I have read and agree to participate in this study," and this action was digitally recorded as valid electronic consent. The consent clearly stated that participant's information would be used solely for data analysis and academic publication related to this study, with no personally identifiable information collected, and all data handled in strict anonymity. This study did not involve minors or other vulnerable individuals; all participants were adults, and therefore, no consent from guardians or legal representatives was required.

Additional information

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